MW50-SV0

LGA2011 sockets R3 motherboard for Intel® E5-1600 V3/V4/E5-2600 V3/V4 series processor

User's Manual

Rev. 1002

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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.

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Box Contents

☑ Motherboard

☑ Driver CD

☑ Two SATA cables

☑ I/O Shield

☑ Bracket mini PCI-e Card

☑ 2-way PCI-e bridge Crossfire cable

☑ 2-way PCI-e bridge SLI cable

☑ 3-way PCI-e bridge SLI small card

• 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.

MW50-SV0 Motherboard Layout

Item	Code	Description
1	COM1	PS/2 connector (top)/USB 2.0 ports (buttom)
2	HD_AUDIO	Audio connectors
3	USB3_LAN1	LAN1 port (top) / USB 3.0 ports (bottom)/I218/
		With Intel vPro management function
4	USB3_LAN2	LAN2 port (top) / USB 3.0 ports (bottom)/I210
5	USB2_LAN3	LAN3 port (top) / USB 2.0 ports (bottom)/I210
6	PS2_USB2	PS/2 connector (top)/USB 2.0 ports (buttom)
7	PMBUS	PMBus connector
8	DIMM_P0_A0	Channel 1 slot 0
9	DIMM_P0_A1	Channel 1 slot 1
10	DIMM_P0_B0	Channel 2 slot 0
11	DIMM_P0_B1	Channel 2 slot 1
12	SYS_FAN0	System fan connector#0
13	P12V_AUX1	8 pin power connector
14	CPU	Intel LGA2011 Socket R3
15	SYS_FAN1	System fan connector#1
16	DIMM_P0_D1	Channel 4 slot 1
17	DIMM_P0_D0	Channel 4 slot 0
18	DIMM_P0_C1	Channel 3 slot 1
19	DIMM_P0_C0	Channel 3 slot 0
20	ATX	24 pin main power connector
21	SSATA_SGP1	sSATA SGPIO header
22	SATA_SGP1	SATA SGPIO header
23	MSATA	mSATA connector
24	SATA_0_1/SATA_2_3	SATA 3 6Gb/s connectors
25	SSATA_0_1/SSATA_2_3	sSATA 3 6Gb/s connectors
26	CLR_CMOS	Clear CMOS jumper
27	SYS_FAN2	System fan connector#2
28	SYS_FAN1	System fan connector#1
29	USB3_A	Type A USB 3.0 connector
30	SATA_DOM4	SATA port 4 DOM support jumper
31	F_USB3	USB3.0 header
32	F_USB2	USB2.0 header
33	CASE_OPEN	Case open intrusion alert header
34	SATA4	SATA 3 6Gb/s connectors
35	ME_RCVR	ME recovery jumper
36	ME_UPDATE	ME update jumper
37	SW_RAID	Software RAID Key header
38	GSATA0/GSATA1/GSATA2/GSATA3	SATA 3 6Gb/s connectors
39	BP_1	HDD back plane board header
40	LAN3_ACT	LAN port 3 active LED header
41	FP_1	Front panel header
42	COM2	Serial port cable connector

43	SPDIF_IN	S/PDIF in header
44	F_AUDIO	Front audio connector
45	PCI_1	PCI 32/33MHz slot
46	BIOS_PWD	Clearing Supervisor Password jumper
47	BIOS_RCVR	BIOS recovery jumper
48	PCIE_1	PCI Express x16 slot (Running at x8/Shared bandwidth with MEZZ_1)
49	PCIE_3	PCI Express x16 slot
50	TPM	TPM module connector
51	SPDIF_OUT	S/PDIF out header
52	MEZZ_1	Mezzine slot (x4 slot/Proprietary/Running at x4)
53	PCIE_4	PCI Express x16 slot
54	BAT	Battery socket
55	TBT	Thunderbolt addin-in card connector
56	CPU0_FAN	CPU0 fan 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 32 for SATA_DOM jumper setting instruction.

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® E5-1600 V3/V4/E5-2600 V3/V4 series processors in the LGA2011-3 package
	◆	L3 cache varies with CPU
	◆	Enhanced Intel SpeedStep Technology (EIST)
	◆	Support Intel Virtualization Technology (VT)
Chipset	◆	Intel® C612 Express (Wellsburg) Chipset
Memory	◆	8 x DIMM slots
	◆	DDR4 memory supported only
	◆	Quad channel memory architecture
	◆	ECC RDIMM / LRDIMM modules supported
	◆	Single and dual rank RDIMM modules up to 32GB supported
	◆	3DS LRDIMM modules up to 128GB supported
	◆	1.2V modules: 1600/1866/2133/2400 MHz
LAN	◆	1 x Intel® I218 controller/Intel® vPro supported
	◆	2 x Intel® I210 controllers
Multi-Graphics Technology	◆	Support for 3-Way/2-Way AMD CrossFir™/NVIDIA® SLI™ Technology
Audio	◆	Realtek ALC887 codec High Definition Audio
	◆	7.1 Channel
Expansion Slots	◆	2 x PCI Express x16 slot, running at x16 (Gen3/PCIE_4/PCIE_3)
	◆	1 x PCI Express x16 slot, running at x8 (Gen3/PCIE_1/Shard bandwidth with MEZZ_1)
	◆	1 x PCI 32bit/33MHz slot
Storage Interface	◆	Intel® C612 Express controller supports 10 x SATA3 6Gb/s connectors (SATA_0_1/SATA_2_3/SSATA_0_1/SSATA_2_3/SATA4/MSATA) support for Intel RSTe SATA RAID 0/1/5/10
	◆	Marvell® 88SE9230 controller 4 x SATA3 6Gb/s connectors (GSATA0/1/2/3) support for SATA RAID 0/1/10
USB	◆	Up to 7 USB 3.0 ports (1 Type A connector, 4 on the back panel, 2 additional ports via the USB brackets connected to the internal USB headers)
	◆	Up to 6 USB 2.0 ports (4 on the back panel, 2 additional ports via the USB brackets connected to the internal USB headers)

Internal Connectors	◆ 1 x 24-pin ATX main power connector
	◆ 1 x 8-pin ATX 12V power connector
	◆ 13 x SATA3 6Gb/s connectors
	◆ 1 x mSATA connector
	◆ 1 x PMBus header
	◆ 1 x CPU fan header
	◆ 4 x System fan headers
	◆ 1 x Front panel header
	◆ 1 x HDD Back plane borad header
	◆ 1 x USB 3.0 header
	◆ 1 x USB 2.0 header
	◆ 1 x USB 3.0 Type A connector
	◆ 1 x TPM module connector
	◆ 1 x Serial port connector
	◆ 1 x Front audio connector
	◆ 1 x Thunderbolt connector
	◆ 2 x SATA SPGIO headers
	◆ 1 x S/PDIF in header
	◆ 1 x S/PDIF out header
	◆ 1 x Software RAID key connector
	◆ 1 x LAN3 Active LED header
	◆ 1 x Chassis intrusion alert header
Rear Panel I/O	◆ 4 x USB 3.0 ports
	◆ 4 x USB 2.0 ports
	◆ 3 x RJ-45 ports
	◆ 1 x COM port
	◆ 1 x PS/2 connector
	◆ 5 x Audio connectors (Center/Subwoofer Speaker Out, Rear Speaker Out, Line In/Mic In, Line Out, Headphone)
	◆ 1 x Optical SPDIF Out
I/O Controller	◆ ITE® 8732F 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	◆ ATX Form Factor; 12 inch x 9.6 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
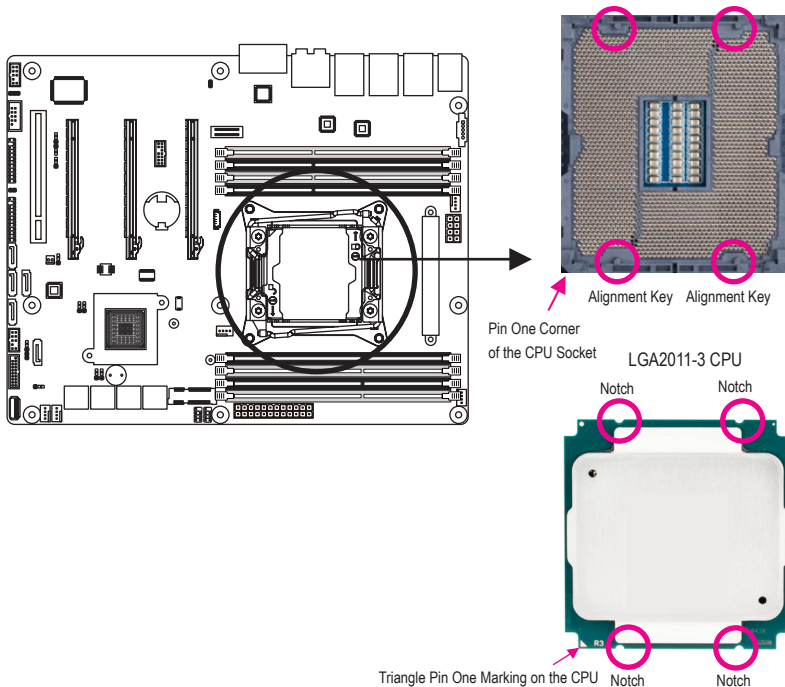
Read the following guidelines before you begin to install the CPU:
- Make sure that the motherboard supports the CPU.
- Always turn off the computer and unplug the power cord from the power outlet before installing the CPU to prevent hardware damage.
- Locate the pin one of the CPU. The CPU cannot be 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
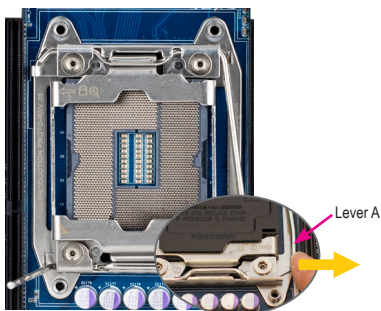
A.   Locate the alignment keys on the motherboard CPU socket and the notches on the CPU.

Alignment Key   Alignment Key

Pin One Corner
of the CPU Socket   LGA2011-3 CPU

Notch   Notch

Triangle Pin One Marking on the CPU   Notch   Notch

B. Follow the steps below to correctly install the CPU into the motherboard CPU socket.
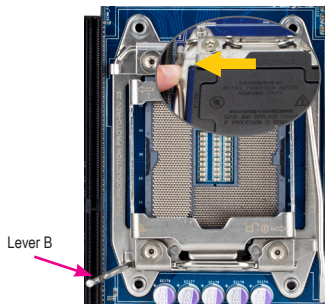
⚠️ • **Before installing the CPU, make sure to turn off the computer and unplug the power cord from the power outlet to prevent damage to the CPU.**
• **To protect the socket contacts, do not remove the protective plastic cover unless the CPU is inserted into the CPU socket. Save the cover properly and replace it if the CPU is removed.**
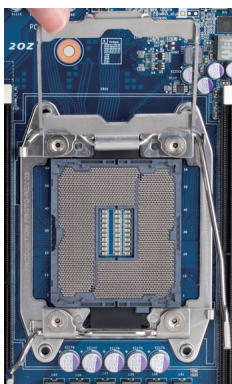
Lever A

Lever B

Step 1:
Push the lever closest to the "unlock" marking "⌷⌒" (below referred as lever A) down and away from the socket to release it.
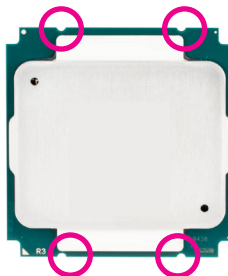
Step 2:
Push the lever closest to the "lock" marking "⌷⌐" (below referred as lever B) down and away from the socket. Then lift the lever.

Step 3:
Gently press lever A to allow the load plate to rise. Open the load plate. (Note: DO NOT touch the socket contacts after the load plate is opened.)
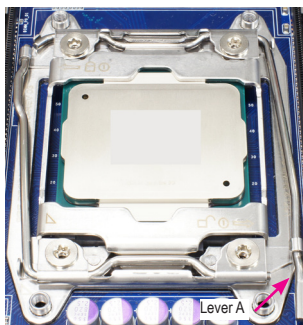
Step 4:
Hold the CPU with your thumb and index fingers. Align the CPU pin one marking (triangle) with the pin one corner of the CPU socket (or align the CPU notches with the socket alignment keys) and carefully insert the CPU into the socket vertically.

Lever B

Lever A

Step 5:

Once the CPU is properly inserted, carefully replace the load plate. Then secure lever B under its retention tab. The protective plastic cover may pop off from the load plate during the process of engaging the lever. Remove the cover. Save the cover properly and always replace it when the CPU is not installed.

Step 6:

Finally, secure lever A under its retention tab to complete the installation of the CPU.
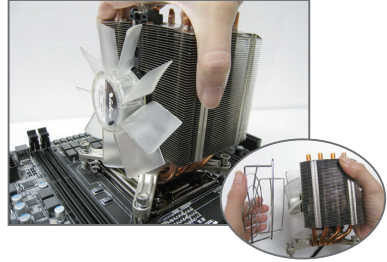
1-3-2   Installing the CPU Cooler

Refer to the steps below to correctly install the CPU cooler on the motherboard. (Actual installation process may differ depending the CPU cooler to be used. Refer to the user's manual for your CPU cooler.)
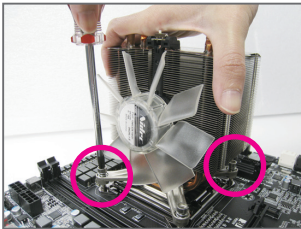
Step 1:
Apply an even and thin layer of thermal grease on the surface of the installed CPU.
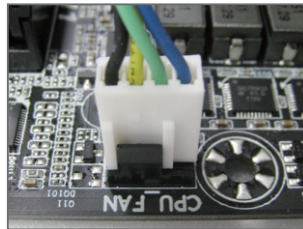
Step 2:
Place the cooler atop the CPU, aligning the four mounting screws with the mounting holes on the ILM. (If your cooler has a fan grill which may cause interference when you tighten the screws, remove it first and replace it after tightening the screws.)

Step 3:
Use one hand to hold the cooler and the other to tighten the screws in a diagonal sequence with a screw driver. Begin tightening a screw with a few turns and repeat with the screw diagonally opposite the one you just tightened. Then do the same to the other pair. Next, fully tighten the four screws.

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

Please pay more attention 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 Four Channel Memory Configuration

This motherboard provides Eight DDR4 memory sockets and supports Four Channel Technology. After the memory is installed, the BIOS will automatically detect the specifications and capacity of the memory. Enabling Four Channel memory mode will be four times of the original memory bandwidth.

The four DDR4 memory sockets are divided into four channels each channel has two memory sockets as following:

Channel 1: DIMM_P0_A0/DIMM_P0_A1
Channel 2: DIMM_P0_B0/DIMM_P0_B1
Channel 3: DIMM_P0_C0/DIMM_P0_C1
Channel 4: DIMM_P0_D0/DIMM_P0_D1
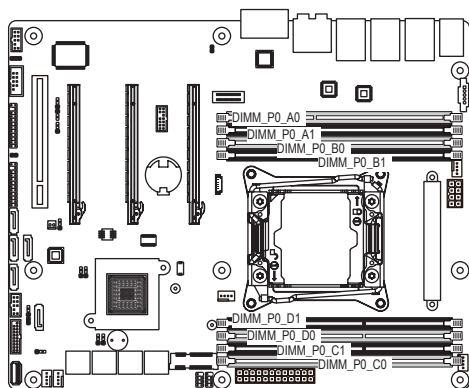
When only one DIMM is used, it must be populated in memory slot0 first.
Memory populated sequence must be followed with slot0/slot1.
System will not boot normally with incorrect populated sequence.

Due to CPU limitations, read the following guidelines before installing the memory in Four Channel mode.
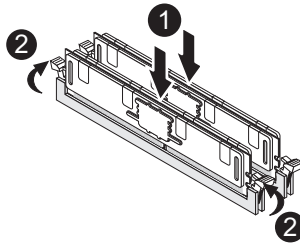
1. Four Channel mode cannot be enabled if only one DDR4 memory module is installed.

2. When enabling Four 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 DDR4 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.

1-4-3   DIMM Population Table

Two Slots Channel RDIMM Population Configuration Within a Channel
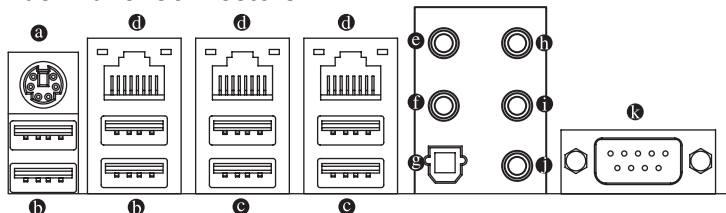
Type	Ranks Per DIMM and Data Width	Speed (MT/s); Slot Per Channel (SPC) and DIMM Per Channel (DPC)		
		1 Slot Per Channel	2 Slot Per Channel	
		1DPC	1DPC	2DPC
RDIMM	SRx4	2133	2133	1866
RDIMM	SRx8	2133	2133	1866
RDIMM	DRx8	2133	2133	1866
RDIMM	DRx4	2133	2133	1866
LRDIMM	QRx4	2133	2133	2133
LRDIMM 3DS	8Rx4	2400	2400	2400

NOTE!
DDR4 2400MHz is only available on Intel Xeon® E5-2600 V4 processor.

1-5 Back Panel Connectors

ⓐ PS/2 Keyboard/Mouse Port

Coonnect a PS/2 keyboard or mouse to this port.

ⓑ 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.

ⓒ USB 3.0 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.

ⓓ RJ-45 LAN Ports (Gigabit Ethernet LAN Ports)

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.

ⓔ Center/Subwoofer Speaker Out Jack (Orange)

Use this audio jack to connect center/subwoofer speakers in a 5.1/7.1-channel audio configuration.

ⓕ Rear Speaker Out Jack (Black)

Use this audio jack to connect rear speakers in a 7.1-channel audio configuration.

ⓖ Optical S/PDIF Out Connector

This connector provides digital audio out to an external audio system that supports digital optical audio. Before using this feature, ensure that your audio system provides an optical digital audio in connector.

ⓗ Line In Jack (Blue)

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

ⓘ Line Out Jack (Green)
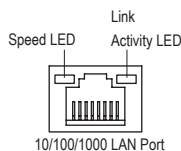
The default line out jack. Use this audio jack for a headphone or 2-channel speaker. This jack can be used to connect front speakers in a 4/5.1/7.1-channel audio configuration.

ⓙ Mic In Jack (Pink)

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

ⓚ Serial Port

Connects to serial-based mouse or data processing devices.

Speed LED:	
State	Description
Yellow On	1 Gbps data rate
Green On	100 Mbps data rate
Off	10 Mbps data rate
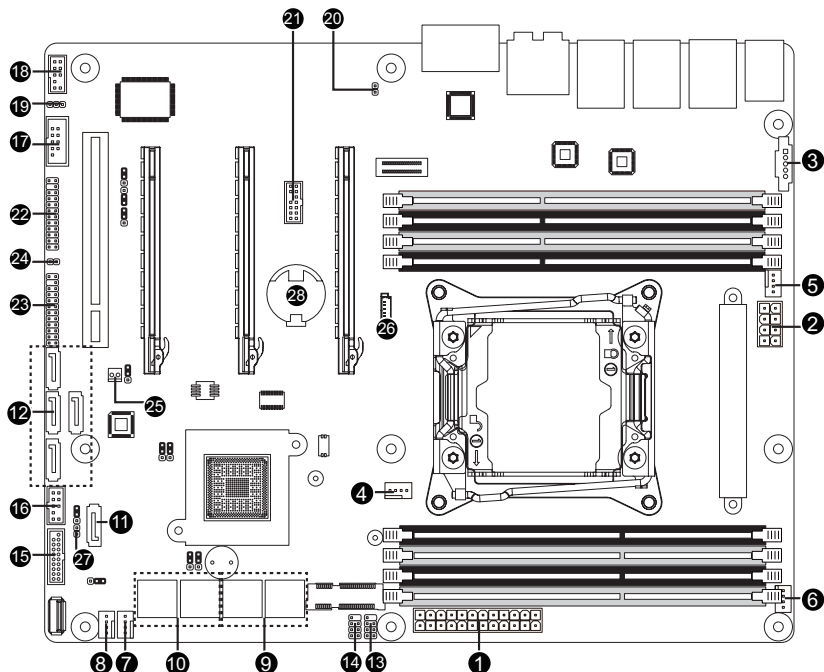
Link/Activity LED:	
State	Description
On	Link between system and network or no access
Blinking	Data transmission or receiving is occurring
Off	No data transmission or receiving is occurring

⚠ • 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)	ATX	**15)**	F_USB3
2)	P12V_AUX1	**16)**	F_USB2
3)	PMBUS	**17)**	COM2
4)	CPU0_FAN	**18)**	F_AUDIO
5)	SYS_FAN0 (System Fan)	**19)**	SPDIF_IN
6)	SYS_FAN1 (System Fan)	**20)**	SPDIF_OUT
7)	SYS_FAN2 (System Fan)	**21)**	TPM
8)	SYS_FAN3 (System Fan)	**22)**	FP_1
9)	SATA_0_1/SATA_2_3	**23)**	BP_1
10)	SSATA_0_1/SSATA_2_3	**24)**	LAN3_ACT
11)	SATA4	**25)**	SW_RAID
12)	GSATA0/1/2/3	**26)**	TBT
13)	SSATA_SGP1	**27)**	CASE_OPEN
14)	SATA_SGP1	**28)**	BAT

Read the following guidelines before connecting external devices:
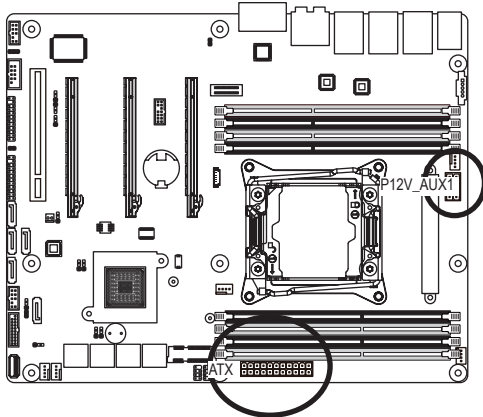
- First make sure your devices are compliant with the connectors you wish to connect.
- Before installing the devices, be sure to turn off the devices and your computer. Unplug the power cord from the power outlet to prevent damage to the devices.
- After installing the device and before turning on the computer, make sure the device cable has been securely attached to the connector on the motherboard.

1/2) ATX/P12V_AUX1 (2x4 12V Power Connector and 2x12 Main Power Connector)

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

⚠️ • **To meet expansion requirements, it is recommended that a power supply that can withstand high power consumption be used (500W or greater). If a power supply is used that does not provide the required power, the result can lead to an unstable or unbootable system.**
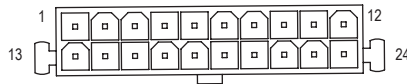
P12V_AUX1
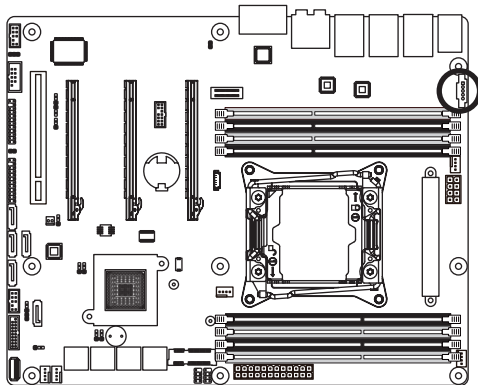
Pin No.	Definition
1	GND
2	GND
3	GND
4	GND
5	+12V
6	+12V
7	+12V
8	+12V

ATX

Pin No.	Definition	Pin No.	Definition
1	3.3V	13	3.3V
2	3.3V	14	-12V
3	GND	15	GND
4	+5V	16	PS_ON
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
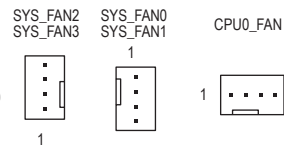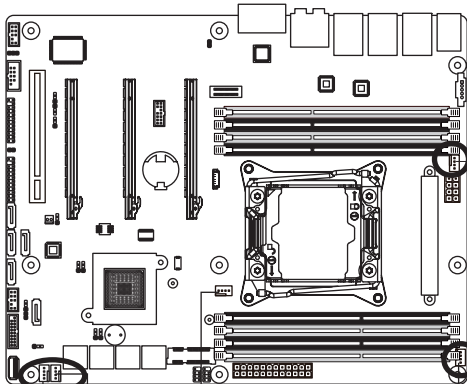
3) PMBUS (PMBus connector)

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

4/5/6/7/8) CPU0_FAN/SYS_FAN0/SYS_FAN1/SYS_FAN2/SYS_FAN3
(CPU Fan/System Fan Headers)

The motherboard has one 4-pin CPU fan headers, and four 4-pin 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.

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.
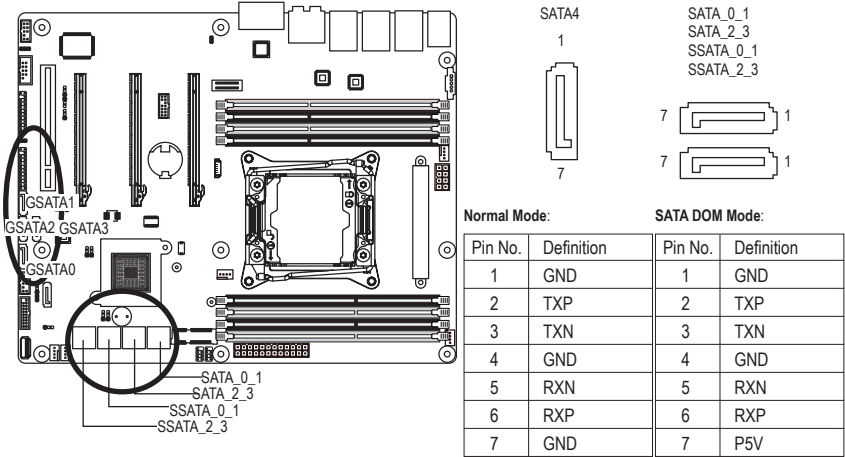
9) SATA0_1/SATA_2_3 (SATA 6Gb/s Connectors)

10) SSATA_0_1/SSATA_2_3 (SATA 6Gb/s Connectors)

11) SATA4 (SATA 6Gb/s Connector/Support SATA DOM Function)

12) GSATA0/GSATA1/GSATA2/GSATA3 (SATA 6Gb/s Connector)

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.
Please see page 32 for SATA DOM jumper setting.

| Normal Mode: | | SATA DOM Mode: | |
Pin No.	Definition	Pin No.	Definition
1	GND	1	GND
2	TXP	2	TXP
3	TXN	3	TXN
4	GND	4	GND
5	RXN	5	RXN
6	RXP	6	RXP
7	GND	7	P5V
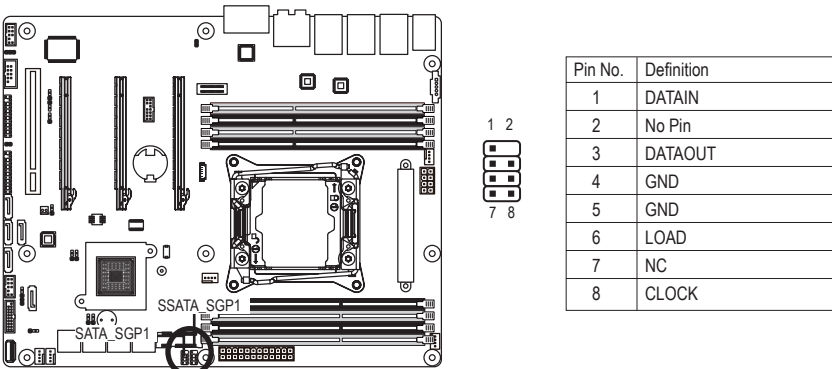
- A RAID 0 or RAID 1 configuration requires at least two hard drives. If more than two hard drives are configured, the total number of hard drives must be an even number.
- A RAID 10 configuration requires four hard drives.

(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.

13/14) SATA_SGP1/SATA_SGP2 (SATA SGPIO Headers)

SGPIO 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	DATAIN
2	No Pin
3	DATAOUT
4	GND
5	GND
6	LOAD
7	NC
8	CLOCK
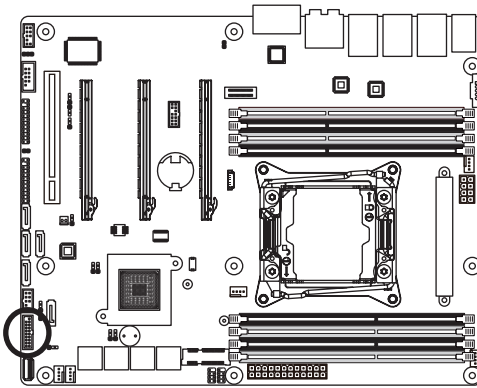
15) F_USB3 (USB 3.0 Header)

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.
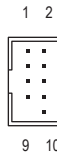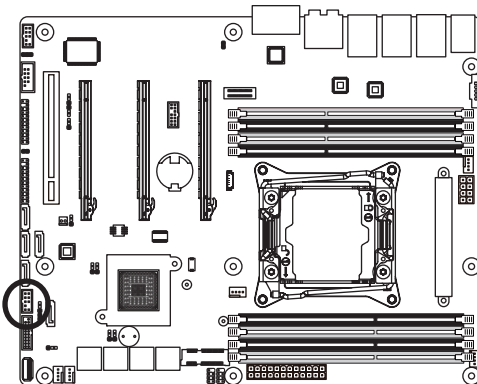
• F_USB3 header can support the fast charge function.

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

16) F_USB2 (Front USB Header)
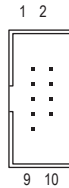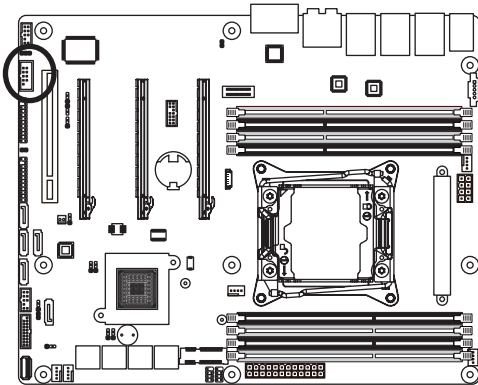
The header conform to USB 2.0 specification. Each USB header can provide two USB ports via an optional USB bracket. For purchasing the optional USB bracket, please contact the local dealer.

Pin No.	Definition
1	Power (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

17) COM2 (Serial Port Header)
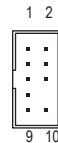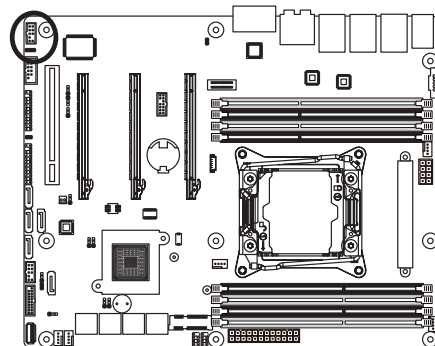
The COM header provides one serial port via an optional COM port cable. For purchasing the optional COM port cable, please contact the local dealer.

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

18) F_AUDIO (Front Panel Audio Header)

The front panel audio header supports Intel High Definition audio (HD) and AC'97 audio. You may connect your chassis front panel audio module to this header. Make sure the wire assignments of the module connector match the pin assignments of the motherboard header. Incorrect connection between the module connector and the motherboard header will make the device unable to work or even damage it.

For HD Front Panel Audio:

Pin No.	Definition
1	MIC2
2	GND
3	FP_AUD_DET
4	NC
5	LINE2_R
6	MIC2_JD
7	GND
8	No Pin
9	LINE2_L
10	LINE2_JD
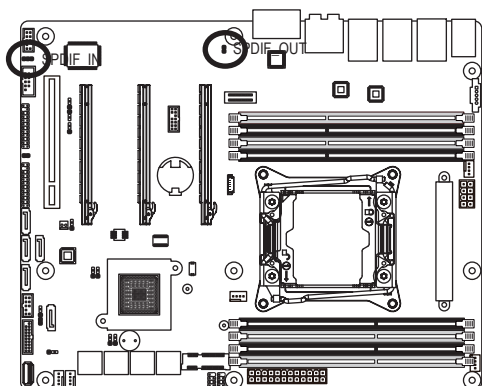
For AC'97 Front Panel Audio:

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

• The front panel audio header supports HD audio by default. If your chassis provides an AC'97 front panel audio module.

19/20) SPDIF_IN/SPDIF_OUT (SPDIF In and SPDIF Out Header)
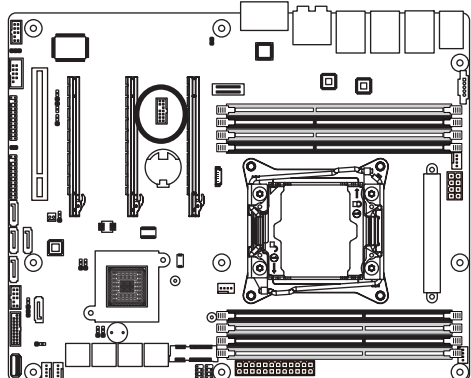
SPDIF_OUT

Pin No.	Definition
1	SPDIF-OUT1
2	GND

SPDIF_IN

Pin No.	Definition
1	P_5V_AUX
2	SPDIF-IN
3	GND

21) TPM (TPM Module Connector)
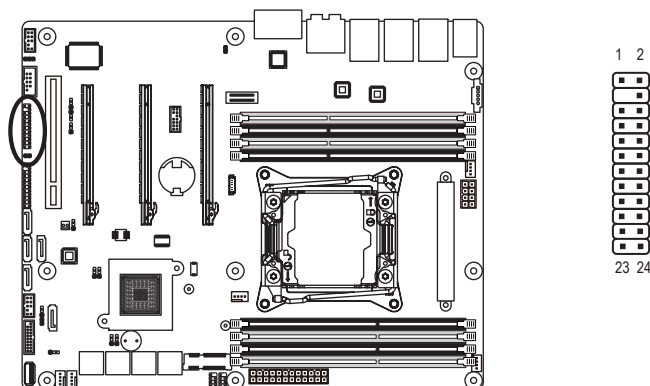
Pin No.	Definition
1	CLK_33M_TPM
2	P_3V3_AUX
3	LPC_RST
4	P3V3
5	LPC_LAD0
6	IRQ_SERIAL
7	LPC_LAD1
8	TPM_DET_N
9	LPC_LAD2
10	NC
11	LPC_LAD3
12	GND
13	LPC_FRAME_N
14	GND

22) 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.
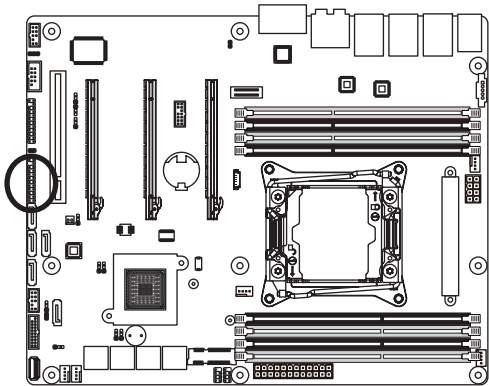
Pin No.	Signal Name	Definition
1	PWR_LED+	Power LED Anode
2	5VSB	Front Panel Power
3	KEY	Key
4	NC	No Connect
5	PWR_LED-	Power LED Cathode
6	NC	No Connect
7	HDD_LED+	HDD Activity LED Anode
8	NC	No Connect
9	HDD_LED-	HDD Activity LED Cathode
10	NC	No Connect
11	PWR_BTN	Power Switch
12	LAN1_LINK	LAN1 Link LED Signal
13	PWR_BTN (GND)	Power Switch (GND)
14	LAN1_ACT	LAN1 Active LED Signal cathode(-)
15	RST_BTN	Reset Switch
16	SDA	SMBus SDA
17	RST_BTN (GND)	Reset Switch (GND)
18	SCL	SMBus SCL
19	NC	No Connect
20	CASE_OPEN	Chassis Intrusion
21	GND	Ground
22	LAN2_LINK	LAN2 Link LED Signal
23	NMI_BTN	NMI to CPU Switch
24	LAN2_ACT	LAN2 Active LED Signal cathode(-)
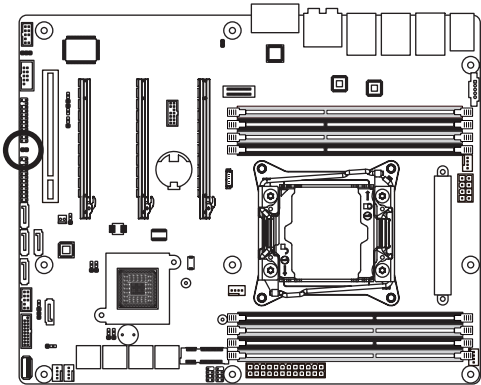
The front panel design may differ by chassis. A front panel module mainly consists of power switch, reset switch, power LED, hard drive activity LED, speaker and etc. When connecting your chassis front panel module to this header, make sure the wire assignments and the pin assignments are matched correctly.

23) BP_1 (HDD Back Plane Board Hearders)

1 2

25 26
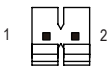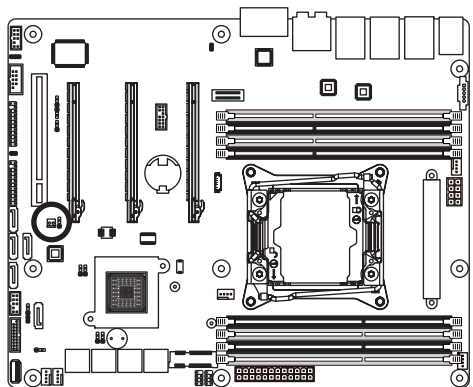
Pin No.	Definition
1	NC
2	NC
3	NC
4	FAN_GATE_N
5	NC
6	GND
7	KEY
8	Rreset
9	GND
10	BP_LED_A_N
11	BP_LED_G_N
12	GND
13	NC
14	NC
15	GND
16	SMB_BP_DATA
17	GND
18	SMB_BP_CLK
19	P_3V3_AUX
20	NC
21	P_3V3_AUX
22	NC
23	GND
24	KEY
25	BP_PRESENSE
26	GND

24) LAN3_ACT (LAN3 Active LED Header)

1 ⬚⬚ 2
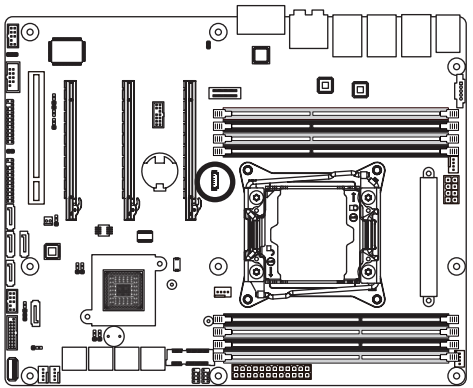
Pin No.	Definition
1	LED+
2	LED-

25) SW_RAID (Intel RAID Key Header)
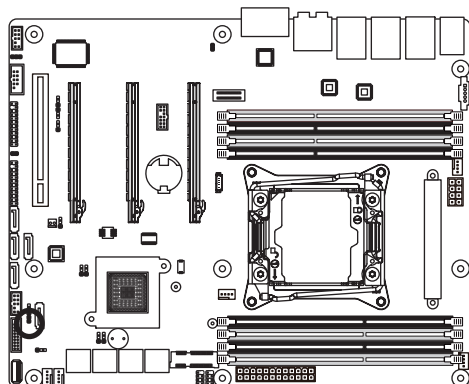
Pin No.	Definition
1	KEY
2	GND

26) TBT (Thunderbolt Add-in Card Connector)

Pin No.	Definition
1	GPIOA
2	GPIOB
3	SLP_S3
4	SLP_S5
5	GND
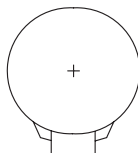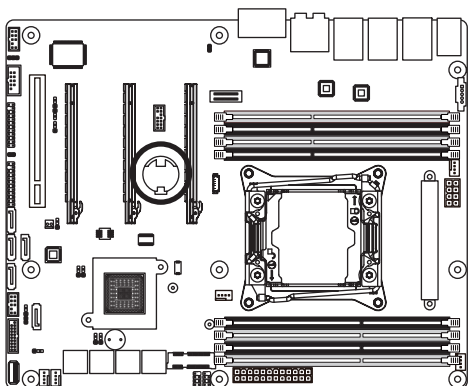
27) CASE_OPEN (Case open intrusion alert header)

Open: Normal operation.

Closed: Active chassis intrustion alert.
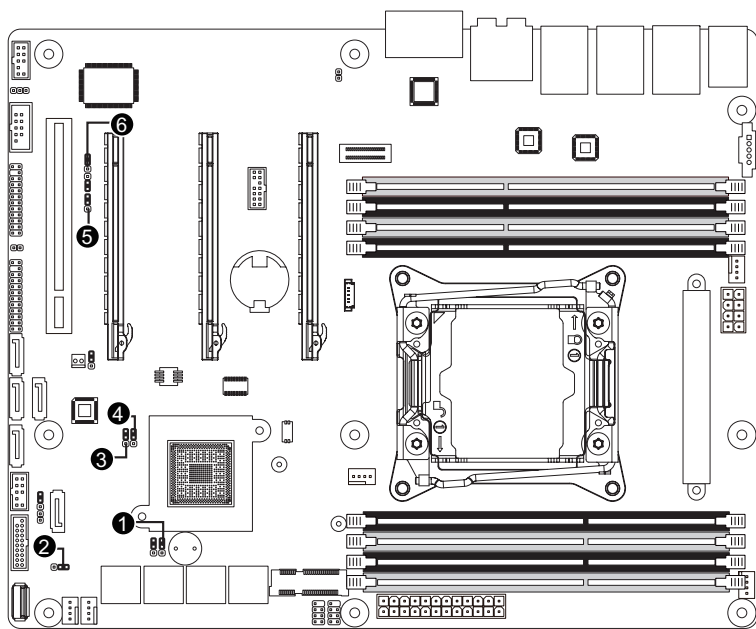
28) BAT (Battery)

The battery provides power to keep the values (such as BIOS configurations, date, and time information) in the CMOS when the computer is turned off. Replace the battery when the battery voltage drops to a low level, or the CMOS values may not be accurate or may be lost.

• 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.
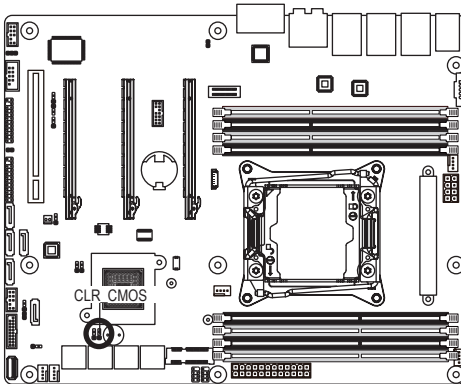
1-7   Jumper Settings

1)	CLR_CMOS	4)	ME_UPDATE
2)	SATA_DOM4	5)	BIOS_PWD
3)	ME_RCVR	6)	BIOS_RCVR

1) CLR_CMOS (Clearing CMOS Jumper)

Use this jumper to clear the CMOS values (e.g. date information and BIOS configurations) and reset the CMOS values to factory defaults. To clear the CMOS values, place a jumper cap on the two pins 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.

CLR_CMOS

⚠ • Always turn off your computer and unplug the power cord from the power outlet before clearing the CMOS values.
• After clearing the CMOS values and before turning on your computer, be sure to remove the jumper cap from the jumper. Failure to do so may cause damage to the motherboard.
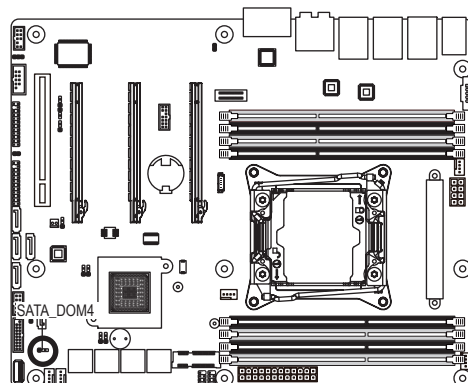
2) SATA_DOM4 (SATA port 4 DOM Jumper)
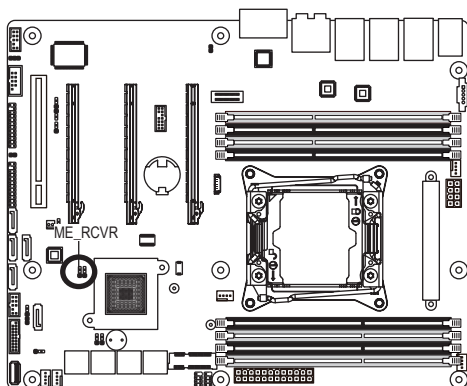
⚠ **CAUTION!**
• If the SATA DOM power is supplied by the motherboard, set the jumper to pin 1-2.
• If the SATA DOM power is supplied by external power, set the jumper to pin 2-3.
• If a SATA type hard drive is connected to the motherboard, please ensure the jumper is closed and set to **2-3 pins** (Default setting), in order to reduce any risk of hard disk damage.

Please refer to the pin definition table in the following.

SATA_DOM4

Pin No.	Definition
1	P5V
2	SATA4 Pin7
3	GND
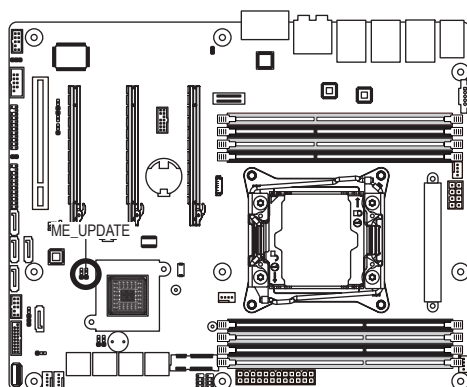
3) ME_RCVR (ME Recovery Jumper)

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

1   2-3 Close: ME recovery mode.
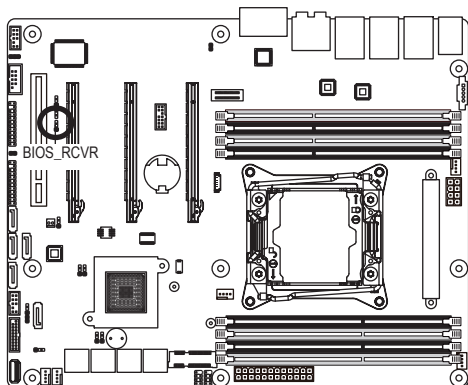
4) ME_UPDATE (ME Update Jumper)

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

1   2-3 Close: ME recovery mode.
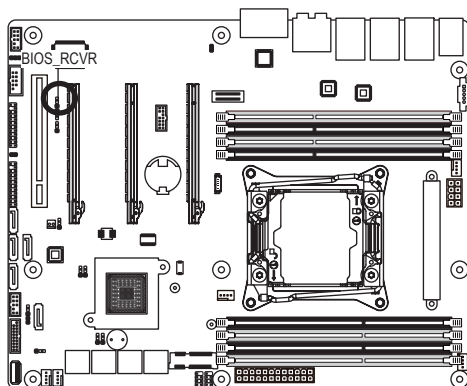
5) BIOS_PWD (Clearing Supervisor Password Jumper)

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

1 2-3 Close: Skip supervisor password.

6) BIOS_RCVR (BIOS Recovery Jumper)

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

1 2-3 Close: BIOS recovery mode.

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Chapter 2   BIOS Setup

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

To access the BIOS Setup program, press the <F2> key during the POST when the power is turned on.

• BIOS flashing is potentially risky, if you do not encounter problems of using the current BIOS version, it is recommended that you don't flash the BIOS. To flash the BIOS, do it with caution. Inadequate BIOS flashing may result in system malfunction.
• It is recommended that you not alter the default settings (unless you need to) to prevent system instability or other unexpected results. Inadequately altering the settings may result in system's failure to boot. If this occurs, try to clear the CMOS values and reset the board to default values. (Refer to the **Exit** section in this chapter or introductions of the battery/clearing CMOS jumper in Chapter 1 for how to clear the CMOS values.)

BIOS Setup Program Function Keys

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

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

■ **Advanced**
This setup page includes all the items of AMI BIOS special enhanced features.
(ex: Auto detect fan and temperature status, automatically configure hard disk parameters.)

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

■ **Server Management**
Server additional features enabled/disabled setup menus.

■ **Security**
Change, set, or disable supervisor and user password. Configuration supervisor password allows you to restrict access to the system and BIOS Setup.
A supervisor password allows you to make changes in BIOS Setup.
A user password only allows you to view the BIOS settings but not to make changes.

■ **Boot**
This setup page provides items for configuration of boot sequence.

■ **Exit**
Save all the changes made in the BIOS Setup program to the CMOS and exit BIOS Setup. (Pressing <F10> can also carry out this task.)
Abandon all changes and the previous settings remain in effect. Pressing <Y> to the confirmation message will exit BIOS Setup. (Pressing <Esc> can also carry out this task.)

2-1 The Main Menu

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

Main Menu Help

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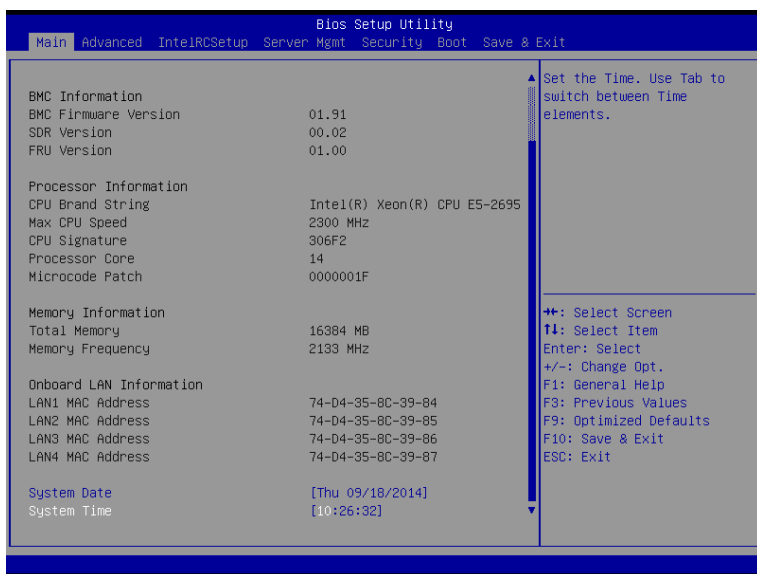
Submenu Help

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

- When the system is not stable as usual, select the **Restore Defaults** item to set your system to its defaults.
- The BIOS Setup menus described in this chapter are for reference only and may differ by BIOS version.

```
                           Bios Setup Utility
   Main   Advanced   IntelRCSetup   Event Logs   Security   Boot   Save & Exit

   BIOS Information                                      Set the Date. Use Tab to
   Project Name                  MW50-SV0                switch between Date
   Project Version               F09                     elements.
   Build Date and Time           08/28/2014 18:09:53

   Processor Information
   CPU Brand String              Intel(R) Xeon(R) CPU E5-2697
   Max CPU Speed                 2600 MHz
   CPU Signature                 306F2
   Processor Core                14
   Microcode Patch               0000001F

   Memory Information
   Total Memory                  65536 MB                ↔: Select Screen
   Memory Frequency              2133 MHz                ↑↓: Select Item
                                                         Enter: Select
   Onboard LAN Information                               +/-: Change Opt.
   LAN1 MAC Address              94-DE-80-F9-08-FC       F1: General Help
   LAN2 MAC Address              94-DE-80-F9-08-FD       F3: Previous Values
   LAN3 MAC Address              94-DE-80-F9-08-FE       F9: Optimized Defaults
                                                         F10: Save & Exit
   System Date                   [Wed 09/24/2014]        ESC: Exit
   System Time                   [11:40:16]
```

```
                           Bios Setup Utility
    Main  Advanced  IntelRCSetup  Server Mgmt  Security  Boot  Save & Exit

                                                      ▲ │Set the Time. Use Tab to
    BMC Information                                      │switch between Time
    BMC Firmware Version          01.91                  │elements.
    SDR Version                   00.02
    FRU Version                   01.00

    Processor Information
    CPU Brand String              Intel(R) Xeon(R) CPU E5-2695
    Max CPU Speed                 2300 MHz
    CPU Signature                 306F2
    Processor Core                14
    Microcode Patch               0000001F

    Memory Information                                   │→←: Select Screen
    Total Memory                  16384 MB               │↑↓: Select Item
    Memory Frequency              2133 MHz               │Enter: Select
                                                         │+/-: Change Opt.
    Onboard LAN Information                              │F1: General Help
    LAN1 MAC Address              74-D4-35-8C-39-84      │F3: Previous Values
    LAN2 MAC Address              74-D4-35-8C-39-85      │F9: Optimized Defaults
    LAN3 MAC Address              74-D4-35-8C-39-86      │F10: Save & Exit
    LAN4 MAC Address              74-D4-35-8C-39-87      │ESC: Exit

    System Date                   [Thu 09/18/2014]
    System Time                   [10:26:32]          ▼
```

& **BIOS Information**

& **Porject Name**

Display the project name information.

& **Porject Version**

Display version number of the BIOS setup utility.

& **BIOS Build Date and Time**

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

& **Processor Information**

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

Displays the technical specifications for the installed processor.

& **Memory Information**

& **Total Memory**

Display the total memory size of the installed memory.

& **Memory Frequency**

Display the frequency information of the installed memory.

& **Onboard LAN Information**

& **LAN1/LAN2/LAN3 MAC Address**

Display LAN1/LAN2/LAN/LAN4 MAC address information.

& **System Date**
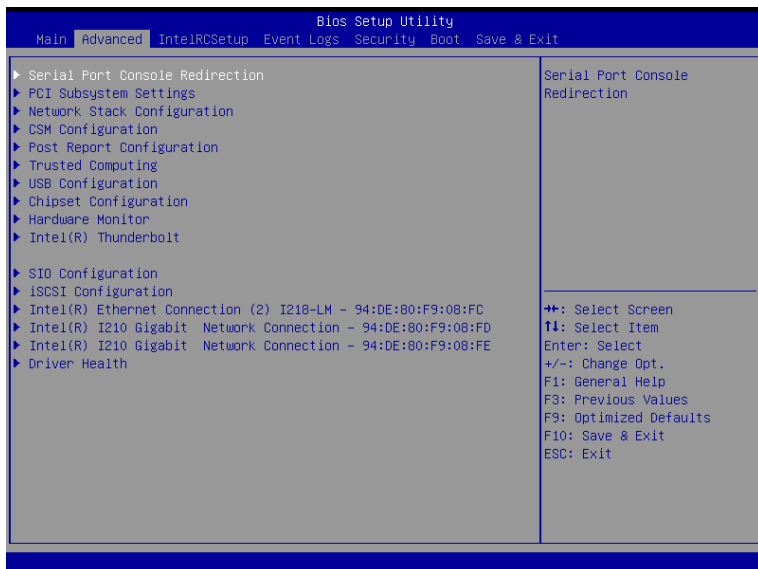
Set the date following the weekday-month-day- year format.

& **System Time**
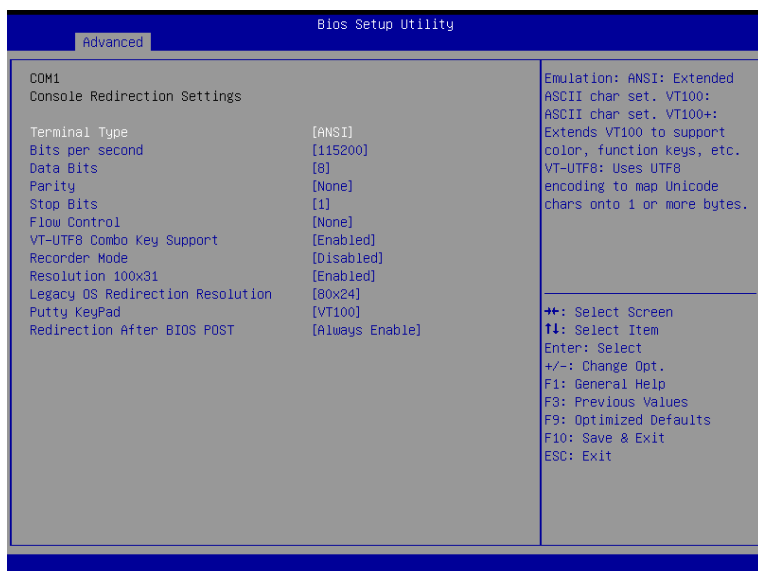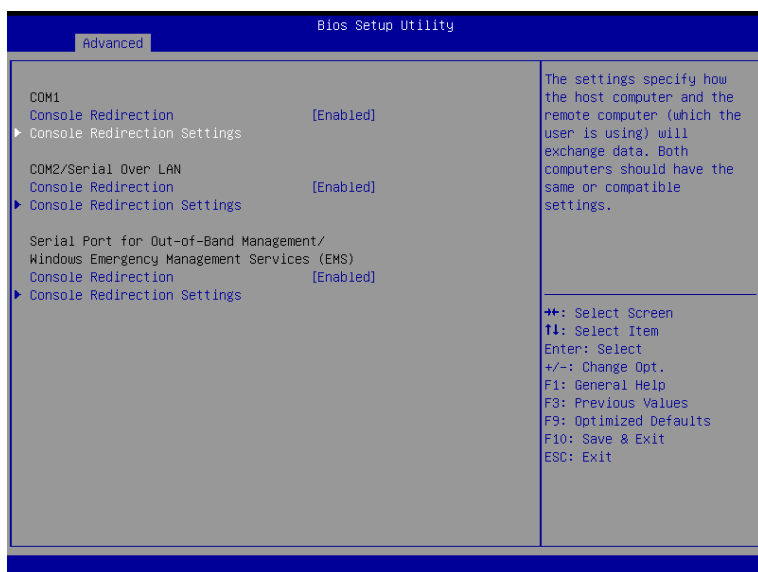
Set the system time following the hour-minute- second format.

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.

```
                           Bios Setup Utility
     Main  Advanced  IntelRCSetup  Event Logs  Security  Boot  Save & Exit

▶ Serial Port Console Redirection                        Serial Port Console
▶ PCI Subsystem Settings                                 Redirection
▶ Network Stack Configuration
▶ CSM Configuration
▶ Post Report Configuration
▶ Trusted Computing
▶ USB Configuration
▶ Chipset Configuration
▶ Hardware Monitor
▶ Intel(R) Thunderbolt

▶ SIO Configuration
▶ iSCSI Configuration
▶ Intel(R) Ethernet Connection (2) I218-LM - 94:DE:80:F9:08:FC      ➜←: Select Screen
▶ Intel(R) I210 Gigabit  Network Connection - 94:DE:80:F9:08:FD     ↑↓: Select Item
▶ Intel(R) I210 Gigabit  Network Connection - 94:DE:80:F9:08:FE     Enter: Select
▶ Driver Health                                                     +/-: Change Opt.
                                                                    F1: General Help
                                                                    F3: Previous Values
                                                                    F9: Optimized Defaults
                                                                    F10: Save & Exit
                                                                    ESC: Exit
```

BIOS Setup

2-2-1 Serial Port Console Redirection

```
                              Bios Setup Utility
        Advanced

    COM1
    Console Redirection           [Enabled]           The settings specify how
  ▶ Console Redirection Settings                       the host computer and the
                                                       remote computer (which the
    COM2/Serial Over LAN                               user is using) will
    Console Redirection           [Enabled]           exchange data. Both
  ▶ Console Redirection Settings                       computers should have the
                                                       same or compatible
    Serial Port for Out-of-Band Management/            settings.
    Windows Emergency Management Services (EMS)
    Console Redirection           [Enabled]
  ▶ Console Redirection Settings

                                                       ←→: Select Screen
                                                       ↑↓: Select Item
                                                       Enter: Select
                                                       +/-: Change Opt.
                                                       F1: General Help
                                                       F3: Previous Values
                                                       F9: Optimized Defaults
                                                       F10: Save & Exit
                                                       ESC: Exit



```

```
                              Bios Setup Utility
        Advanced

    COM1
    Console Redirection Settings                       Emulation: ANSI: Extended
                                                       ASCII char set. VT100:
                                                       ASCII char set. VT100+:
    Terminal Type                 [ANSI]               Extends VT100 to support
    Bits per second               [115200]             color, function keys, etc.
    Data Bits                     [8]                  VT-UTF8: Uses UTF8
    Parity                        [None]               encoding to map Unicode
    Stop Bits                     [1]                  chars onto 1 or more bytes.
    Flow Control                  [None]
    VT-UTF8 Combo Key Support     [Enabled]
    Recorder Mode                 [Disabled]
    Resolution 100x31             [Enabled]
    Legacy OS Redirection Resolution [80x24]
    Putty KeyPad                  [VT100]              ←→: Select Screen
    Redirection After BIOS POST   [Always Enable]      ↑↓: Select Item
                                                       Enter: Select
                                                       +/-: Change Opt.
                                                       F1: General Help
                                                       F3: Previous Values
                                                       F9: Optimized Defaults
                                                       F10: Save & Exit
                                                       ESC: Exit



```

```
                              Bios Setup Utility
        Advanced

    COM2/Serial Over LAN                              Emulation: ANSI: Extended
    Console Redirection Settings                      ASCII char set. VT100:
                                                      ASCII char set. VT100+:
    Terminal Type                [ANSI]               Extends VT100 to support
    Bits per second              [115200]             color, function keys, etc.
    Data Bits                    [8]                  VT-UTF8: Uses UTF8
    Parity                       [None]               encoding to map Unicode
    Stop Bits                    [1]                  chars onto 1 or more bytes.
    Flow Control                 [None]
    VT-UTF8 Combo Key Support    [Enabled]
    Recorder Mode                [Disabled]
    Resolution 100x31            [Enabled]
    Legacy OS Redirection Resolution  [80x24]
    Putty KeyPad                 [VT100]              ➔←: Select Screen
    Redirection After BIOS POST  [Always Enable]      ↑↓: Select Item
                                                      Enter: Select
                                                      +/-: Change Opt.
                                                      F1: General Help
                                                      F3: Previous Values
                                                      F9: Optimized Defaults
                                                      F10: Save & Exit
                                                      ESC: Exit
```

```
                              Bios Setup Utility
        Advanced

    Out-of-Band Mgmt Port        [COM1]               Microsoft Windows
    Terminal Type                [VT-UTF8]            Emergency Management
    Bits per second              [115200]             Services (EMS) allows for
    Flow Control                 [None]               remote management of a
    Data Bits                    8                    Windows Server OS through
    Parity                       None                 a serial port.
    Stop Bits                    1




                                                      ➔←: Select Screen
                                                      ↑↓: Select Item
                                                      Enter: Select
                                                      +/-: Change Opt.
                                                      F1: General Help
                                                      F3: Previous Values
                                                      F9: Optimized Defaults
                                                      F10: Save & Exit
                                                      ESC: Exit
```

- ☞ **COM1/COM2/Serial Over LAN Console Redirection Settings**
- ☞ **Console Redirection** (Note)

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

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

  Select the baud rate for console redirection.
  Options available: 9600/19200/38400/57600/115200. Default setting is **115200**.
- ☞ **Data Bits**

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

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

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

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

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

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

  Enables or disables extended terminal resolution. Default setting is **Enabled**.
  Options available: Enabled/Disabled.

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

⍞ **Legacy OS Redirection Resolution** [(Note)]

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

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

⍞ **Putty KeyPad** [(Note)]

Select function FunctionKey and KeyPad on Putty.

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

⍞ **Redirection After BIOS POST** [(Note)]

This option allows user to enable console redirection after O.S has loaded.
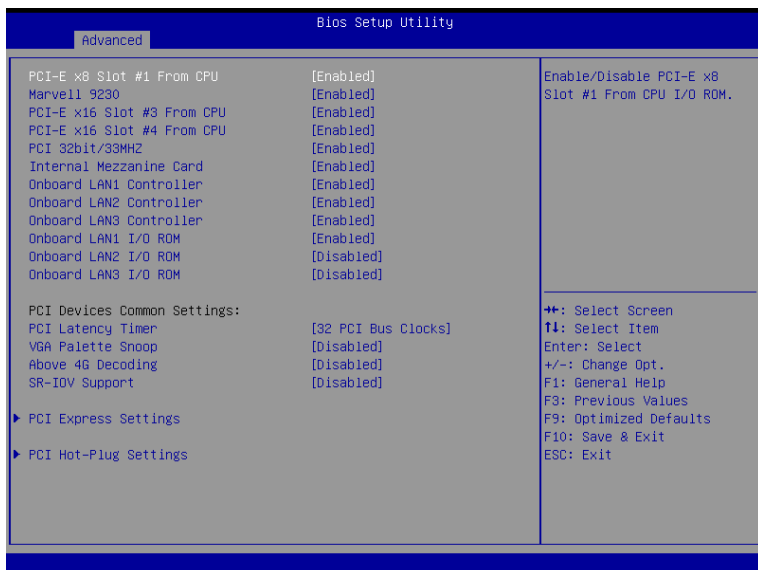
Options available: Always Enable/Boot Loader. Default setting is **Always Enable**.

⍞ **Out-of-Bnad Mgmt Port**

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

Options available: COM1/COM2. Default setting is **COM1**.

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

2-2-2 PCI Subsystem Settings

```
                              Bios Setup Utility
        Advanced

   PCI-E x8 Slot #1 From CPU          [Enabled]          Enable/Disable PCI-E x8
   Marvell 9230                       [Enabled]          Slot #1 From CPU I/O ROM.
   PCI-E x16 Slot #3 From CPU         [Enabled]
   PCI-E x16 Slot #4 From CPU         [Enabled]
   PCI 32bit/33MHZ                    [Enabled]
   Internal Mezzanine Card            [Enabled]
   Onboard LAN1 Controller            [Enabled]
   Onboard LAN2 Controller            [Enabled]
   Onboard LAN3 Controller            [Enabled]
   Onboard LAN1 I/O ROM               [Enabled]
   Onboard LAN2 I/O ROM               [Disabled]
   Onboard LAN3 I/O ROM               [Disabled]

   PCI Devices Common Settings:                          ↔: Select Screen
   PCI Latency Timer                  [32 PCI Bus Clocks] ↑↓: Select Item
   VGA Palette Snoop                  [Disabled]          Enter: Select
   Above 4G Decoding                  [Disabled]          +/-: Change Opt.
   SR-IOV Support                     [Disabled]          F1: General Help
                                                          F3: Previous Values
 ▶ PCI Express Settings                                   F9: Optimized Defaults
                                                          F10: Save & Exit
 ▶ PCI Hot-Plug Settings                                  ESC: Exit


```

☞ **PCI x8 Slot #1 From CPU/Marvell 9230/PCIE x16 Slot#3/#4 From CPU**

When enabled, This setting will initialize the device expansion ROM for the related PCI-E slot.
Options available: Enabled/Disabled. Default setting is **Enabled**.

☞ **PCI 32bit/33MHz**

When enabled, This setting will initialize the device expansion ROM for the related PCI slot.
Options available: Enabled/Disabled. Default setting is **Enabled**.

☞ **Onboard LAN#1/#2/#3 Controller**

Enable/Disable onboard LAN devices.
Options available: Enabled/Disabled. Default setting is **Enabled**.

☞ **Onboard LAN #1/#2/#3 I/O ROM**

Enable/Disable onboard LAN devices and initialize device expansion ROM.
Options available: Enabled/Disabled. Default setting is **Enabled**.

☞ **PCI Devices Common Settings**

☞ **PCI Latency Timer**

Value to be programmed into PCI Latency Timer Register.
Options available: 32 PCI Bus Clocks/64 PCI Bus Clocks/96 PCI Bus Clocks/128 PCI Bus Clocks/160 PCI Bus Clocks/192 PCI Bus Clocks/224 PCI Bus Clocks/248 PCI Bus Clocks/.
Default setting is **32 PCI Bus Clocks**.

☞ **VGA Palette Snoop**

Enable/Disable VGA Palette Tegisters Snooping.
Options available: Enabled/Disabled. Default setting is **Disabled**.

☾ **Above 4G Decoding**

Enable/Disable Above 4G Decoding.

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

☾ **SR-IOV Support**

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

Options available: Enabled/Disabled. Default setting is **Disabled**.
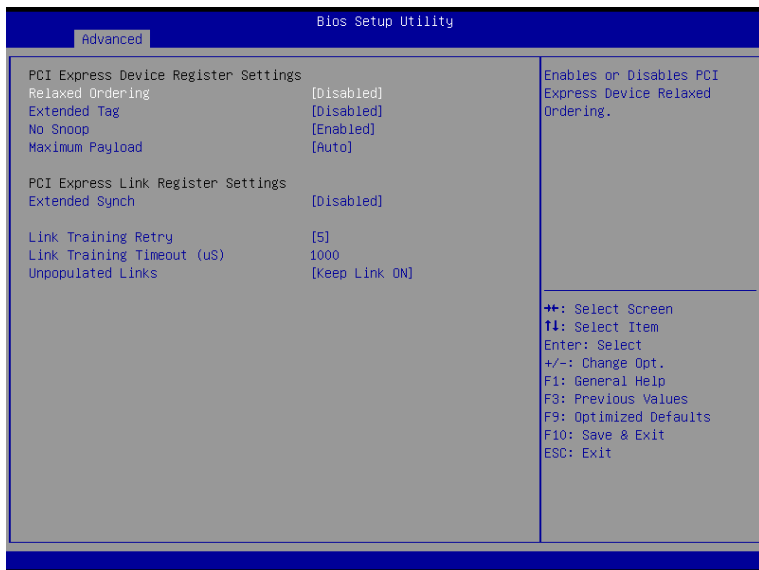
☾ **PCI Express Settings**

Press [Enter] for configuration of advanced items.

☾ **PCI Hot-Plug Settings**

Press [Enter] for configuration of advanced items.

2-2-2-1 PCI Express Settings

```
                          Bios Setup Utility
        Advanced

   PCI Express Device Register Settings            Enables or Disables PCI
   Relaxed Ordering              [Disabled]        Express Device Relaxed
   Extended Tag                  [Disabled]        Ordering.
   No Snoop                      [Enabled]
   Maximum Payload               [Auto]

   PCI Express Link Register Settings
   Extended Synch                [Disabled]

   Link Training Retry           [5]
   Link Training Timeout (uS)    1000
   Unpopulated Links             [Keep Link ON]

                                                   →←: Select Screen
                                                   ↑↓: Select Item
                                                   Enter: Select
                                                   +/−: Change Opt.
                                                   F1: General Help
                                                   F3: Previous Values
                                                   F9: Optimized Defaults
                                                   F10: Save & Exit
                                                   ESC: Exit
```

🞂 **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**.

🞂 **PCI Express Link Register Settings**

🞂 **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.
Options available: Disabled/2/3/5.Default setting is **5**.

☞ **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**.

2-2-2-2 PCI Hot-Plug Settings

```
                              Bios Setup Utility
        Advanced

    PCI Hot-Plug Settings                              If ENABLED allows BIOS
                                                       build in Hot-Pug support.
    BIOS Hot-Plug Support              [Enabled]       Use this feature if OS
                                                       does not support PCI
    PCI Buses Padding                  [1]             Express and SHPC hot-plug
    I/O Resources Padding              [4 K]           natively.
    MMIO 32 bit Resources Padding      [16 M]
    PFMMIO 32 bit Resources Padding    [16 M]



                                                       →←: Select Screen
                                                       ↑↓: Select Item
                                                       Enter: Select
                                                       +/-: Change Opt.
                                                       F1: General Help
                                                       F3: Previous Values
                                                       F9: Optimized Defaults
                                                       F10: Save & Exit
                                                       ESC: Exit
```

☞ **PCI Hot-Plug Settings**

☞ **BIOS Hot-Plug Support**

If enabled, system allows BIOS build in HOt-Plug suuport. Use this feature if OS does not support PCI Express and SHPC hot-plug natively

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

☞ **PCI Buses Padding**

Configure the PCI Buses Padding.

☞ **I/O Resource Padding**

Configure the I/O Resource Padding.

☞ **MMIO 32 bit Resource Padding**

Configure the MMIO 32 bit Resource Padding.

☞ **PFMMIO 32 bit Resource Padding**

Configure the PFMMIO 32 bit Resource Padding.

2-2-3 Network Stack

```
                              Bios Setup Utility
        Advanced

 Network Stack                    [Enabled]                Enable/Disable UEFI
 Ipv4 PXE Support                 [Enabled]                Network Stack
 Ipv6 PXE Support                 [Enabled]
 PXE boot wait time               0
 Media detect time                0






                                                          →←: Select Screen
                                                          ↑↓: Select Item
                                                          Enter: Select
                                                          +/-: Change Opt.
                                                          F1: General Help
                                                          F3: Previous Values
                                                          F9: Optimized Defaults
                                                          F10: Save & Exit
                                                          ESC: Exit

```

☞ **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**.

☞ **PXE boot wait time(Note)**
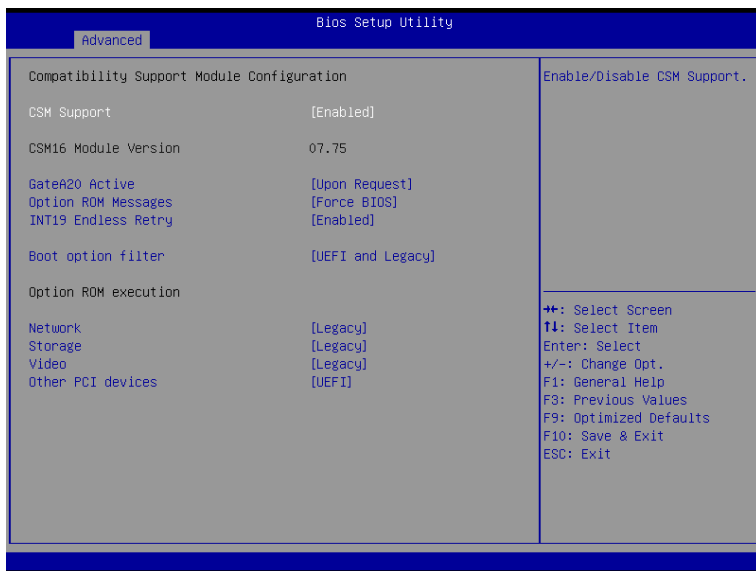
  Press <+> / <-> keys to increase or decrease the desired values.

☞ **Media detect time(Note)**

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

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

2-2-4 CSM Configuration

```
                              Bios Setup Utility
        Advanced

   Compatibility Support Module Configuration           Enable/Disable CSM Support.

   CSM Support                       [Enabled]

   CSM16 Module Version              07.75

   GateA20 Active                    [Upon Request]
   Option ROM Messages               [Force BIOS]
   INT19 Endless Retry               [Enabled]

   Boot option filter                [UEFI and Legacy]

   Option ROM execution
                                                        ++: Select Screen
   Network                           [Legacy]           ↑↓: Select Item
   Storage                           [Legacy]           Enter: Select
   Video                             [Legacy]           +/-: Change Opt.
   Other PCI devices                 [UEFI]             F1: General Help
                                                        F3: Previous Values
                                                        F9: Optimized Defaults
                                                        F10: Save & Exit
                                                        ESC: Exit
```

☞ **Compatibility Support Module Configuration**

☞ **CSM Support**

 Enable/Disable Compatibility Support Module (CSM) support.

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

☞ **CSM16 Module Version**

 Display CSM Module version information.

☞ **Gate20 Active**

 Upon Request: GA20 can be disabled using BIOS services.

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

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

☞ **Option ROM Messages**

 Option ROM Messages.

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

☞ **INT19 Endless Retry**

 Enabled: Allowed headless retry boot

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

☞ **Boot option filter**

 Determines which devices system will boot to.

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

☞ **Option ROM execution**

☞ **Network**

Controls the execution UEFI and Legacy PXE OpROM.

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

☞ **Storage**

Controls the execution UEFI and Legacy Storage OpROM.

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

☞ **Video**

Controls the execution UEFI and Legacy Video OpROM.

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

☞ **Other PCI devices**

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

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

2-2-5 Post Report Configuration

```
                          Bios Setup Utility
          Advanced

    Post Report Configuration                    Post Error Message Support
                                                 Enabled/Disabled
    Error Message Report
    Post Error Message              [Enabled]




                                                 →←: Select Screen
                                                 ↑↓: Select Item
                                                 Enter: Select
                                                 +/-: Change Opt.
                                                 F1: General Help
                                                 F3: Previous Values
                                                 F9: Optimized Defaults
                                                 F10: Save & Exit
                                                 ESC: Exit

```

☞ **Post Report Configuration**
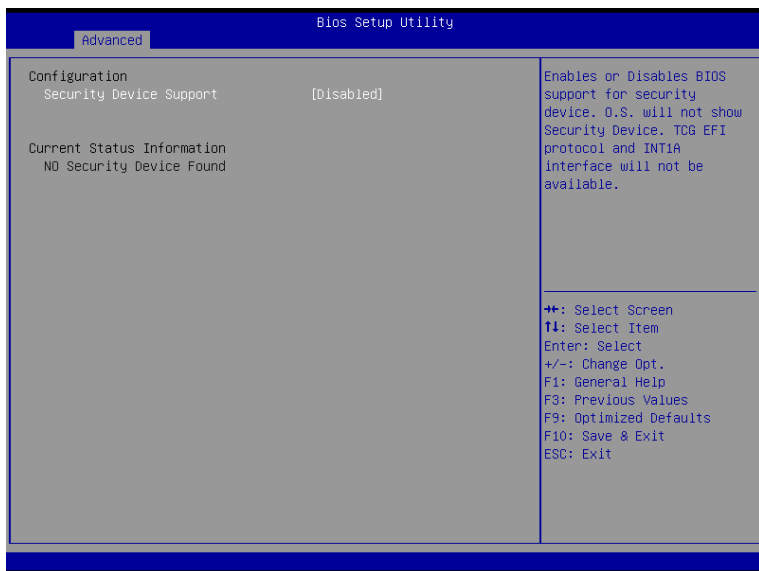
☞ **Error Message Report**

☞ **Post Error Message**

Enable/Disable Info Error Message support.
Options available: Enabled/Disabled. Default setting is **Enabled**.

2-2-6 Trusted Computing

```
                              Bios Setup Utility
        Advanced

  Configuration                                          Enables or Disables BIOS
    Security Device Support         [Disabled]           support for security
                                                         device. O.S. will not show
                                                         Security Device. TCG EFI
  Current Status Information                             protocol and INT1A
    NO Security Device Found                             interface will not be
                                                         available.



                                                         ↔: Select Screen
                                                         ↑↓: Select Item
                                                         Enter: Select
                                                         +/-: Change Opt.
                                                         F1: General Help
                                                         F3: Previous Values
                                                         F9: Optimized Defaults
                                                         F10: Save & Exit
                                                         ESC: Exit
```

☞ **Configuration**

☞ **Security Device Support**
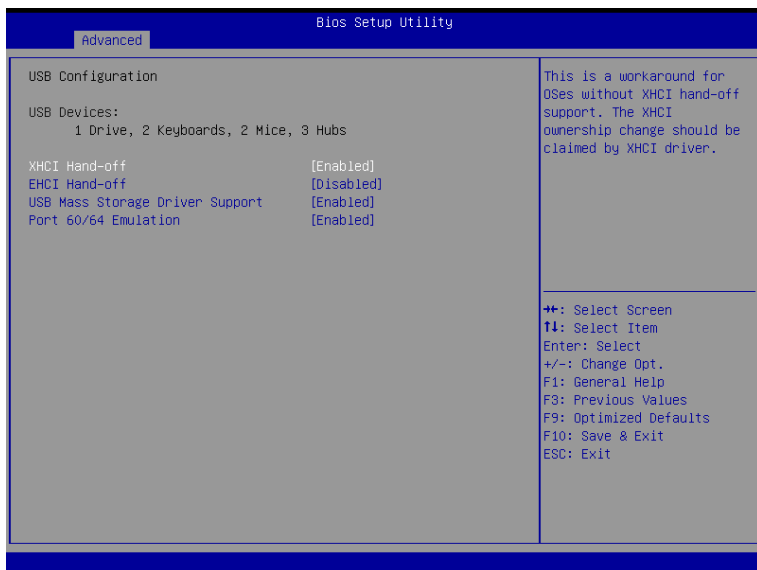
Select Enabled to activate TPM support feature.

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

☞ **Current Status Information**

Display current TPM status information.

2-2-7 USB Configuration

```
                          Bios Setup Utility
       Advanced

  USB Configuration                                      This is a workaround for
                                                         OSes without XHCI hand-off
  USB Devices:                                           support. The XHCI
        1 Drive, 2 Keyboards, 2 Mice, 3 Hubs             ownership change should be
                                                         claimed by XHCI driver.
  XHCI Hand-off                        [Enabled]
  EHCI Hand-off                        [Disabled]
  USB Mass Storage Driver Support      [Enabled]
  Port 60/64 Emulation                 [Enabled]


                                                         ++: Select Screen
                                                         ↑↓: Select Item
                                                         Enter: Select
                                                         +/-: Change Opt.
                                                         F1: General Help
                                                         F3: Previous Values
                                                         F9: Optimized Defaults
                                                         F10: Save & Exit
                                                         ESC: Exit

```

☞ **USB Configuration**

☞ **USB Devices:**

Display the USB devices connected to the system.

☞ **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**.
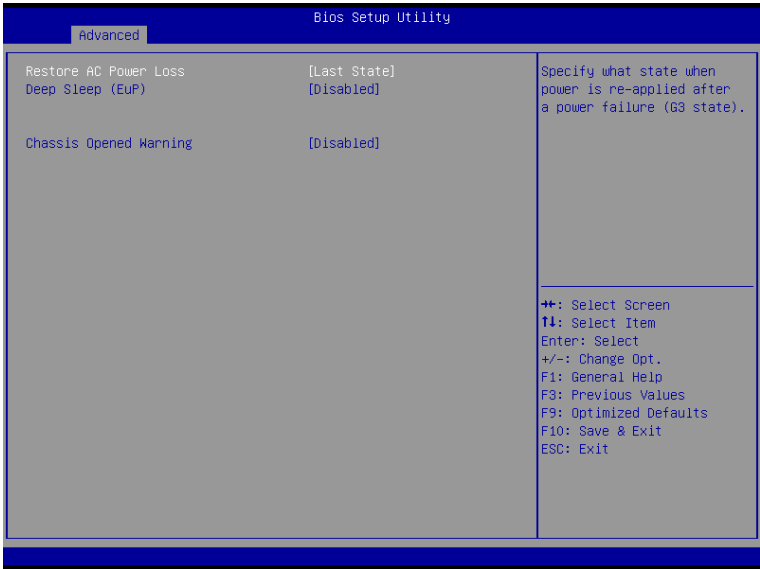
☞ **Port 60/64 Emulation**

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 Chipset Configuration

```
                            Bios Setup Utility
       Advanced

  Restore AC Power Loss          [Last State]           Specify what state when
  Deep Sleep (EuP)               [Disabled]             power is re-applied after
                                                        a power failure (G3 state).

  Chassis Opened Warning         [Disabled]




                                                        ↔: Select Screen
                                                        ↑↓: Select Item
                                                        Enter: Select
                                                        +/-: Change Opt.
                                                        F1: General Help
                                                        F3: Previous Values
                                                        F9: Optimized Defaults
                                                        F10: Save & Exit
                                                        ESC: Exit


```

☞ **Restore on AC Power Loss**

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

Options available: Last State/Stay Off/Power On. Default setting is **Last State**.
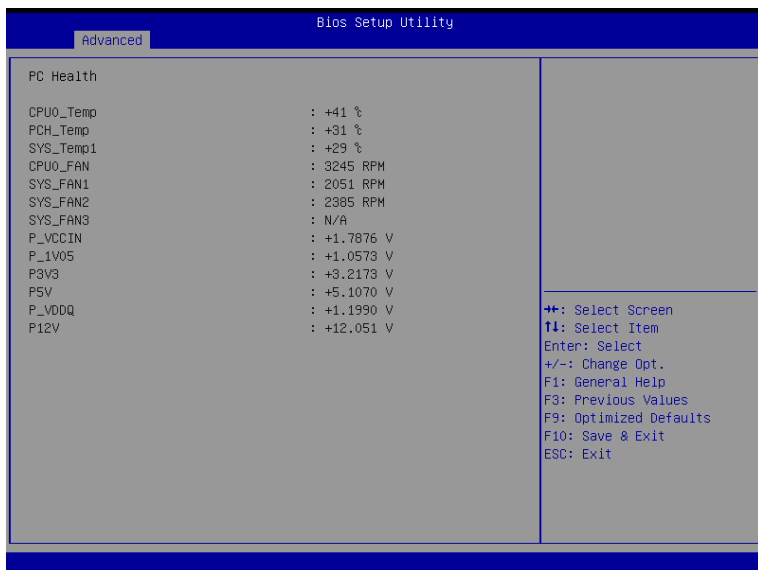
☞ **Chassis Opened Warning**

Enable/Disable Chassis intrusion alter funtion.
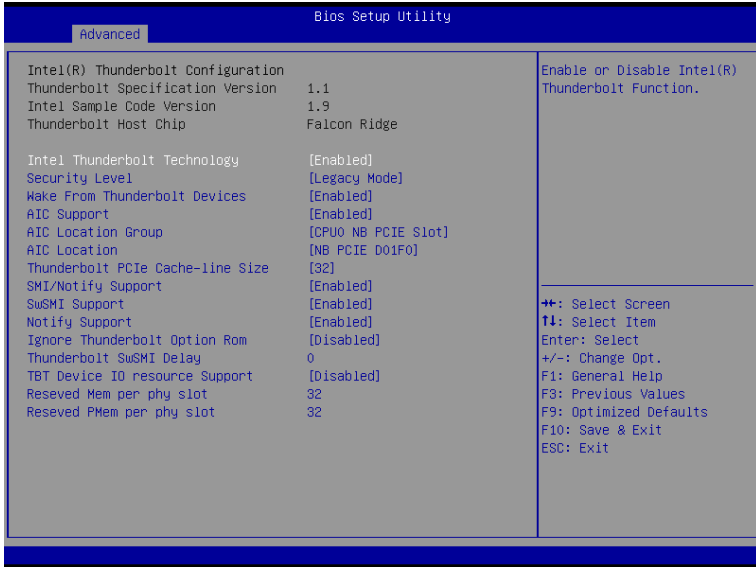
Options available: Enabled/Disabled. Default setting is **Disabled**.

2-2-9   HW Monitor

Press Enter to view the Hardware Monitor screen which displays a real-time record of the CPU/system temperature, and fan speed, Items on this window are non-configurable.

```
                            Bios Setup Utility
        Advanced

  PC Health

  CPU0_Temp                        : +41 %
  PCH_Temp                         : +31 %
  SYS_Temp1                        : +29 %
  CPU0_FAN                         : 3245 RPM
  SYS_FAN1                         : 2051 RPM
  SYS_FAN2                         : 2385 RPM
  SYS_FAN3                         : N/A
  P_VCCIN                          : +1.7876 V
  P_1V05                           : +1.0573 V
  P3V3                             : +3.2173 V
  P5V                              : +5.1070 V
  P_VDDQ                           : +1.1990 V        →←: Select Screen
  P12V                             : +12.051 V        ↑↓: Select Item
                                                      Enter: Select
                                                      +/-: Change Opt.
                                                      F1: General Help
                                                      F3: Previous Values
                                                      F9: Optimized Defaults
                                                      F10: Save & Exit
                                                      ESC: Exit
```

2-2-10 Intel(R) Thunderbolt

 ⊂ **Intel (R) Thunderbolt Configuration**

 ⊂ **Thunderbolt Specification**

 ⊂ **Intel Sample Code Version**

 ⊂ **Thunderbolt Host Chip**

 ⊂ **Intel Thunderbolt Technology(Note)**

Enable/Disable Intel Thunderbolt Technology feature.
Options available: Enabled/Disabled. Default setting is **Enabled**.

 ⊂ **Security Level**

Configure the security level.
Options available: Legacy Mode/Unique ID/One time saved key/DP++ only.
Default setting is **Legacy Mode**.

 ⊂ **Wake From Thunderbolt Devices**

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

 ⊂ **AIC Support (Add In Card Support)**

Apply Go2Sx command before going to sleep.
Options available: Enabled/Disabled. Default setting is **Enabled**.

 ⊂ **AIC Location Group**

Thunderbolt AIC location group.
Options available: SB PCIE Slot/CPU0 NB PCIE Slot. Default setting is **CPU0 NB PCIE Slot**.

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

      ☪ **AIC Location**

          Options available: NB PCIE D01F0/NB PCIE D01F1/NB PCIE D01F2/NB PCIE D02F0/NB PCIE D02F1/ NB PCIE D02F2/NB PCIE D02F3/NB PCIE D03F0/NB PCIE D03F1/NB PCIE D03F2/NB PCIE D03F3. Default setting is **NB PCIE D01F0**.

      ☪ **Thunderbolt PCIe Cache-line Size**

          Options available: 0/1/2/4/8/16/32/64/128. Default setting is **32**.

      ☪ **SMI/Notify Support**

          Enable/Disable SMI/Notify support feature.
          Options available: Enabled/Disabled. Default setting is **Enabled**.

      ☪ **SuSMI Support**

          Enable/Disable SuSMI support feature.
          Options available: Enabled/Disabled. Default setting is **Enabled**.

      ☪ **Notify Support**

          Enable/Disable Notify support feature.
          Options available: Enabled/Disabled. Default setting is **Enabled**.

      ☪ **Ignore Thunderbolt Option Rom**

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

      ☪ **Thunderbolt SwSMI Delay**

          Configure the Thunderbolt SwSMI Delay. Press <+> / <-> keys to increase or decrease the desired values.

      ☪ **TBT Device IO resource Support**

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

      ☪ **Reserved Mem per phy slot**

          Press <+> / <-> keys to increase or decrease the desired values.
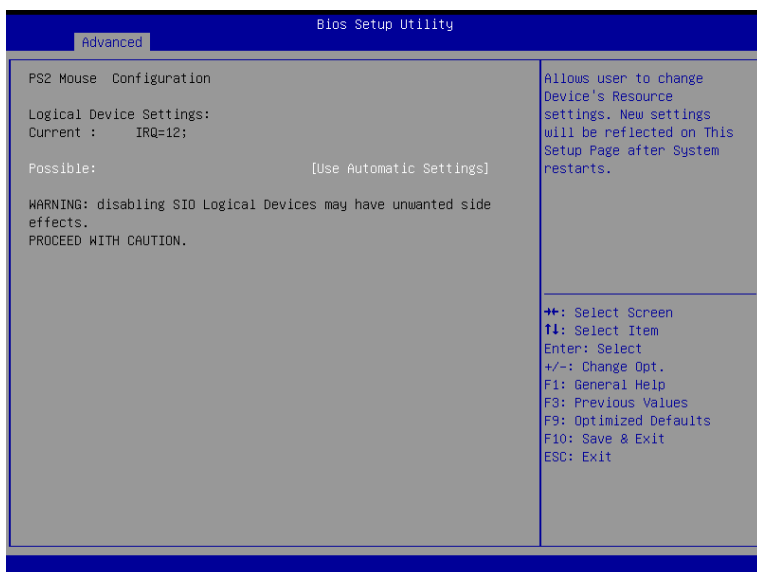
      ☪ **Reserved PMem per phy slot**

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

2-11 SIO Configuration

```
                              Bios Setup Utility
  Advanced

   AMI SIO Driver Version :   GSIO010A5.03.04          View and Set Basic
                                                       properties of the SIO
   Super IO Chip Logical Device(s) Configuration       Logical device. Like IO
 ▶ [*Active*]   Serial Port  1                          Base, IRQ Range, DMA
 ▶ [*Active*]   Serial Port  2                          Channel and Device Mode.
 ▶ [*Active*]   PS2 Keyboard
 ▶ [*Active*]   PS2 Mouse

   WARNING: Logical Devices state showing at the left side of the
   controll, reflects current Logical Device state. Cahnges made
   during Setup Session will be shown after you restart the system.


                                                       →←: Select Screen
                                                       ↑↓: Select Item
                                                       Enter: Select
                                                       +/-: Change Opt.
                                                       F1: General Help
                                                       F3: Previous Values
                                                       F9: Optimized Defaults
                                                       F10: Save & Exit
                                                       ESC: Exit
```

```
                              Bios Setup Utility
  Advanced

   Serial Port  1 Configuration                        Enable or Disable this
                                                       Logical Devcie.
   Use This DeviceGSIO011              [Enabled]

   Logical Device Settings:
   Current :    IO=3F8h; IRQ=4;

   Possible:                          [Use Automatic Settings]

   WARNING: disabling SIO Logical Devices may have unwanted side
   effects.
   PROCEED WITH CAUTION.


                                                       →←: Select Screen
                                                       ↑↓: Select Item
                                                       Enter: Select
                                                       +/-: Change Opt.
                                                       F1: General Help
                                                       F3: Previous Values
                                                       F9: Optimized Defaults
                                                       F10: Save & Exit
                                                       ESC: Exit
```

```
                         Bios Setup Utility
   ┌─────────┐
   │ Advanced│
   └─────────┘

   Serial Port  2 Configuration                     Enable or Disable this
                                                    Logical Devcie.
   Use This DeviceGSIO011           [Enabled]

   Logical Device Settings:
   Current :     IO=2F8h; IRQ=3;

   Possible:                        [Use Automatic Settings]

   WARNING: disabling SIO Logical Devices may have unwanted side
   effects.
   PROCEED WITH CAUTION.

                                                    →←: Select Screen
                                                    ↑↓: Select Item
                                                    Enter: Select
                                                    +/-: Change Opt.
                                                    F1: General Help
                                                    F3: Previous Values
                                                    F9: Optimized Defaults
                                                    F10: Save & Exit
                                                    ESC: Exit
```

```
                         Bios Setup Utility
   ┌─────────┐
   │ Advanced│
   └─────────┘

   PS2 Keyboard  Configuration                      Allows user to change
                                                    Device's Resource
   Logical Device Settings:                         settings. New settings
   Current :     IO=60h; IO=64h; IRQ=1;             will be reflected on This
                                                    Setup Page after System
   Possible:                        [Use Automatic Settings]   restarts.

   WARNING: disabling SIO Logical Devices may have unwanted side
   effects.
   PROCEED WITH CAUTION.

                                                    →←: Select Screen
                                                    ↑↓: Select Item
                                                    Enter: Select
                                                    +/-: Change Opt.
                                                    F1: General Help
                                                    F3: Previous Values
                                                    F9: Optimized Defaults
                                                    F10: Save & Exit
                                                    ESC: Exit
```

```
                              Bios Setup Utility
          Advanced

       PS2 Mouse  Configuration                         Allows user to change
                                                        Device's Resource
       Logical Device Settings:                         settings. New settings
       Current :    IRQ=12;                             will be reflected on This
                                                        Setup Page after System
       Possible:                    [Use Automatic Settings]   restarts.

       WARNING: disabling SIO Logical Devices may have unwanted side
       effects.
       PROCEED WITH CAUTION.

                                                        ++: Select Screen
                                                        ↑↓: Select Item
                                                        Enter: Select
                                                        +/-: Change Opt.
                                                        F1: General Help
                                                        F3: Previous Values
                                                        F9: Optimized Defaults
                                                        F10: Save & Exit
                                                        ESC: Exit
```

  ☟ **AMI SIO Driver Version**

Display the AMI SIO driver version information.

  ☟ **Super IO Chip Logical Device(s) Configuration**

  ☟ **[*Active*] Serial Port 1/2**

Press [Enter] for confuguration of advanced items.

  ☟ **[*Active*] PS2 Keyboard**

Press [Enter] for confuguration of advanced items.

  ☟ **[*Active*] PS2 Mouse**

Press [Enter] for confuguration of advanced items.

  ☟ **Serial Port 1 Configuration**

  ☟ **Use This Device**

When enabled allows you to configure the serial port 1 settings. When set to Disabled, displays no
configuration for the serial port.
Options available: Enabled/Disabled. Default setting is **Enabled**.

  ☟ **Logical Device Settings:**

  ☟ **Current:**

Display the Serial Port 1 base I/O addressand IRQ.

  ☟ **Possible:**

Configure Serial Port 1 base I/O addressand IRQ.
Option available:
Use Automatic Settings
IO=3F8h; IRQ=4; DMA;/
IO=3F8h; IRQ=3,4,5,7,9,10,11,12; DMA;/
IO=2F8h; IRQ=3,4,5,7,9,10,11,12; DMA;/

IO=3E8h; IRQ=3,4,5,7,9,10,11,12; DMA;/
IO=2E8h; IRQ=3,4,5,7,9,10,11,12; DMA;
Default setting is **Use Automatic Settings**.

) **Serial Port 2 Configuration**

) **Use This Device**

When enabled allows you to configure the serial port 2 settings. When set to Disabled, displays no configuration for the serial port.
Options available: Enabled/Disabled. Default setting is **Enabled**.

) **Logical Device Settings:**

) **Current:**

Display the Serial Port 2 base I/O addressand IRQ.

) **Possible:**

Configure Serial Port 2 base I/O addressand IRQ.
Option available:
Use Automatic Settings/
IO=2F8h; IRQ=3; DMA;/
IO=3F8h; IRQ=3,4,5,7,9,10,11,12; DMA;/
IO=2F8h; IRQ=3,4,5,7,9,10,11,12; DMA;/
IO=3E8h; IRQ=3,4,5,7,9,10,11,12; DMA;/
IO=2E8h; IRQ=3,4,5,7,9,10,11,12; DMA;/
Default setting is **Use Automatic Settings**.

) **PS2 Keyboard Configuration**

) **Logical Device Settings:**

) **Current:**

Display the PS2 keyboard base I/O addressand IRQ.

) **Possible:**

Configure PS2 keyboard base I/O addressand IRQ.
Option available: Use Automatic Settings/IO=60h; IO=64h; IRQ=1.
Default setting is **Use Automatic Settings**.

) **PS2 Mouse Configuration**

) **Logical Device Settings:**

) **Current:**
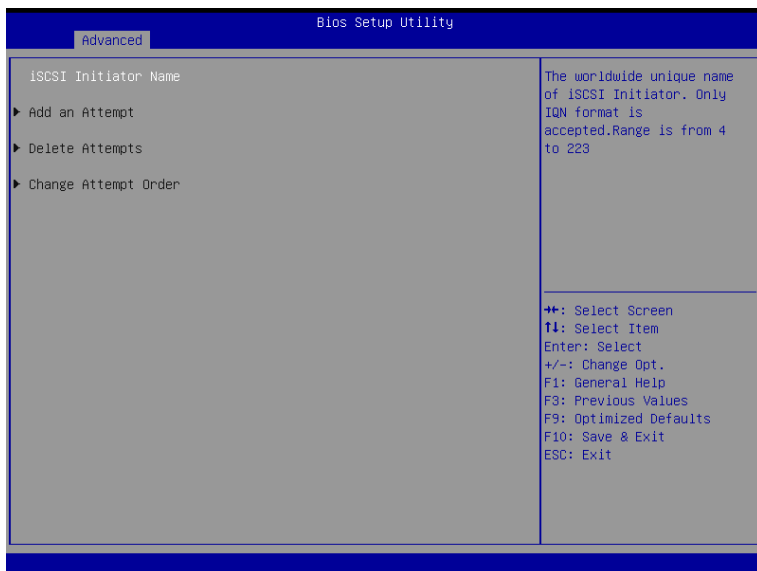
Display the PS2 mouse base I/O addressand IRQ.

) **Possible:**

Configure PS2 nouse base I/O addressand IRQ.
Option available: Use Automatic Settings/IRQ=12;. Default setting is **Use Automatic Settings**.

2-2-12 iSCSI Configuration

```
                            Bios Setup Utility
        Advanced

    iSCSI Initiator Name                          The worldwide unique name
                                                  of iSCSI Initiator. Only
  ▶ Add an Attempt                                IQN format is
                                                  accepted.Range is from 4
  ▶ Delete Attempts                               to 223

  ▶ Change Attempt Order




                                                  ↔: Select Screen
                                                  ↑↓: Select Item
                                                  Enter: Select
                                                  +/-: Change Opt.
                                                  F1: General Help
                                                  F3: Previous Values
                                                  F9: Optimized Defaults
                                                  F10: Save & Exit
                                                  ESC: Exit


```

☞ **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.

2-2-13 Intel (R) Ethernet Connection I218-LM
Intel (R) I210 Gigabit Network Connection

```
                               Bios Setup Utility
       Advanced

                                                        Click to configure the
                                                        network device port.
 PORT CONFIGURATION MENU
▶ NIC Configuration

 Blink LEDs                        0

 PORT CONFIGURATION INFORMATION
 UEFI Driver:                      Intel(R) PRO/1000 6.1.14 PCI
 Adapter PBA:                      140502-003
 Chip Type                         Intel PCH LPT
 PCI Device ID                     15A0
 PCI Address                       00:19:00
 Link Status                       [Disconnected]          ↔: Select Screen
 MAC Address                       94:DE:80:F9:08:FC        ↑↓: Select Item
                                                            Enter: Select
                                                            +/-: Change Opt.
                                                            F1: General Help
                                                            F3: Previous Values
                                                            F9: Optimized Defaults
                                                            F10: Save & Exit
                                                            ESC: Exit
```

```
                               Bios Setup Utility
       Advanced

                                                        Specifies the port speed
                                                        used for the selected boot
 Link Speed                        [Auto Negotiated]    protocol.
 Wake On LAN                       [Enabled]

                                                            ↔: Select Screen
                                                            ↑↓: Select Item
                                                            Enter: Select
                                                            +/-: Change Opt.
                                                            F1: General Help
                                                            F3: Previous Values
                                                            F9: Optimized Defaults
                                                            F10: Save & Exit
                                                            ESC: Exit
```

☟ **PORT CONFIGURATION MENU**

☟ **NIC Configuration**

Press [Enter] for configuration of advanced items.

☟ **Blink LEDs (range 0-15 seconds)**

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

☟ **Link Status**

Display the link status.

☟ **MAC Address**

Display the Factory MAC address information.

☟ **Link Speed**

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

☟ **Wake On LAN**

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

2-2-14 Driver Health
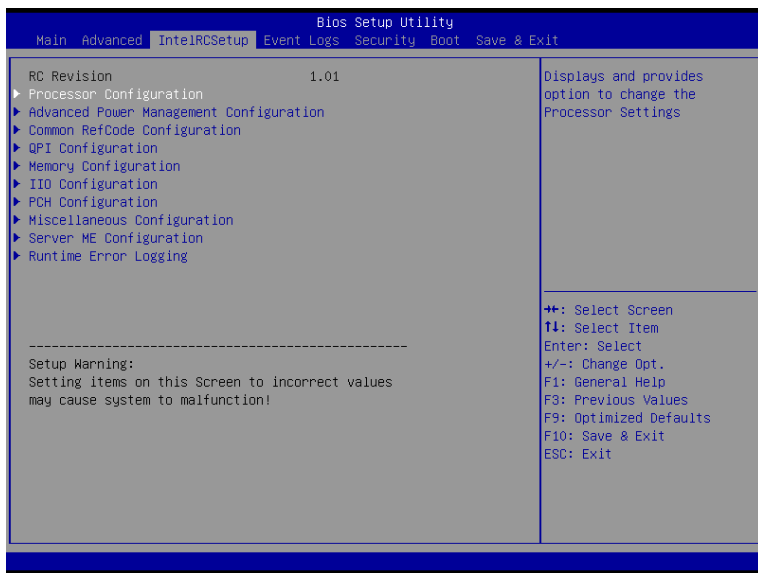
☞ **Intel (R) PRO/1000 6.1.14 PCIE Healthy**

Press [Enter] for configuration to view related information.

2-3 Intel RC Setup Menu

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

```
                           Bios Setup Utility
      Main  Advanced  IntelRCSetup  Event Logs  Security  Boot  Save & Exit

   RC Revision                     1.01              Displays and provides
 ▶ Processor Configuration                           option to change the
 ▶ Advanced Power Management Configuration            Processor Settings
 ▶ Common RefCode Configuration
 ▶ QPI Configuration
 ▶ Memory Configuration
 ▶ IIO Configuration
 ▶ PCH Configuration
 ▶ Miscellaneous Configuration
 ▶ Server ME Configuration
 ▶ Runtime Error Logging
                                                     ↔: Select Screen
                                                     ↑↓: Select Item
   --------------------------------------------------  Enter: Select
   Setup Warning:                                     +/-: Change Opt.
   Setting items on this Screen to incorrect values   F1: General Help
   may cause system to malfunction!                   F3: Previous Values
                                                     F9: Optimized Defaults
                                                     F10: Save & Exit
                                                     ESC: Exit
```
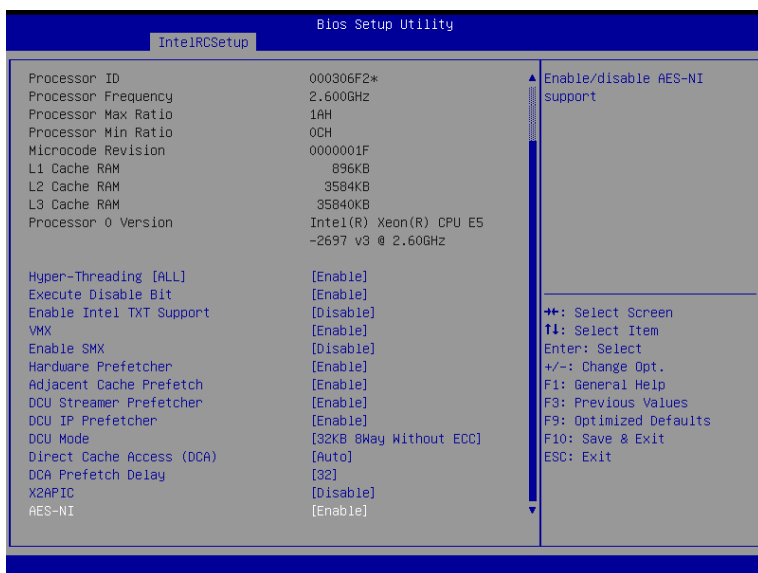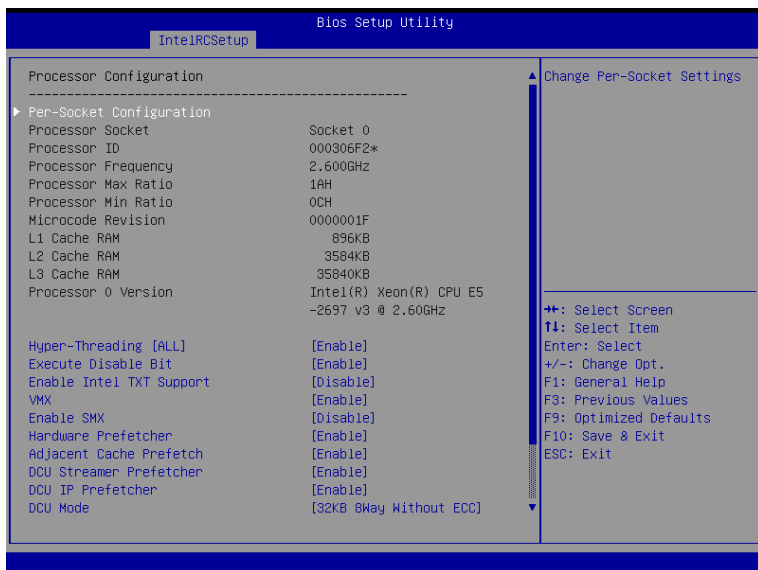
☞ **RC Revision**

Display Intel RC version information.

2-3-1 Processor Configuration

```
                            Bios Setup Utility
            IntelRCSetup

  Processor Configuration                                    ▲   Change Per-Socket Settings
  ----------------------------------------------
▶ Per-Socket Configuration
  Processor Socket                   Socket 0
  Processor ID                       000306F2*
  Processor Frequency                2.600GHz
  Processor Max Ratio                1AH
  Processor Min Ratio                0CH
  Microcode Revision                 0000001F
  L1 Cache RAM                           896KB
  L2 Cache RAM                          3584KB
  L3 Cache RAM                         35840KB
  Processor 0 Version        Intel(R) Xeon(R) CPU E5
                             -2697 v3 @ 2.60GHz            ➡←: Select Screen
                                                          ↑↓: Select Item
  Hyper-Threading [ALL]              [Enable]             Enter: Select
  Execute Disable Bit                [Enable]             +/-: Change Opt.
  Enable Intel TXT Support           [Disable]            F1: General Help
  VMX                                [Enable]             F3: Previous Values
  Enable SMX                         [Disable]            F9: Optimized Defaults
  Hardware Prefetcher                [Enable]             F10: Save & Exit
  Adjacent Cache Prefetch            [Enable]             ESC: Exit
  DCU Streamer Prefetcher            [Enable]
  DCU IP Prefetcher                  [Enable]
  DCU Mode                   [32KB 8Way Without ECC]   ▼
```

```
                            Bios Setup Utility
            IntelRCSetup

  Processor ID                       000306F2*            ▲   Enable/disable AES-NI
  Processor Frequency                2.600GHz                 support
  Processor Max Ratio                1AH
  Processor Min Ratio                0CH
  Microcode Revision                 0000001F
  L1 Cache RAM                           896KB
  L2 Cache RAM                          3584KB
  L3 Cache RAM                         35840KB
  Processor 0 Version        Intel(R) Xeon(R) CPU E5
                             -2697 v3 @ 2.60GHz

  Hyper-Threading [ALL]              [Enable]
  Execute Disable Bit                [Enable]             ➡←: Select Screen
  Enable Intel TXT Support           [Disable]            ↑↓: Select Item
  VMX                                [Enable]             Enter: Select
  Enable SMX                         [Disable]            +/-: Change Opt.
  Hardware Prefetcher                [Enable]             F1: General Help
  Adjacent Cache Prefetch            [Enable]             F3: Previous Values
  DCU Streamer Prefetcher            [Enable]             F9: Optimized Defaults
  DCU IP Prefetcher                  [Enable]             F10: Save & Exit
  DCU Mode                   [32KB 8Way Without ECC]      ESC: Exit
  Direct Cache Access (DCA)          [Auto]
  DCA Prefetch Delay                 [32]
  X2APIC                             [Disable]
  AES-NI                             [Enable]          ▼
```

☍ **Processor Configuration**

☍ **Pre-Socket Configuration**

Press [Enter] for configuration of advanced items.

☍ **Processor Socket/Processor ID/Processor Frequency/Processor Max Raito/ Processor Min Raio/Microcode Revision/L1 Cache RAM/L2 Cache RAM/L3 Cache RAM/ Processor 0/1Version**

Displays the technical specifications for the installed processor.

☍ **Hyper-Threading [All]**

The 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**.

☍ **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**.

☍ **Enable Intel TXT Support**

Enable/Disable Intel Trusted Execution Technology support function.
Options available: Enabled/Disabled. Default setting is **Disabled.**

☍ **VMX (Vanderpool Technology)**

Enable/Disable Vanderpool Technology. This will take effect after rebooting the system.
Options available: Enabled/Disabled. Default setting is **Enabled**.

☍ **Enable SMX (Intel Safer Mode Extensions Technology)**

Enable/Disblae Intel Safer Mode Extensions (SMX) support function.
Options available: Enabled/Disabled. Default setting is **Disabled**.

☍ **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**.

☍ **DCU Streamer Prefetch**

Enable prefetch of next L1 Data line based upon multiple loads in same cache line.
Options available: Enabled/Disabled. Default setting is **Enabled**.

☍ **DCU IP Prefetch**

Enable prefetch of next L1 Data line based upon sequential load history.
Options available: Enabled/Disabled. Default setting is **Enabled**.

☍ **DCU Mode**

Configure DCU mode.
Options available: 32KB 8Way Without ECC/16KB 4Way With ECC. Default setting is **32KB 8Way Without ECCC**.

- ☞ **Direct Cache Access (DCA)**

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

- ☞ **DCA Prefetch Delay**

  Options available: Disabled/8/16/24/32/40/48/56/64/72/80/88/96/104/112. Default setting is **32**.

- ☞ **X2APIC**
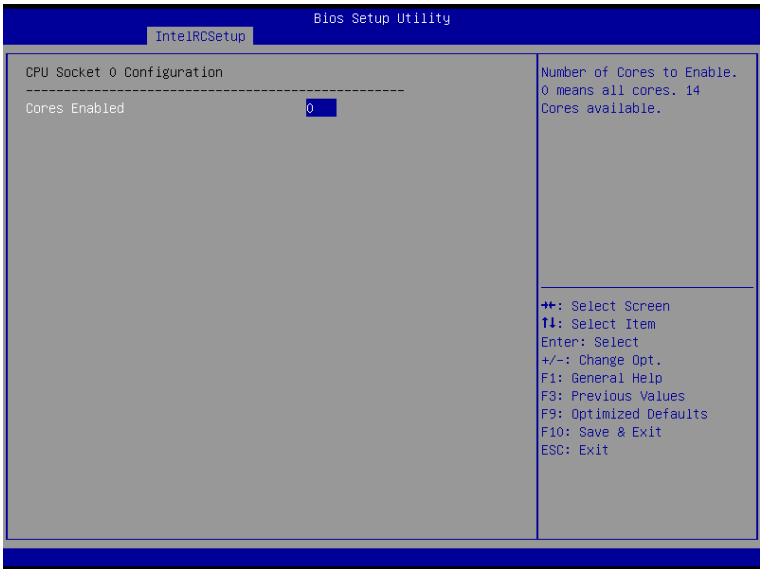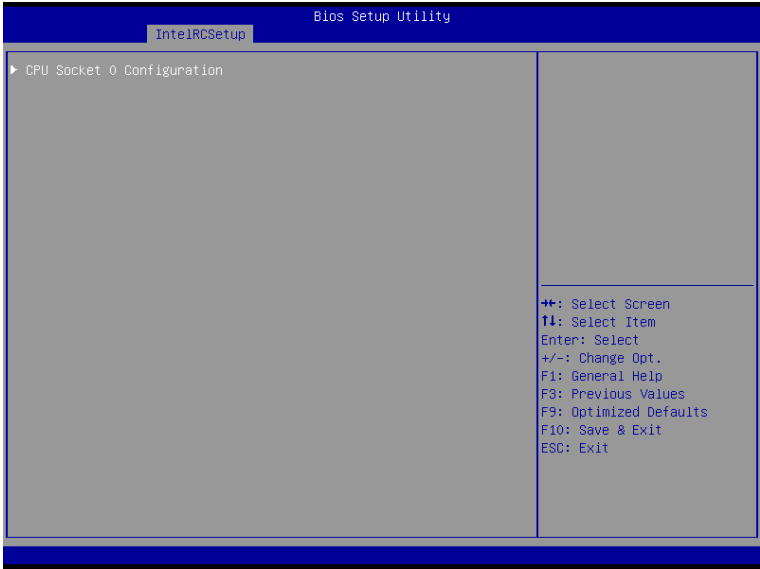
  Options available: Enabled/Disabled. Default setting is **Disabled**.

- ☞ **AES-NI**

  Enable/Disable AES-NI (Intel Advanced Encryption Standard New Instructions) support function.
  Options available: Enabled/Disabled. Default setting is **Enabled**.

2-3-1-1 Pre-Socket Configuration

```
                         Bios Setup Utility
          IntelRCSetup

  ▶ CPU Socket 0 Configuration                      ↔: Select Screen
                                                    ↑↓: Select Item
                                                    Enter: Select
                                                    +/-: Change Opt.
                                                    F1: General Help
                                                    F3: Previous Values
                                                    F9: Optimized Defaults
                                                    F10: Save & Exit
                                                    ESC: Exit
```

```
                         Bios Setup Utility
          IntelRCSetup

  CPU Socket 0 Configuration                        Number of Cores to Enable.
  --------------------------------------------------  0 means all cores. 14
  Cores Enabled                     0                 Cores available.




                                                    ↔: Select Screen
                                                    ↑↓: Select Item
                                                    Enter: Select
                                                    +/-: Change Opt.
                                                    F1: General Help
                                                    F3: Previous Values
                                                    F9: Optimized Defaults
                                                    F10: Save & Exit
                                                    ESC: Exit
```

  ☞ **CPU Socket 0 Configuration**

     Press [Enter] for configuration of advanced items.

  ☞ **Cores Enabled (for CPU socket 0)**

     Number of Cores to enable. 0 means all cores. 14 Cores is available. Press the numeric keys to adjust desired values.

2-3-2 Advanced Power Management Configuration

```
                              Bios Setup Utility
              IntelRCSetup

  Advanced Power Management Configuration            Enable the power
  --------------------------------------------------  management features.
  Power Technology                 [Custom]
  Config TDP                       [Disable]
▶ CPU P State Control
▶ CPU C State Control
▶ CPU T State Control




                                                   →←: Select Screen
                                                   ↑↓: Select Item
                                                   Enter: Select
                                                   +/-: Change Opt.
                                                   F1: General Help
                                                   F3: Previous Values
                                                   F9: Optimized Defaults
                                                   F10: Save & Exit
                                                   ESC: Exit


```

☞ **Advanced Power Management Configuration**

☞ **Power Technology**

Option available:Disable/Energy Efficient/Custom. Default setting is **Energy Efficient**.

☞ **Config TDP**

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

☞ **CPU P State Control**

Press [Enter] for configuration of advanced items.
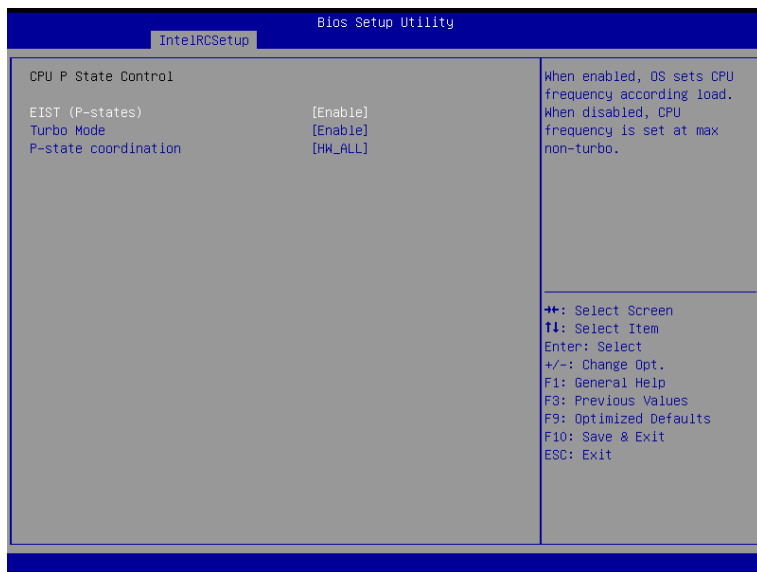
☞ **CPU C State Control**

Press [Enter] for configuration of advanced items.

☞ **CPU T State Control**

Press [Enter] for configuration of advanced items.

2-3-2-1 CPU P State Control

```
                                    Bios Setup Utility
          IntelRCSetup

  CPU P State Control                                     When enabled, OS sets CPU
                                                          frequency according load.
  EIST (P-states)                 [Enable]               When disabled, CPU
  Turbo Mode                      [Enable]               frequency is set at max
  P-state coordination            [HW_ALL]               non-turbo.



                                                          →←: Select Screen
                                                          ↑↓: Select Item
                                                          Enter: Select
                                                          +/-: Change Opt.
                                                          F1: General Help
                                                          F3: Previous Values
                                                          F9: Optimized Defaults
                                                          F10: Save & Exit
                                                          ESC: Exit
```

☞ **EIST (P-State)**

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**.

☞ **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**.

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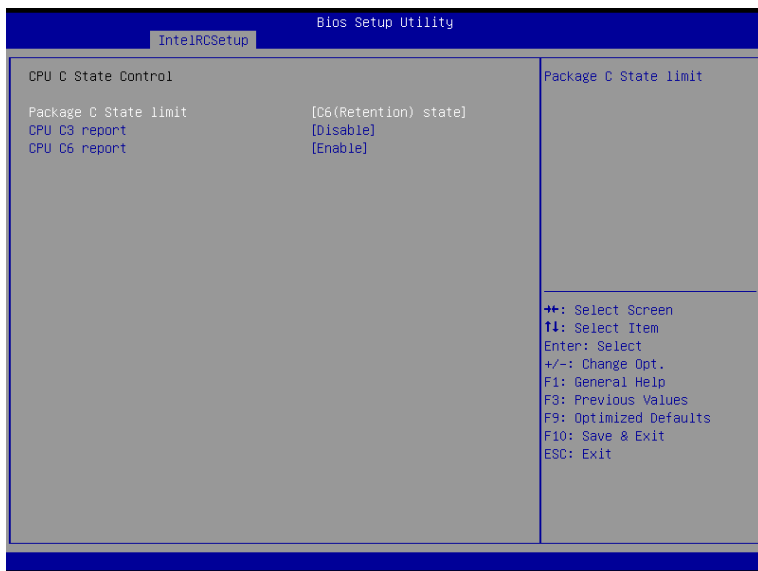
In HW_ALL mode, the processor hardware is responsible for coordinating the P-state among logical processors dependencies. The OS is responsible for keeping the P-state request up to date on all logical processors.

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

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

Options available: HW_ALL/SW_ALL/SW_ANY. Default setting is **HW_ALL**.

2-3-2-2 CPU C State Control

```
                              Bios Setup Utility
            IntelRCSetup

  CPU C State Control                                        Package C State limit

  Package C State limit           [C6(Retention) state]
  CPU C3 report                   [Disable]
  CPU C6 report                   [Enable]




                                                            ↔: Select Screen
                                                            ↑↓: Select Item
                                                            Enter: Select
                                                            +/-: Change Opt.
                                                            F1: General Help
                                                            F3: Previous Values
                                                            F9: Optimized Defaults
                                                            F10: Save & Exit
                                                            ESC: Exit

```

☞ **Package C State Limit**

Configure state for the C-State package limit.

Options available: C0/C1 state/C2 state/C6(non Retention) state/C6(Retention) state.

Default setting is **C6(non Retention) state**.
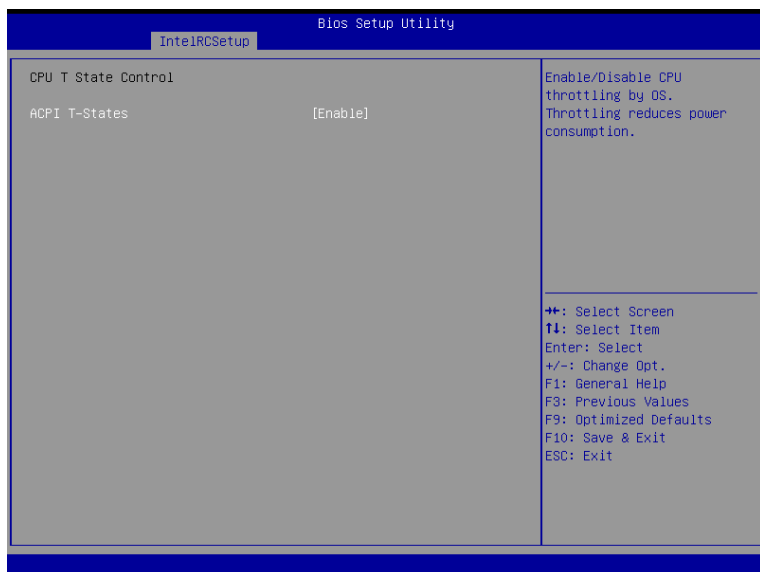
☞ **CPU C3/C6 Report**

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 for C3 is **Disabled**; default setting for C6 is **Enabled**.

2-3-2-3 CPU T State Control

```
                            Bios Setup Utility
        IntelRCSetup

   CPU T State Control                                  Enable/Disable CPU
                                                        throttling by OS.
   ACPI T-States                  [Enable]             Throttling reduces power
                                                        consumption.




                                                        →←: Select Screen
                                                        ↑↓: Select Item
                                                        Enter: Select
                                                        +/-: Change Opt.
                                                        F1: General Help
                                                        F3: Previous Values
                                                        F9: Optimized Defaults
                                                        F10: Save & Exit
                                                        ESC: Exit
```
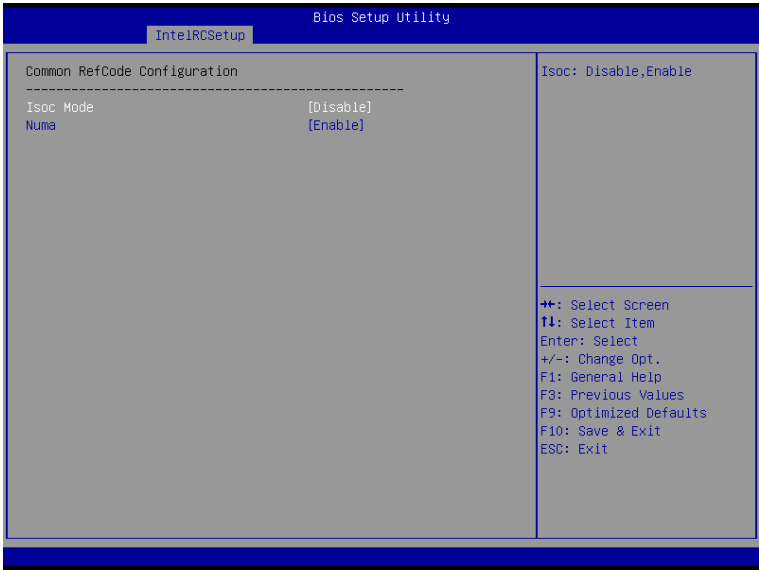
☞ **ACPI T-States**

Enable/Disable CPU throttling by OS. Thorttling reduces power comsumption.

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

2-3-3   Common RefCode Configuration

```
                              Bios Setup Utility
          IntelRCSetup

 Common RefCode Configuration                                    Isoc: Disable,Enable
 ---------------------------------------------------
 Isoc Mode                        [Disable]
 Numa                             [Enable]




                                                                 →←: Select Screen
                                                                 ↑↓: Select Item
                                                                 Enter: Select
                                                                 +/-: Change Opt.
                                                                 F1: General Help
                                                                 F3: Previous Values
                                                                 F9: Optimized Defaults
                                                                 F10: Save & Exit
                                                                 ESC: Exit
```

☞ **Common RefCode Configuration**
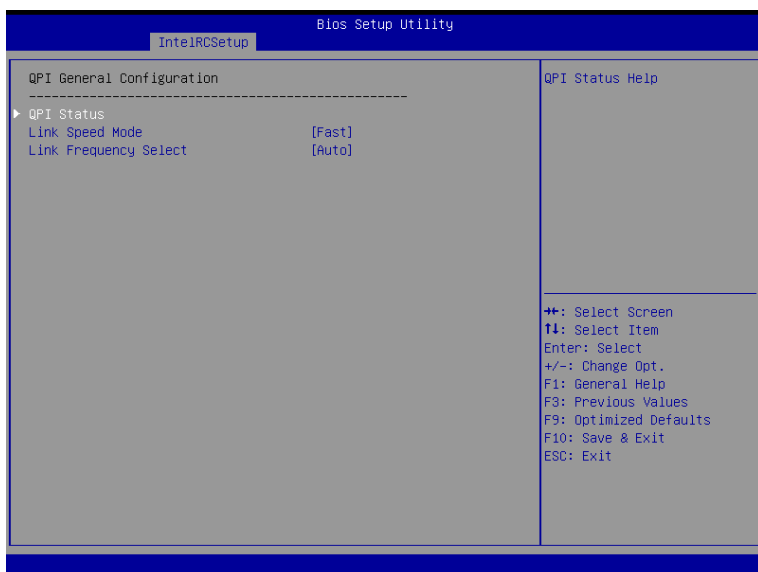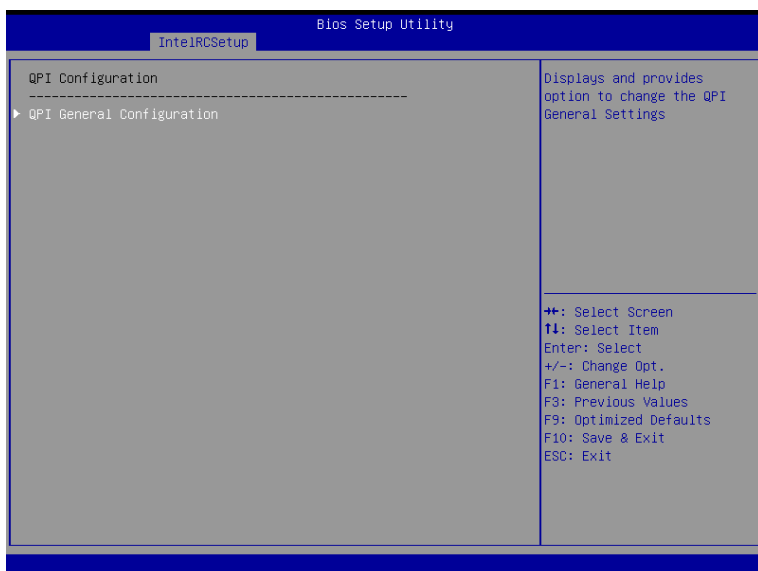
☞ **Isoc Mode**

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

☞ **Numa (Non-Uniform Memory Access)**

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

2-3-4   QPI Configuration

```
                           Bios Setup Utility
              IntelRCSetup

   QPI Configuration                                    Displays and provides
   --------------------------------------------------   option to change the QPI
 ▶ QPI General Configuration                            General Settings




                                                        ↔: Select Screen
                                                        ↑↓: Select Item
                                                        Enter: Select
                                                        +/-: Change Opt.
                                                        F1: General Help
                                                        F3: Previous Values
                                                        F9: Optimized Defaults
                                                        F10: Save & Exit
                                                        ESC: Exit


```

```
                           Bios Setup Utility
              IntelRCSetup

   QPI General Configuration                            QPI Status Help
   --------------------------------------------------
 ▶ QPI Status
   Link Speed Mode              [Fast]
   Link Frequency Select        [Auto]




                                                        ↔: Select Screen
                                                        ↑↓: Select Item
                                                        Enter: Select
                                                        +/-: Change Opt.
                                                        F1: General Help
                                                        F3: Previous Values
                                                        F9: Optimized Defaults
                                                        F10: Save & Exit
                                                        ESC: Exit


```

```
                          Bios Setup Utility
            IntelRCSetup

QPI Status
--------------------------------------------------
Number of CPU                    1
Number of IIO                    1
Current QPI Link Speed           Slow
Current QPI Link Frequency       Unknown GT/s
QPI Global MMIO Low Base / Limit    90000000 / FBFFFFFF
QPI Global MMIO High Base / Limit   00000000000 / 000FFFFFFFF
QPI Pci-e Configuration Base / Siz  80000000 / 10000000


                                              →←: Select Screen
                                              ↑↓: Select Item
                                              Enter: Select
                                              +/-: Change Opt.
                                              F1: General Help
                                              F3: Previous Values
                                              F9: Optimized Defaults
                                              F10: Save & Exit
                                              ESC: Exit
```

   ☞ **QPI General Configuration**

Press [Enter] for configuration of advanced items.

   ☞ **QPI Status**

Press [Enter] to view QPI status.
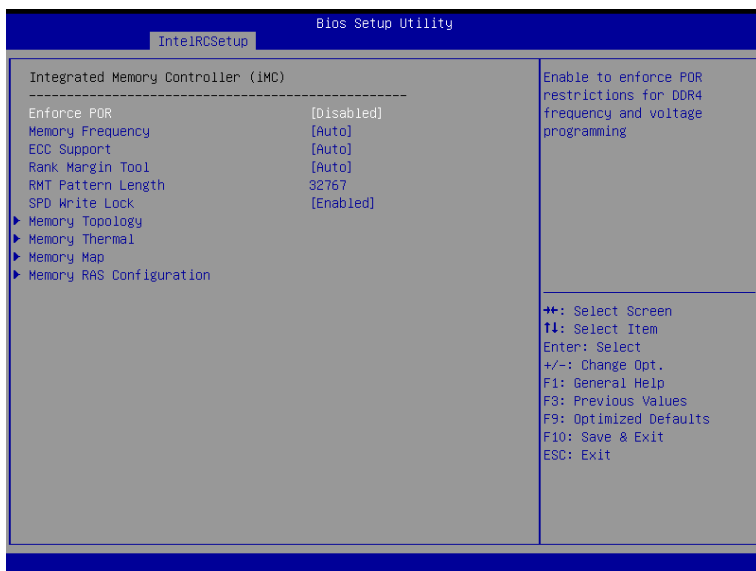
   ☞ **Link Speed Mode**

Options available: Slow/Fast. Default setting is **Fast**.

   ☞ **Link Frequency Select**

Options available: 6.4GB/s/8.0GB/s/9.6GB/s/Auto/Auto Limited. Default setting is **Auto**.

2-3-5 Memory Configuration

```
                              Bios Setup Utility
            IntelRCSetup

   Integrated Memory Controller (iMC)                        Enable to enforce POR
   ------------------------------------------------          restrictions for DDR4
   Enforce POR                     [Disabled]                frequency and voltage
   Memory Frequency                [Auto]                    programming
   ECC Support                     [Auto]
   Rank Margin Tool                [Auto]
   RMT Pattern Length              32767
   SPD Write Lock                  [Enabled]
 ▶ Memory Topology
 ▶ Memory Thermal
 ▶ Memory Map
 ▶ Memory RAS Configuration
                                                             ++: Select Screen
                                                             ↑↓: Select Item
                                                             Enter: Select
                                                             +/-: Change Opt.
                                                             F1: General Help
                                                             F3: Previous Values
                                                             F9: Optimized Defaults
                                                             F10: Save & Exit
                                                             ESC: Exit
```

🕯 **Integrated Memory Controller (iMC)**

🕯 **Enforce POR**

Enable to enforce POR restrictions for DDR4 frequency and voltage programming.

Options available: Enforce POR/Disabled/Enforce Stretch Goals. Default setting is **Enforce POR**.

🕯 **Memory Frequency**

Configure memory frequency.

Options available: Auto/1333/1400/1600/1800/1867/2000/2133.

Default setting is **Auto**.

🕯 **ECC Support**

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

🕯 **Rank Margin Tool**

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

🕯 **RMT Pattern Length**

Display RMT Pattern Length.

🕯 **SPD Write Lock**

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

🕯 **Memory Topology**

Press [Enter] for configuration of advanced items.

🕯 **Memory Thermal**

Press [Enter] for configuration of advanced items.
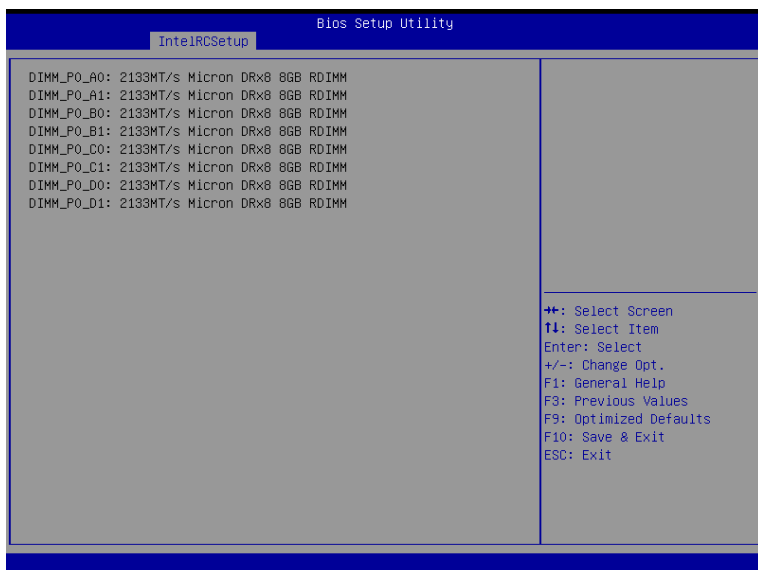
☞ **Memory Map**

Press [Enter] for configuration of advanced items.
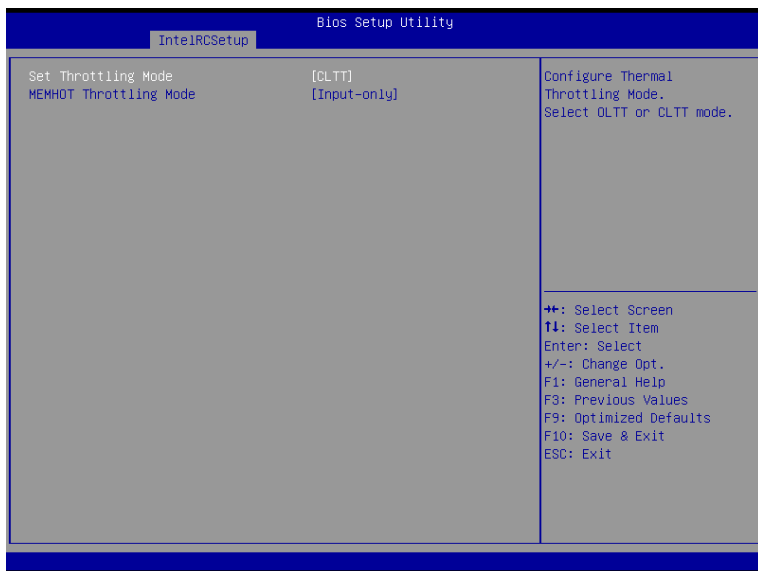
☞ **Memory RAS Configuration**

Press [Enter] for configuration of advanced items.

2-3-5-1 Memory Topology

```
                              Bios Setup Utility
           IntelRCSetup

  DIMM_P0_A0: 2133MT/s Micron DRx8 8GB RDIMM
  DIMM_P0_A1: 2133MT/s Micron DRx8 8GB RDIMM
  DIMM_P0_B0: 2133MT/s Micron DRx8 8GB RDIMM
  DIMM_P0_B1: 2133MT/s Micron DRx8 8GB RDIMM
  DIMM_P0_C0: 2133MT/s Micron DRx8 8GB RDIMM
  DIMM_P0_C1: 2133MT/s Micron DRx8 8GB RDIMM
  DIMM_P0_D0: 2133MT/s Micron DRx8 8GB RDIMM
  DIMM_P0_D1: 2133MT/s Micron DRx8 8GB RDIMM


                                                  →←: Select Screen
                                                  ↑↓: Select Item
                                                  Enter: Select
                                                  +/-: Change Opt.
                                                  F1: General Help
                                                  F3: Previous Values
                                                  F9: Optimized Defaults
                                                  F10: Save & Exit
                                                  ESC: Exit
```

2-3-5-2 Memory Thermal

```
                          Bios Setup Utility
         IntelRCSetup

  Set Throttling Mode              [CLTT]                   Configure Thermal
  MEMHOT Throttling Mode           [Input-only]             Throttling Mode.
                                                            Select OLTT or CLTT mode.




                                                            →←: Select Screen
                                                            ↑↓: Select Item
                                                            Enter: Select
                                                            +/-: Change Opt.
                                                            F1: General Help
                                                            F3: Previous Values
                                                            F9: Optimized Defaults
                                                            F10: Save & Exit
                                                            ESC: Exit


```

   Set Throttling Mode

     Configure Thermal Throttling Mode. Select OLTT or CLTT mode.

     Options available: Disabled/CLTT Mode. Default setting is **CLTT Mode**.

   MEMHOT Throttling Mode

     Options available: Disabled/Output-only/Input-only. Default setting is **Input-only**.

2-3-5-3 Memory Map


```
                              Bios Setup Utility
            IntelRCSetup

Socket Interleave Below 4GB       [Disable]          Splits the 0-4GB address
Channel Interleaving              [Auto]             space between two sockets,
Rank Interleaving                 [Auto]             so that both sockets get a
                                                     chunk of local memory
                                                     below 4GB




                                                     →←: Select Screen
                                                     ↑↓: Select Item
                                                     Enter: Select
                                                     +/-: Change Opt.
                                                     F1: General Help
                                                     F3: Previous Values
                                                     F9: Optimized Defaults
                                                     F10: Save & Exit
                                                     ESC: Exit
```

🍲 **Socket Interleave Below 4GB**

Splits the 0-4GB address space between two sockets, so that both sockets get a chunk of local memory below 4GB.

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

🍲 **Channel Interleaving**

Options available: Auto/1-way Interleave/2-way Interleave/3-way Interleave/4-way Interleave.
Default setting is **Auto**.
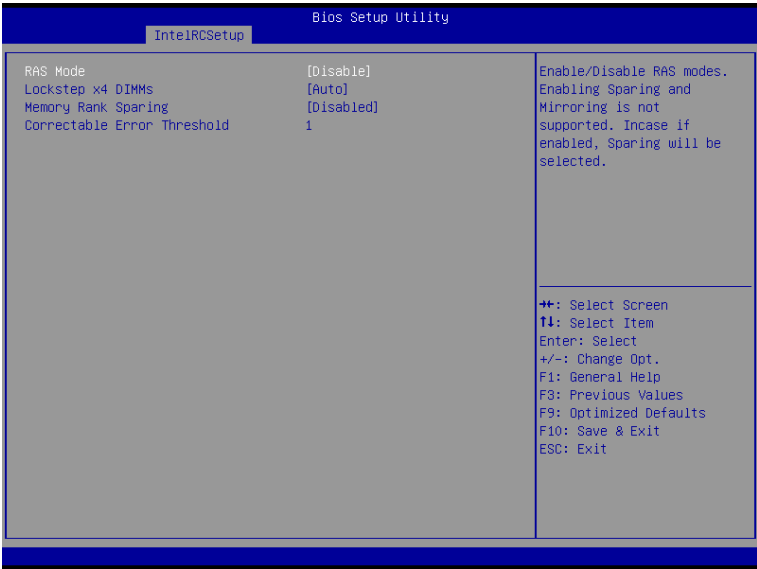
🍲 **Rank Interleaving**

Options available: Auto/1-way Interleave/2-way Interleave/4-way Interleave/8-way Interleave.
Default setting is **Auto**.

2-3-5-4 Memory RAS Configuration

```
                              Bios Setup Utility
              IntelRCSetup

  RAS Mode                        [Disable]          Enable/Disable RAS modes.
  Lockstep x4 DIMMs               [Auto]             Enabling Sparing and
  Memory Rank Sparing             [Disabled]         Mirroring is not
  Correctable Error Threshold     1                  supported. Incase if
                                                     enabled, Sparing will be
                                                     selected.


                                                     →←: Select Screen
                                                     ↑↓: Select Item
                                                     Enter: Select
                                                     +/-: Change Opt.
                                                     F1: General Help
                                                     F3: Previous Values
                                                     F9: Optimized Defaults
                                                     F10: Save & Exit
                                                     ESC: Exit
```

☞ **RAS Mode**

Enable/Disable RAS modes. Enabling Sparing and Mirroring is not supported. When this item is set to enabled, Sparing will be selected.

Options available: Disable/Mirror/Lockstep Mode. Default setting is **Disabled**.

☞ **Lockstep x4 DIMMs**

Options available: Auto/Disabled/Enabled. Default setting is **Auto**.
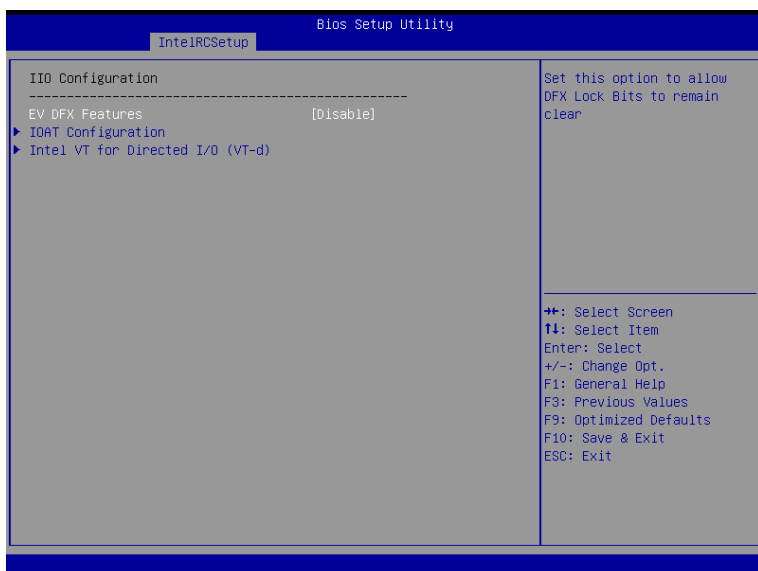
☞ **Memory Rank Sparing**

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

☞ **Correctable Error Threshold**

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

2-3-6   IIO Configuration

```
                              Bios Setup Utility
              IntelRCSetup

   IIO Configuration                                        Set this option to allow
   -------------------------------------------------        DFX Lock Bits to remain
   EV DFX Features                      [Disable]           clear
 ▶ IOAT Configuration
 ▶ Intel VT for Directed I/O (VT-d)



                                                            ➡: Select Screen
                                                            ↑↓: Select Item
                                                            Enter: Select
                                                            +/-: Change Opt.
                                                            F1: General Help
                                                            F3: Previous Values
                                                            F9: Optimized Defaults
                                                            F10: Save & Exit
                                                            ESC: Exit


```

  ☞ **IIO Configuration**

  ☞ **EV DFX Features**

    Set this option to allow DFX Lock Bits to remain clear.

    Options available: Enabled/Disabled. Default setting is **Disabled**.
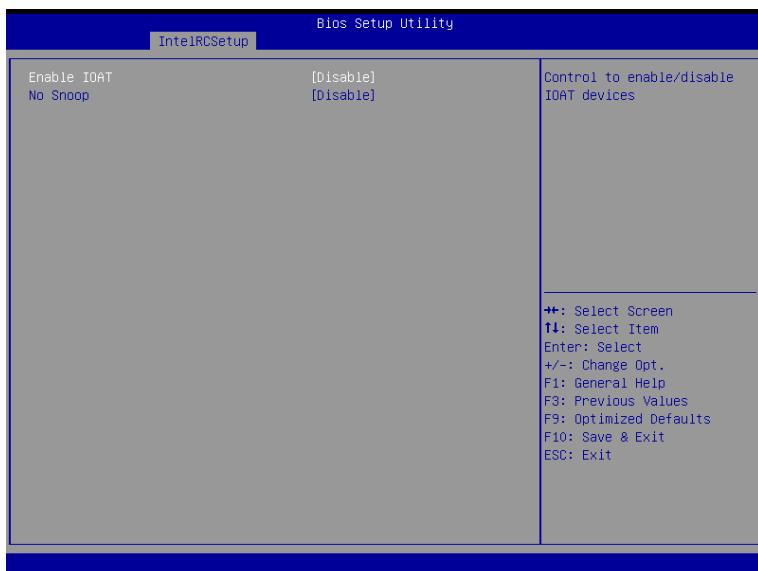
  ☞ **IOAT Configuration**

    Press [Enter] for configuration of advanced items.

  ☞ **Intel VT for Directed I/O (VT-d)**

    Press [Enter] for configuration of advanced items.

2-3-6-1 IOAT Configuration

```
                              Bios Setup Utility
            IntelRCSetup

   Enable IOAT                    [Disable]              Control to enable/disable
   No Snoop                       [Disable]              IOAT devices




                                                         ↔: Select Screen
                                                         ↑↓: Select Item
                                                         Enter: Select
                                                         +/-: Change Opt.
                                                         F1: General Help
                                                         F3: Previous Values
                                                         F9: Optimized Defaults
                                                         F10: Save & Exit
                                                         ESC: Exit


```

☞ **IOAT Configuration**

☞ **Enable IOAT**

Control to enable/disable IOAT (Intel I/O Acceleration Technology) device.

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 **Disabled**.

2-3-6-2 Intel VT for Directed I/O (VT-d)

```
                         Bios Setup Utility
        IntelRCSetup

  Intel VT for Directed I/O (VT-d)                        Enable/Disable Azalea VCp
  -------------------------------------------------       Optimizations
  VTd Azalea VCp Optimizations       [Disable]
  Intel VT for Directed I/O (VT-d)   [Enable]
  Interrupt Remapping                [Enable]
  Coherency Support (Non-Isoch)      [Enable]
  Coherency Support (Isoch)          [Enable]



                                                          ↔: Select Screen
                                                          ↑↓: Select Item
                                                          Enter: Select
                                                          +/-: Change Opt.
                                                          F1: General Help
                                                          F3: Previous Values
                                                          F9: Optimized Defaults
                                                          F10: Save & Exit
                                                          ESC: Exit
```

☞ **Intel VT for Directed I/O (VT-d)**

☞ **VT-d Azalea VCp Optimizations**

   Enable/Disable Azalea VCp optimizations.
   Options available: Enabled/Disabled. Default setting is **Disabled**.

☞ **Intel VT for Directed I/O (VT-d)**

   Enable/Disable Intel VT for Directed I/O (VT-d) support function.
   Options available: Enabled/Disabled. Default setting is **Enabled**.

☞ **Interrupt Remapping**

   Enable/Disable interrupt remapping support function.
   Options available: Enabled/Disabled. Default setting is **Enabled**.

☞ **Coherency Suuport (Non-Isoch)**

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

☞ **Coherency Suuport (Isoch)**

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

2-3-7 PCH Configuration

```
                            Bios Setup Utility
            IntelRCSetup

   PCH Configuration                                    Enable/Disable Intel(R) IO
   ------------------------------------------------     Controller Hub devices
 ▶ PCH Devices
 ▶ PCH sSATA Configuration
 ▶ PCH SATA Configuration
 ▶ USB Configuration
 ▶ Azalia Configuration




                                                        ++: Select Screen
                                                        ↑↓: Select Item
                                                        Enter: Select
                                                        +/-: Change Opt.
                                                        F1: General Help
                                                        F3: Previous Values
                                                        F9: Optimized Defaults
                                                        F10: Save & Exit
                                                        ESC: Exit


```

  PCH Configuration

  PCH Devices

 Press [Enter] for configuration of advanced items.

  PCH sSATA Configuration

 Press [Enter] for configuration of advanced items.

  PCH SATA Configuration

 Press [Enter] for configuration of advanced items.
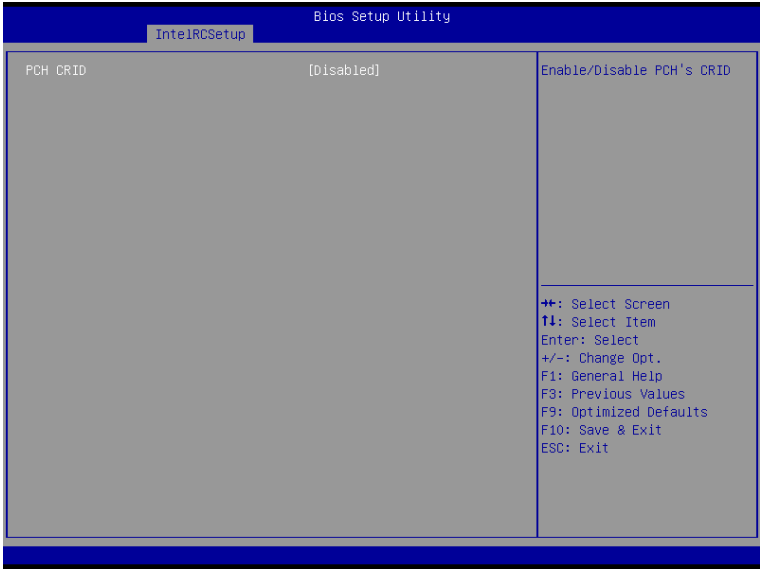
  USB Configuration

 Press [Enter] for configuration of advanced items.

  Azalia Configuration

 Press [Enter] for configuration of advanced items.

2-3-7-1 PCH Devices

```
                          Bios Setup Utility
         IntelRCSetup

  PCH CRID                      [Disabled]              Enable/Disable PCH's CRID




                                                       �🡢: Select Screen
                                                       ↑↓: Select Item
                                                       Enter: Select
                                                       +/-: Change Opt.
                                                       F1: General Help
                                                       F3: Previous Values
                                                       F9: Optimized Defaults
                                                       F10: Save & Exit
                                                       ESC: Exit


```

☞ **PCH CRID**

Enable/Disable Intel Compatible Revision ID.
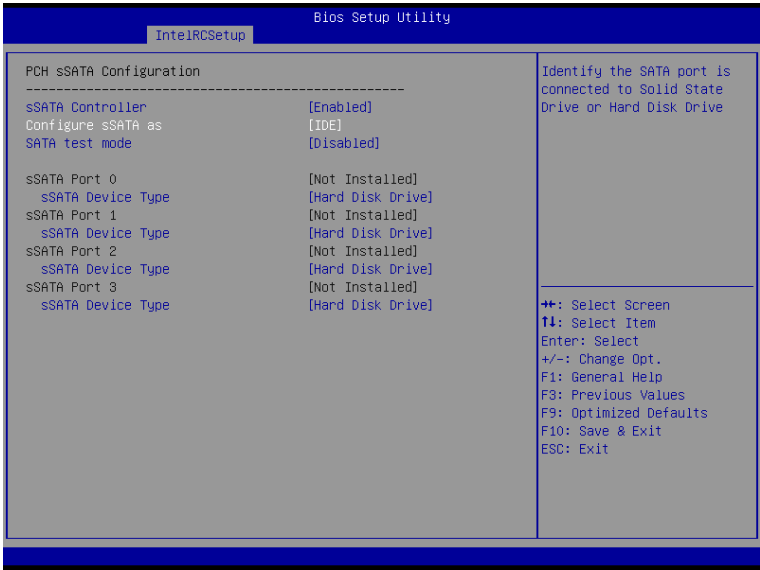
Options available: Enabled/Disabled. Default setting is **Disabled**.

2-3-7-2 PCH sSATA Configuration

```
                           Bios Setup Utility
            IntelRCSetup

 PCH sSATA Configuration                              ▲  Enable or Disable SATA
 ------------------------------------------------        Controller
 sSATA Controller                   [Enabled]
 Configure sSATA as                 [RAID]
 SATA test mode                     [Disabled]
 sSATA RSTe Boot Info               [Enabled]
 ▶ SATA Mode options
 Support Aggressive Link Power Mana  [Enabled]
 Alternate Device ID on RAID        [Disabled]

 sSATA Port 0                       [Not Installed]
    Port 0                          [Enabled]
    Hot Plug                        [Disabled]
    Configured as eSATA             Hot Plug supported   ↔: Select Screen
    Spin Up Device                  [Disabled]           ↑↓: Select Item
    sSATA Device Type               [Hard Disk Drive]    Enter: Select
 sSATA Port 1                       [Not Installed]      +/-: Change Opt.
    Port 1                          [Enabled]            F1: General Help
    Hot Plug                        [Disabled]           F3: Previous Values
    Configured as eSATA             Hot Plug supported   F9: Optimized Defaults
    Spin Up Device                  [Disabled]           F10: Save & Exit
    sSATA Device Type               [Hard Disk Drive]    ESC: Exit
 sSATA Port 2                       [Not Installed]
    Port 2                          [Enabled]
    Hot Plug                        [Disabled]        ▼
```

```
                           Bios Setup Utility
            IntelRCSetup

 sSATA Port 0                       [Not Installed]   ▲  Identify the SATA port is
    Port 0                          [Enabled]            connected to Solid State
    Hot Plug                        [Disabled]           Drive or Hard Disk Drive
    Configured as eSATA             Hot Plug supported
    Spin Up Device                  [Disabled]
    sSATA Device Type               [Hard Disk Drive]
 sSATA Port 1                       [Not Installed]
    Port 1                          [Enabled]
    Hot Plug                        [Disabled]
    Configured as eSATA             Hot Plug supported
    Spin Up Device                  [Disabled]
    sSATA Device Type               [Hard Disk Drive]
 sSATA Port 2                       [Not Installed]
    Port 2                          [Enabled]            ↔: Select Screen
    Hot Plug                        [Disabled]           ↑↓: Select Item
    Configured as eSATA             Hot Plug supported   Enter: Select
    Spin Up Device                  [Disabled]           +/-: Change Opt.
    sSATA Device Type               [Hard Disk Drive]    F1: General Help
 sSATA Port 3                       [Not Installed]      F3: Previous Values
    Port 3                          [Enabled]            F9: Optimized Defaults
    Hot Plug                        [Disabled]           F10: Save & Exit
    Configured as eSATA             Hot Plug supported   ESC: Exit
    Spin Up Device                  [Disabled]
    sSATA Device Type               [Hard Disk Drive] ▼
```

When SATA Type is set to IDE

```
                              Bios Setup Utility
          IntelRCSetup

 PCH sSATA Configuration                                      Identify the SATA port is
 ----------------------------------------------------         connected to Solid State
 sSATA Controller                    [Enabled]                Drive or Hard Disk Drive
 Configure sSATA as                  [IDE]
 SATA test mode                      [Disabled]

 sSATA Port 0                        [Not Installed]
   sSATA Device Type                 [Hard Disk Drive]
 sSATA Port 1                        [Not Installed]
   sSATA Device Type                 [Hard Disk Drive]
 sSATA Port 2                        [Not Installed]
   sSATA Device Type                 [Hard Disk Drive]
 sSATA Port 3                        [Not Installed]
   sSATA Device Type                 [Hard Disk Drive]          ↔: Select Screen
                                                                ↑↓: Select Item
                                                                Enter: Select
                                                                +/-: Change Opt.
                                                                F1: General Help
                                                                F3: Previous Values
                                                                F9: Optimized Defaults
                                                                F10: Save & Exit
                                                                ESC: Exit
```

☞ **PCH sSATA Configuration**

☞ **sSATA Controller(s)**

    Enable/Disable sSATA controller.

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

☞ **Configure sSATA as**

    Coonfigure 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**.

☞ **SATA Test Mode**

    Enable/Disable SATA Test Mode.

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

☞ **SATA RSTe Boot Info**[(Note 1)]

    Enable/Disable SATA RSTe Boot Information.

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

☞ **SATA Mode options**[(Note 2)]

    Press [Enter] for configuration of advanced items.

(Note 1) Only Supported When HDD is in **RAID** Mode.

(Note 2) Only Supported When HDD is in **AHCI** or **RAID** Mode.

- **Support Aggressive Link Power Mana(Note)**

  Enable PCH to aggressively enter link power state.

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

- **Alternate Device ID on RAID**

  Enable /Disable Alternate Device ID on RAID mode.

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

  Please note that this option appears when HDD is in RAID Mode.

- **sSATA Port 0/1/2/3**

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

  System will automatically detect HDD type.

- **Port 0/1/2/3**

  Enable/Disable Port 0/1/2/3 device.

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

- **Hot Plug (for Port 0/1/2/3)(Note)**

  Enable/Disable HDD Hot-Plug function.

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

- **Configured as eSATA(Note)**

  Display Hot-Plug supported information.

- **Spin Up Device (for Port 0/1/2/3)(Note)**

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

  Options available: Enabled/Disabled. Default setting is **Disabled**.
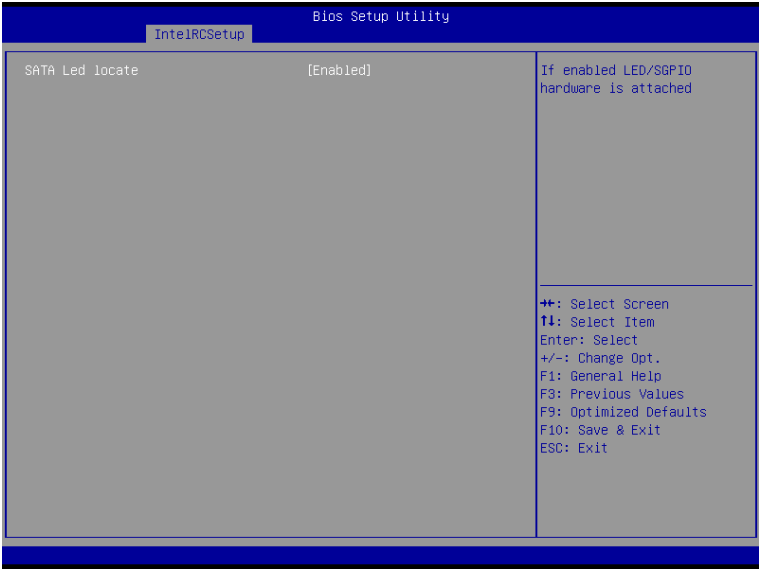
- **sSATA Device Type**

  Select sSATA device type.

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

(Note)   Only Supported When HDD is in **AHCI** or **RAID** Mode.

2-3-7-2-1 SATA Mode Options
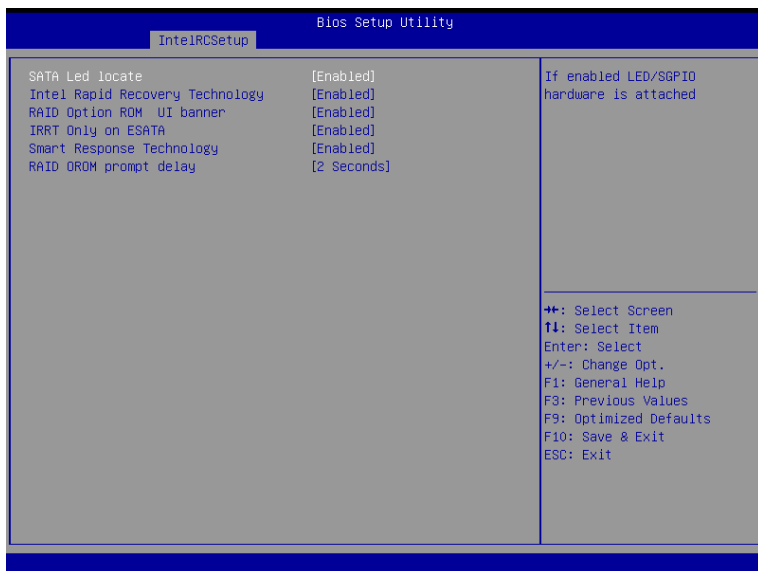
When SATA Type is set to IDE/AHCI Mode

```
                              Bios Setup Utility
              IntelRCSetup

   SATA Led locate                 [Enabled]              If enabled LED/SGPIO
                                                          hardware is attached




                                                          →←: Select Screen
                                                          ↑↓: Select Item
                                                          Enter: Select
                                                          +/-: Change Opt.
                                                          F1: General Help
                                                          F3: Previous Values
                                                          F9: Optimized Defaults
                                                          F10: Save & Exit
                                                          ESC: Exit

```

☞ **SATA LED locate**

When this option is enabled, LED/SGPIO hardware is attached.

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

When SATA Type is set to RAID Mode

```
                           Bios Setup Utility
         IntelRCSetup

 SATA Led locate                     [Enabled]            If enabled LED/SGPIO
 Intel Rapid Recovery Technology     [Enabled]            hardware is attached
 RAID Option ROM  UI banner          [Enabled]
 IRRT Only on ESATA                  [Enabled]
 Smart Response Technology           [Enabled]
 RAID OROM prompt delay              [2 Seconds]



                                                          →←: Select Screen
                                                          ↑↓: Select Item
                                                          Enter: Select
                                                          +/-: Change Opt.
                                                          F1: General Help
                                                          F3: Previous Values
                                                          F9: Optimized Defaults
                                                          F10: Save & Exit
                                                          ESC: Exit
```

☞ **SATA LED locate**

When this option is enabled, LED/SGPIO hardware is attached.
Options available: Enabled/Disabled. Default setting is **Enabled**.

☞ **Intel Rapid Recovery Technology**

Enable/Disable Intel Rapid Recovery Technology support function.
Options available: Enabled/Disabled. Default setting is **Enabled**.

☞ **RAID Option ROM UI banner**

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

☞ **IRRT Only on ESATA**

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

☞ **Smart Response Technology**

Enable/Disable Intel Smart Response Technology support function.
Options available: Enabled/Disabled. Default setting is **Enabled**.

☞ **RAID OROM prompt delay**

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

2-3-7-3 PCH SATA Configuration

```
                          Bios Setup Utility
             IntelRCSetup

 PCH SATA Configuration                                    ▲  Identify the SATA port is
 ------------------------------------------------             connected to Solid State
 SATA Controller                     [Enabled]               Drive or Hard Disk Drive
 Configure SATA as                   [RAID]
 SATA test mode                      [Disabled]
 SATA RSTe Boot Info                 [Enabled]
 ▶ SATA Mode options
 Support Aggressive Link Power Mana  [Enabled]
 Alternate Device ID on RAID         [Disabled]

 SATA Port 0                         [Not Installed]
    Port 0                           [Enabled]
    Hot Plug                         [Disabled]
    Configured as eSATA              Hot Plug supported      ◄►: Select Screen
    Spin Up Device                   [Disabled]             ↑↓: Select Item
    SATA Device Type                 [Hard Disk Drive]       Enter: Select
 SATA Port 1                         [Not Installed]         +/-: Change Opt.
    Port 1                           [Enabled]               F1: General Help
    Hot Plug                         [Disabled]              F3: Previous Values
    Configured as eSATA              Hot Plug supported      F9: Optimized Defaults
    Spin Up Device                   [Disabled]              F10: Save & Exit
    SATA Device Type                 [Hard Disk Drive]       ESC: Exit
 SATA Port 2                         [Not Installed]
    Port 2                           [Enabled]
    Hot Plug                         [Disabled]           ▼
```

```
                          Bios Setup Utility
             IntelRCSetup

    SATA Device Type                 [Hard Disk Drive]    ▲  Identify the SATA port is
 SATA Port 2                         [Not Installed]         connected to Solid State
    Port 2                           [Enabled]               Drive or Hard Disk Drive
    Hot Plug                         [Disabled]
    Configured as eSATA              Hot Plug supported
    Spin Up Device                   [Disabled]
    SATA Device Type                 [Hard Disk Drive]
 SATA Port 3                         [Not Installed]
    Port 3                           [Enabled]
    Hot Plug                         [Disabled]
    Configured as eSATA              Hot Plug supported
    Spin Up Device                   [Disabled]
    SATA Device Type                 [Hard Disk Drive]
 SATA Port 4                         [Not Installed]
    Port 4                           [Enabled]               ◄►: Select Screen
    Hot Plug                         [Disabled]              ↑↓: Select Item
    Configured as eSATA              Hot Plug supported      Enter: Select
    Spin Up Device                   [Disabled]              +/-: Change Opt.
    SATA Device Type                 [Hard Disk Drive]       F1: General Help
 SATA Port 5                         [Not Installed]         F3: Previous Values
    Port 5                           [Enabled]               F9: Optimized Defaults
    Hot Plug                         [Disabled]              F10: Save & Exit
    Configured as eSATA              Hot Plug supported      ESC: Exit
    Spin Up Device                   [Disabled]
    SATA Device Type                 [Hard Disk Drive]    ▼
```

When SATA Type is set to IDE

```
                          Bios Setup Utility
           IntelRCSetup

  PCH SATA Configuration                                Identify the SATA port is
  -----------------------------------------------       connected to Solid State
  SATA Controller                    [Enabled]          Drive or Hard Disk Drive
  Configure SATA as                  [IDE]
  SATA test mode                     [Disabled]

  SATA Port 0                        [Not Installed]
     SATA Device Type                [Hard Disk Drive]
  SATA Port 1                        [Not Installed]
     SATA Device Type                [Hard Disk Drive]
  SATA Port 2                        [Not Installed]
     SATA Device Type                [Hard Disk Drive]
  SATA Port 3                        [Not Installed]    →←: Select Screen
     SATA Device Type                [Hard Disk Drive]  ↑↓: Select Item
  SATA Port 4                        [Not Installed]    Enter: Select
     SATA Device Type                [Hard Disk Drive]  +/-: Change Opt.
  SATA Port 5                        [Not Installed]    F1: General Help
     SATA Device Type                [Hard Disk Drive]  F3: Previous Values
                                                        F9: Optimized Defaults
                                                        F10: Save & Exit
                                                        ESC: Exit
```

☞ **PCH SATA Configuration**

☞ **SATA Controller(s)**

Enable/Disable sSATA controller.

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

☞ **Configure sSATA as**

Coonfigure 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**.

☞ **SATA Test Mode**

Enable/Disable SATA Test Mode.

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

☞ **SATA RSTe Boot Info**(Note 1)

Enable/Disable SATA RSTe Boot Information.

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

☞ **SATA Mode options**(Note 2)

Press [Enter] for configuration of advanced items.

(Note 1) Only Supported When HDD is in **RAID** Mode.

(Note 2) Only Supported When HDD is in **AHCI** or **RAID** Mode.

⍜ **Support Aggressive Link Power Mana^(Note)**

Enable PCH to aggressively enter link power state.

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

⍜ **Alternate Device ID on RAID**

Enable /Disable Alternate Device ID on RAID mode.

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

Please note that this option appears when HDD is in RAID Mode.

⍜ **sSATA Port 0/1/2/3/4/5**

The category identifies sSATA 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 device.

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

⍜ **Hot Plug (for Port 0/1/2/3/4/5)^(Note)**

Enable/Disable HDD Hot-Plug function.

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

⍜ **Configured as eSATA^(Note)**

Display Hot-Plug supported information.

⍜ **Spin Up Device (for Port 0/1/2/3/4/5)^(Note)**

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

Options available: Enabled/Disabled. Default setting is **Disabled**.
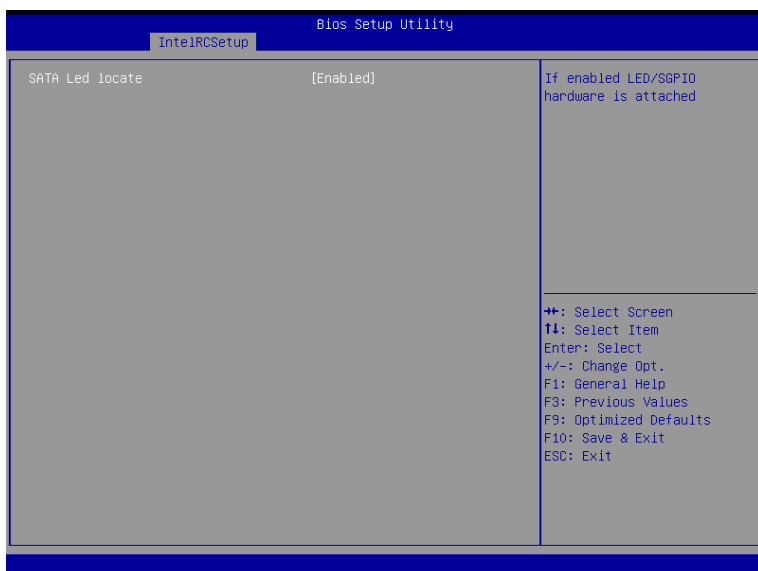
⍜ **sSATA Device Type**

Select sSATA device type.

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

(Note)   Only Supported When HDD is in **AHCI** or **RAID** Mode.

2-3-7-3-1 SATA Mode Options

When SATA Type is set to IDE/AHCI Mode

```
                              Bios Setup Utility
         IntelRCSetup

   SATA Led locate                    [Enabled]              If enabled LED/SGPIO
                                                             hardware is attached




                                                             ➔←: Select Screen
                                                             ↑↓: Select Item
                                                             Enter: Select
                                                             +/-: Change Opt.
                                                             F1: General Help
                                                             F3: Previous Values
                                                             F9: Optimized Defaults
                                                             F10: Save & Exit
                                                             ESC: Exit
```

    ⍟ **SATA LED locate**

        When this option is enabled, LED/SGPIO hardware is attached.

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

When SATA Type is set to RAID Mode

```
                          Bios Setup Utility
        IntelRCSetup

 SATA Led locate                   [Enabled]          If enabled LED/SGPIO
 Intel Rapid Recovery Technology   [Enabled]          hardware is attached
 RAID Option ROM  UI banner        [Enabled]
 IRRT Only on ESATA                [Enabled]
 Smart Response Technology         [Enabled]
 RAID OROM prompt delay            [2 Seconds]




                                                     ↔: Select Screen
                                                     ↑↓: Select Item
                                                     Enter: Select
                                                     +/-: Change Opt.
                                                     F1: General Help
                                                     F3: Previous Values
                                                     F9: Optimized Defaults
                                                     F10: Save & Exit
                                                     ESC: Exit


```

☞ **SATA LED locate**

When this option is enabled, LED/SGPIO hardware is attached.
Options available: Enabled/Disabled. Default setting is **Enabled**.

☞ **Intel Rapid Recovery Technology**

Enable/Disable Intel Rapid Recovery Technology support function.
Options available: Enabled/Disabled. Default setting is **Enabled**.

☞ **RAID Option ROM UI banner**

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

☞ **Smart Response Technology**

Enable/Disable Intel Smart Response Technology support function.
Options available: Enabled/Disabled. Default setting is **Enabled**.

☞ **RAID OROM prompt delay**

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

2-3-7-4 USB Configuration

```
                              Bios Setup Utility
        IntelRCSetup

USB Precondition                 [Disabled]              Precondition work on USB
xHCI Mode                        [Smart Auto]            host controller and root
                                                         ports for faster
                                                         enumeration.



                                                         ↔: Select Screen
                                                         ↑↓: Select Item
                                                         Enter: Select
                                                         +/-: Change Opt.
                                                         F1: General Help
                                                         F3: Previous Values
                                                         F9: Optimized Defaults
                                                         F10: Save & Exit
                                                         ESC: Exit


```

  ✆ **USB Precondition**

      Precondition work on USB host conteoller and root ports for faster enumeration.
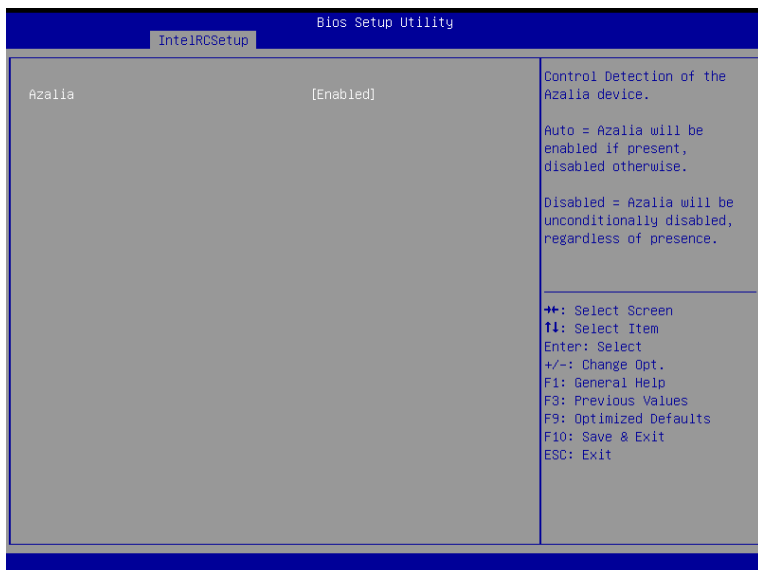
      Options available: Enabled/Disabled. Default setting is **Disabled**.

  ✆ **xHCI Mode**

      Enable/Disable xHCI (USB 3.0) support function.

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

2-3-7-5 Azalia Configuration

```
                          Bios Setup Utility
          IntelRCSetup

   Azalia                          [Enabled]            Control Detection of the
                                                        Azalia device.

                                                        Auto = Azalia will be
                                                        enabled if present,
                                                        disabled otherwise.

                                                        Disabled = Azalia will be
                                                        unconditionally disabled,
                                                        regardless of presence.


                                                        →←: Select Screen
                                                        ↑↓: Select Item
                                                        Enter: Select
                                                        +/-: Change Opt.
                                                        F1: General Help
                                                        F3: Previous Values
                                                        F9: Optimized Defaults
                                                        F10: Save & Exit
                                                        ESC: Exit
```
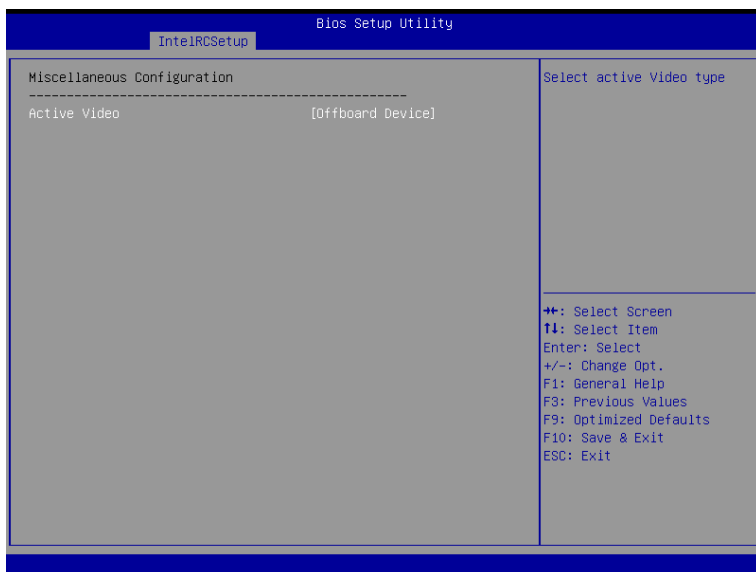
☞ **Azalia**

Enable/Disbale onabord audio device.

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

2-3-8 Miscellaneous Configuration

```
                              Bios Setup Utility
          IntelRCSetup

 Miscellaneous Configuration                          Select active Video type
 --------------------------------------------------
 Active Video                    [Offboard Device]




                                                      →←: Select Screen
                                                      ↑↓: Select Item
                                                      Enter: Select
                                                      +/-: Change Opt.
                                                      F1: General Help
                                                      F3: Previous Values
                                                      F9: Optimized Defaults
                                                      F10: Save & Exit
                                                      ESC: Exit


```
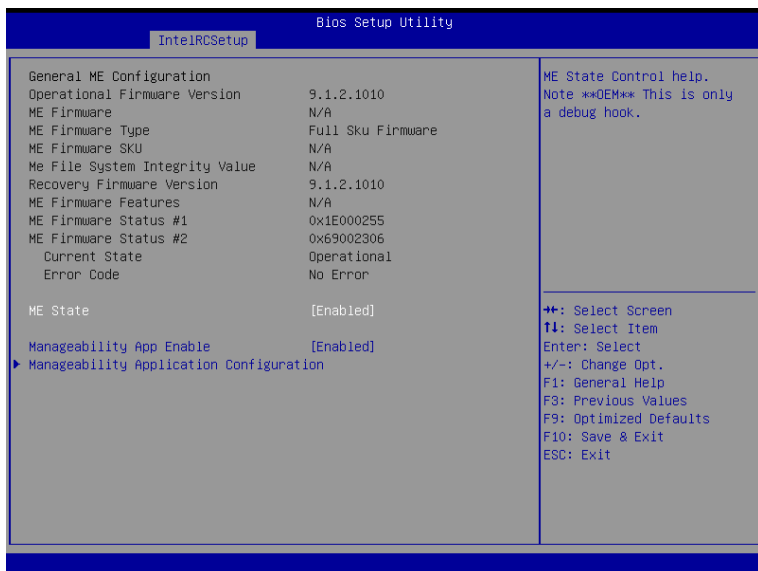
☞ **Miscellaneous Configuration**

☞ **Active Video**

Select active Video type.
Options available: Onboard Device/Offboard Device. Default setting is **Offboard Device**.

2-3-9 Server ME Configuration

```
                              Bios Setup Utility
         IntelRCSetup

   General ME Configuration                                    ME State Control help.
   Operational Firmware Version    9.1.2.1010                  Note **OEM** This is only
   ME Firmware                     N/A                         a debug hook.
   ME Firmware Type                Full Sku Firmware
   ME Firmware SKU                 N/A
   Me File System Integrity Value  N/A
   Recovery Firmware Version       9.1.2.1010
   ME Firmware Features            N/A
   ME Firmware Status #1           0x1E000255
   ME Firmware Status #2           0x69002306
     Current State                Operational
     Error Code                   No Error

   ME State                        [Enabled]                   →←: Select Screen
                                                               ↑↓: Select Item
   Manageability App Enable        [Enabled]                   Enter: Select
 ▶ Manageability Application Configuration                     +/-: Change Opt.
                                                               F1: General Help
                                                               F3: Previous Values
                                                               F9: Optimized Defaults
                                                               F10: Save & Exit
                                                               ESC: Exit
```

☞ **Greneral ME Configuration**

☞ **Operational Firmware Version**

   Display Operational Firmware Version information.

☞ **Recovery Firmware Version**

   Display Recovery Firmware Version information.

☞ **ME Firmware Features**

   Display ME Firmware features information.

☞ **ME Firmware Status #1/#2**

   Display ME Firmware status information.

☞ **Current State (for ME Firmware)**

   Display ME Firmware current status information.

☞ **Error Code (for ME Firmware)**

   Display ME Firmware status error code.

☞ **ME State**

   Options available: Enabled/Disabled. Default setting is **Enabled**.
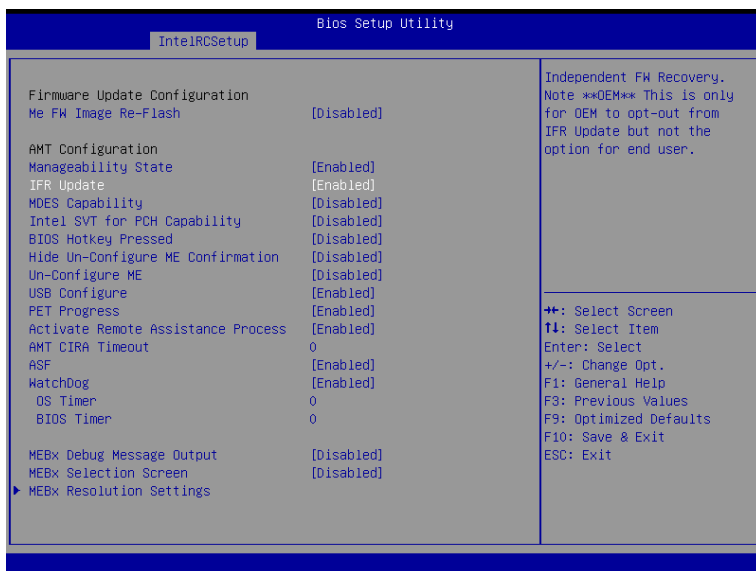
☞ **Manageability App Enable**

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

☞ **Manageability Application Configuration**

   Press [Enter] for configuration of advanced items.

2-3-9-1 Manageability Application Configuration

☞ **Firmware Update Configuration**

☞ **Me FW Image Re-Flash**

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

☞ **AMT Configuration**

☞ **Manageability Sate**

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

☞ **IFR Update**

Independant Firmware Recovery.
Options available: Enabled/Disabled. Default setting is **Enabled**.

☞ **MDES Capability**

MDES Capability state control.
Options available: Enabled/Disabled. Default setting is **Enabled**.

☞ **Intel SVT for PCH Capability**

Intel Silicon View Technology (SVT) for PCH Capabilities.
Options available: Enabled/Disabled. Default setting is **Disabled**.

☞ **BIOS HOtkey Pressed**

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

☞ **Hide Un-Congigure ME Confirmation**

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

☞ **Un-Configure ME**

Un-Configure ME without password.
Options available: Enabled/Disabled. Default setting is **Disabled**.

- ☞ **USB Configure**

    Enable/Disable USB Configure function.

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

- ☞ **PET Progress**

    User can eenable/disable PET Events progress to receive PET events or not.

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

- ☞ **Activate Remote Assistance Process**

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

- ☞ **AMT CIRA Timeout(Note)**

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

- ☞ **ASF**

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

- ☞ **Watchdog**

    Enable/Disable watchdog function.

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

- ☞ **OS Timer(Note)**

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

- ☞ **BIOS Timer(Note)**

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

- ☞ **MEBx Debug Message Output**

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

- ☞ **MEBx Selection Screen**
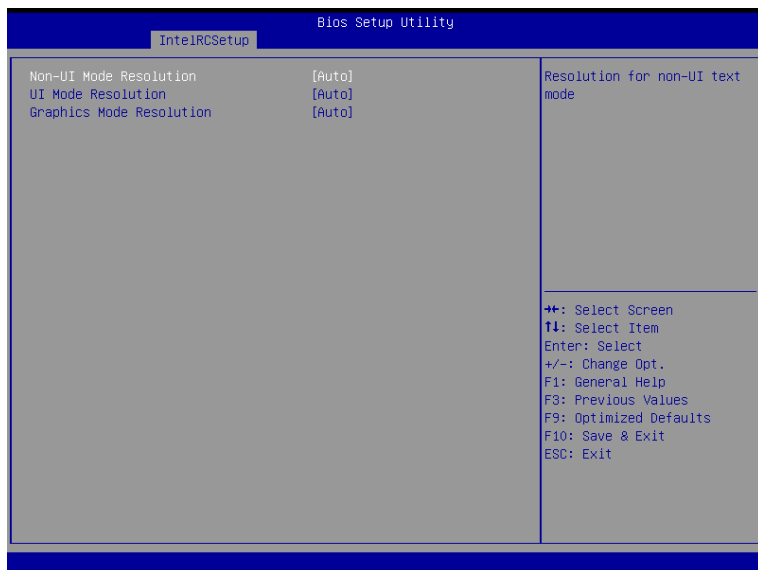
    Options available: Enabled/Disabled. Default setting is **Disabled**.

- ☞ **MEBx Resolution Settings**

    Press [Enter] for configuration of advanced items.

(Note)   This item is configurable when **Activate Remote Assistance Process** and **Watchdog** and is set to **Enlabled**.

2-3-9-1-1 MEBx Resolution Settings

```
                              Bios Setup Utility
        IntelRCSetup

Non-UI Mode Resolution            [Auto]              Resolution for non-UI text
UI Mode Resolution                [Auto]              mode
Graphics Mode Resolution          [Auto]




                                                      →←: Select Screen
                                                      ↑↓: Select Item
                                                      Enter: Select
                                                      +/-: Change Opt.
                                                      F1: General Help
                                                      F3: Previous Values
                                                      F9: Optimized Defaults
                                                      F10: Save & Exit
                                                      ESC: Exit
```

☞ **Non-UI Resolution**

Resolution for non-UI text mode.

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

☞ **UI Mode Resolution**

Resolution for UI text mode.
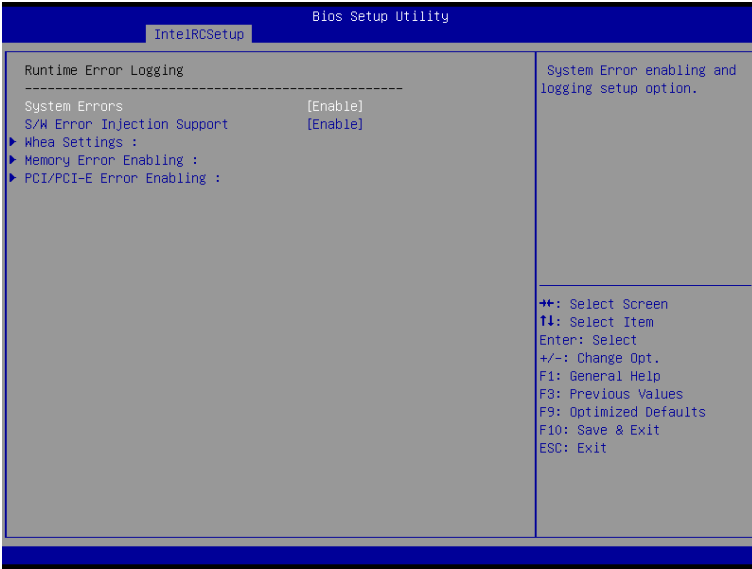
Options available: Auto/Disabled. Default setting is **Auto**.

☞ **Graphics Mode Resolution**

Resolution for graphic mode.

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

2-3-10 Runtime Error Logging

```
                              Bios Setup Utility
          IntelRCSetup

   Runtime Error Logging                               System Error enabling and
   -----------------------------------------------     logging setup option.
   System Errors                    [Enable]
   S/W Error Injection Support      [Enable]
 ▶ Whea Settings :
 ▶ Memory Error Enabling :
 ▶ PCI/PCI-E Error Enabling :



                                                     →←: Select Screen
                                                     ↑↓: Select Item
                                                     Enter: Select
                                                     +/-: Change Opt.
                                                     F1: General Help
                                                     F3: Previous Values
                                                     F9: Optimized Defaults
                                                     F10: Save & Exit
                                                     ESC: Exit
```

☞ **Runtime Error Logging**

☞ **System Errors**

Enable/Disable system error logging function.
Options available: Enabled/Disabled. Default setting is **Enabled**.

☞ **S/W Error Injection Support**

Enable/Disable software injection error logging function.
Options available: Enabled/Disabled. Default setting is **Disabled**.

☞ **Whea Settings**

Press [Enter] for configuration of advanced items.

☞ **Memory Error Enabling**

Press [Enter] for configuration of advanced items.

☞ **PCI/PCI-E Error Enabling**

Press [Enter] for configuration of advanced items.

2-3-10-1 Whea Setting

```
                              Bios Setup Utility
          IntelRCSetup

   Whea Settings :                                      Enable or disable the WHEA
   ------------------------------------------------     support
   WHEA Support                      [Enable]




                                                        →←: Select Screen
                                                        ↑↓: Select Item
                                                        Enter: Select
                                                        +/-: Change Opt.
                                                        F1: General Help
                                                        F3: Previous Values
                                                        F9: Optimized Defaults
                                                        F10: Save & Exit
                                                        ESC: Exit


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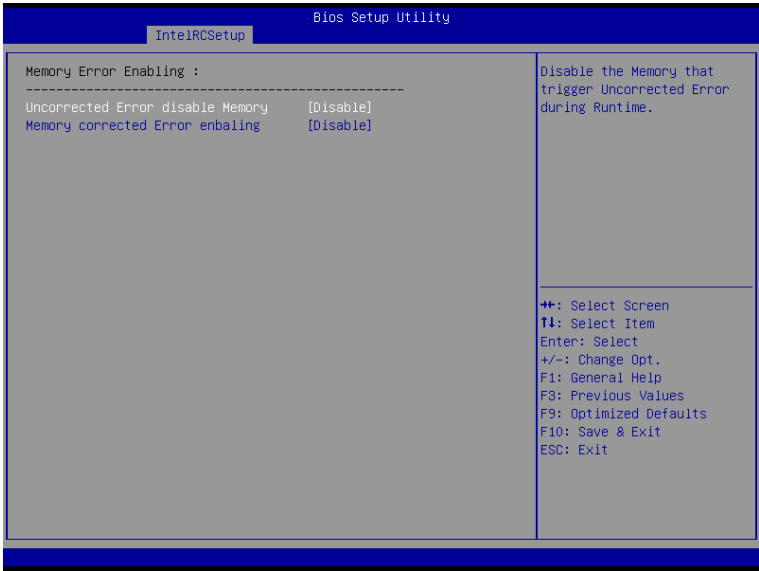
☞ **WHEA Support (Windows Hardware Error Architecture)**

Enable/Disable WHEA Support.

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

2-3-10-2 Memory Error Enabling

```
                              Bios Setup Utility
            IntelRCSetup

  Memory Error Enabling :                            Disable the Memory that
  -------------------------------------------------  trigger Uncorrected Error
  Uncorrected Error disable Memory    [Disable]      during Runtime.
  Memory corrected Error enbaling     [Disable]



                                                     →←: Select Screen
                                                     ↑↓: Select Item
                                                     Enter: Select
                                                     +/-: Change Opt.
                                                     F1: General Help
                                                     F3: Previous Values
                                                     F9: Optimized Defaults
                                                     F10: Save & Exit
                                                     ESC: Exit


```

   ☞ **Memory Error Enabling**
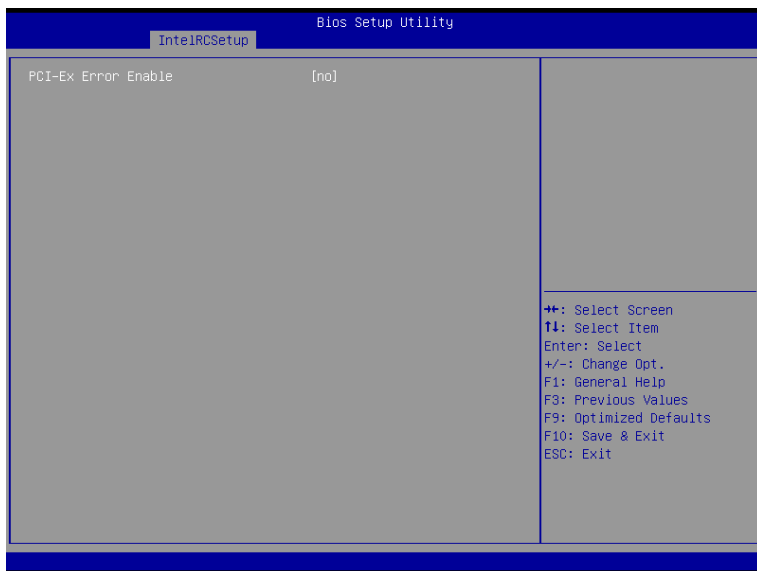
   ☞ **Un-Correctable Errors disable Memory**

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

   ☞ **Memory corrected Errors enabling**

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

2-3-10-3 PCI/PCI-E Error Enabling

```
                                   Bios Setup Utility
              IntelRCSetup

  PCI-Ex Error Enable                    [no]



                                                        ↔: Select Screen
                                                        ↑↓: Select Item
                                                        Enter: Select
                                                        +/-: Change Opt.
                                                        F1: General Help
                                                        F3: Previous Values
                                                        F9: Optimized Defaults
                                                        F10: Save & Exit
                                                        ESC: Exit
```

☞ **PCI-Ex Error Enable (Note)**

Options available: Yes/No. Default setting is **No**.

☞ **Corrected Error Enable**

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

☞ **Uncorrected Error Enable**

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

☞ **Fatal Error Enable**

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

☞ **Enable SERR propagation**

When this item is set to enabled, PCI bus system error (SERR) is generated and is routed to NMI.
Options available: Yes/No. Default setting is **Yes**.
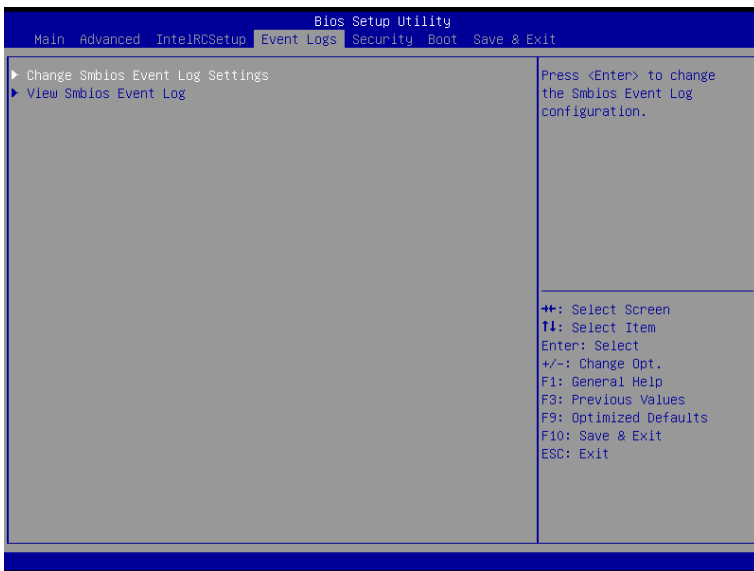
☞ **Enable PERR propagation**

When this item is set to Yes, PCI bus parity error (PERR) is generated and is routed to NMI.
Options available: Yes/No. Default setting is **Yes**.

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

2-4 Event Logs Menu

```
                            Bios Setup Utility
    Main   Advanced   IntelRCSetup   Event Logs   Security   Boot   Save & Exit

▶ Change Smbios Event Log Settings                        Press <Enter> to change
▶ View Smbios Event Log                                   the Smbios Event Log
                                                          configuration.




                                                          →←: Select Screen
                                                          ↑↓: Select Item
                                                          Enter: Select
                                                          +/-: Change Opt.
                                                          F1: General Help
                                                          F3: Previous Values
                                                          F9: Optimized Defaults
                                                          F10: Save & Exit
                                                          ESC: Exit


```
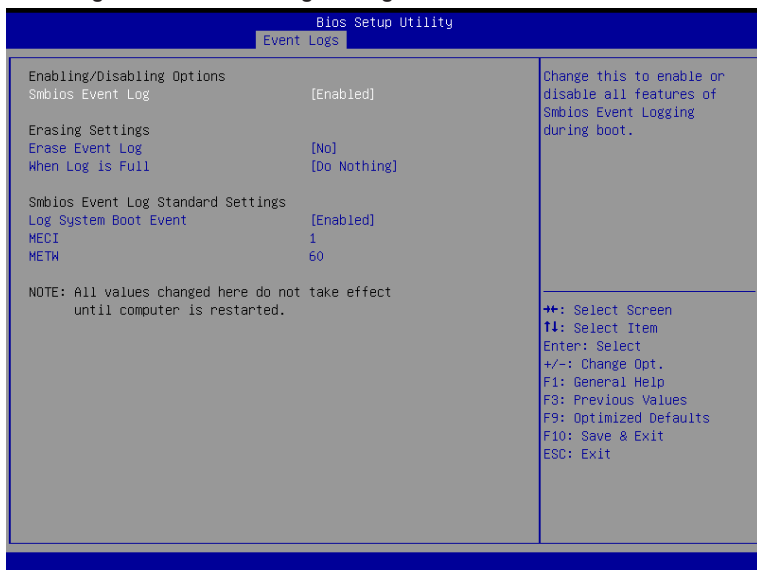
☞ **Change Smbios Event Log Settings**

Press [Enter] for configuration of advanced items.

☞ **View Smbios Event Log**

Press [Enter] to view event logs.

2-4-1　Change Smbios Event Log Settings

```
                          Bios Setup Utility
                          Event Logs

  Enabling/Disabling Options                          Change this to enable or
  Smbios Event Log              [Enabled]             disable all features of
                                                      Smbios Event Logging
  Erasing Settings                                    during boot.
  Erase Event Log               [No]
  When Log is Full              [Do Nothing]

  Smbios Event Log Standard Settings
  Log System Boot Event         [Enabled]
  MECI                          1
  METW                          60

  NOTE: All values changed here do not take effect
        until computer is restarted.                  ++: Select Screen
                                                      ↑↓: Select Item
                                                      Enter: Select
                                                      +/-: Change Opt.
                                                      F1: General Help
                                                      F3: Previous Values
                                                      F9: Optimized Defaults
                                                      F10: Save & Exit
                                                      ESC: Exit
```

☙　**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.
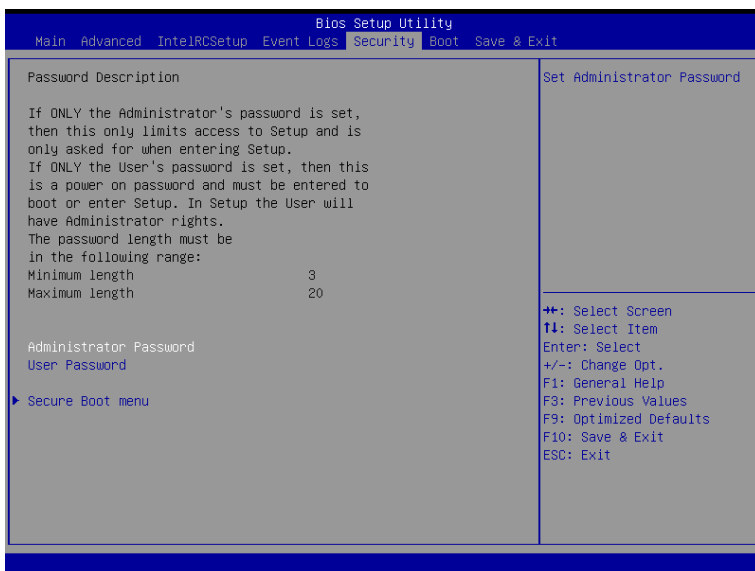
2-4-2 View Smbios Event Log

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

```
                            Bios Setup Utility
                           Event Logs

   DATE       TIME       ERROR CODE      SEVERITY         DESCRIPTION
                                                          Log Area Reset
   09/24/14   09:25:42   Smbios 0x16     N/A
   09/24/14   09:25:42   Smbios 0x17     N/A
   09/24/14   11:12:30   Smbios 0x17     N/A
   09/24/14   11:14:00   Smbios 0x17     N/A




                                                          →←: Select Screen
                                                          ↑↓: Select Item
                                                          Enter: Select
                                                          +/-: Change Opt.
                                                          F1: General Help
                                                          F3: Previous Values
                                                          F9: Optimized Defaults
                                                          F10: Save & Exit
                                                          ESC: Exit
```

2-5   Security Menu

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

```
                             Bios Setup Utility
        Main  Advanced  IntelRCSetup  Event Logs  Security  Boot  Save & Exit

   ┌──────────────────────────────────────────────────┬──────────────────────────────┐
   │  Password Description                             │ Set Administrator Password   │
   │                                                   │                              │
   │  If ONLY the Administrator's password is set,     │                              │
   │  then this only limits access to Setup and is     │                              │
   │  only asked for when entering Setup.              │                              │
   │  If ONLY the User's password is set, then this    │                              │
   │  is a power on password and must be entered to    │                              │
   │  boot or enter Setup. In Setup the User will      │                              │
   │  have Administrator rights.                       │                              │
   │  The password length must be                      │                              │
   │  in the following range:                          │                              │
   │  Minimum length              3                    │                              │
   │  Maximum length              20                   │ ←→: Select Screen            │
   │                                                   │ ↑↓: Select Item              │
   │                                                   │ Enter: Select                │
   │  Administrator Password                           │ +/-: Change Opt.             │
   │  User Password                                    │ F1: General Help             │
   │                                                   │ F3: Previous Values          │
   │ ▶ Secure Boot menu                                │ F9: Optimized Defaults       │
   │                                                   │ F10: Save & Exit             │
   │                                                   │ ESC: Exit                    │
   │                                                   │                              │
   │                                                   │                              │
   └──────────────────────────────────────────────────┴──────────────────────────────┘
```

☞ **Administrator Password**

Press Enter to configure the Administrator password.

☞ **User Password**
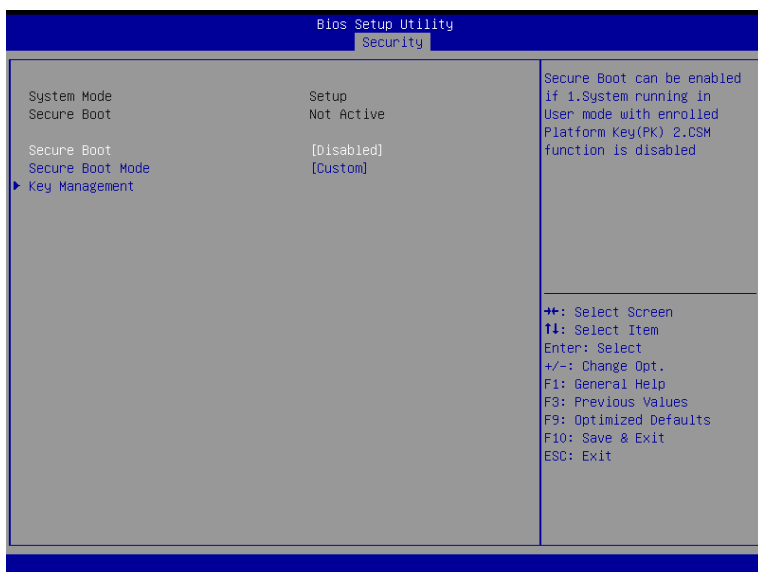
Press Enter to configure the user password.

☞ **Secure Boot menu**

Press [Enter] for configuration of advanced items.

2-5-1 Secure Boot menu

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

```
                        Bios Setup Utility
                         Security

 System Mode              Setup                    Secure Boot can be enabled
 Secure Boot              Not Active               if 1.System running in
                                                   User mode with enrolled
 Secure Boot             [Disabled]                Platform Key(PK) 2.CSM
 Secure Boot Mode        [Custom]                  function is disabled
▶ Key Management




                                                   →←: Select Screen
                                                   ↑↓: Select Item
                                                   Enter: Select
                                                   +/-: Change Opt.
                                                   F1: General Help
                                                   F3: Previous Values
                                                   F9: Optimized Defaults
                                                   F10: Save & Exit
                                                   ESC: Exit


```

☞ Secure Mode

Display the System secure mode state.

☞ Secure Boot

Display the status of Secure Boot.

☞ Secure Boot

Enable/Disable Secure Boot function.

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

☞ Secure Boot Mode

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

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

When set to Custom, you can customize the Secure Boot settings and manually load its keys from the BIOS database.
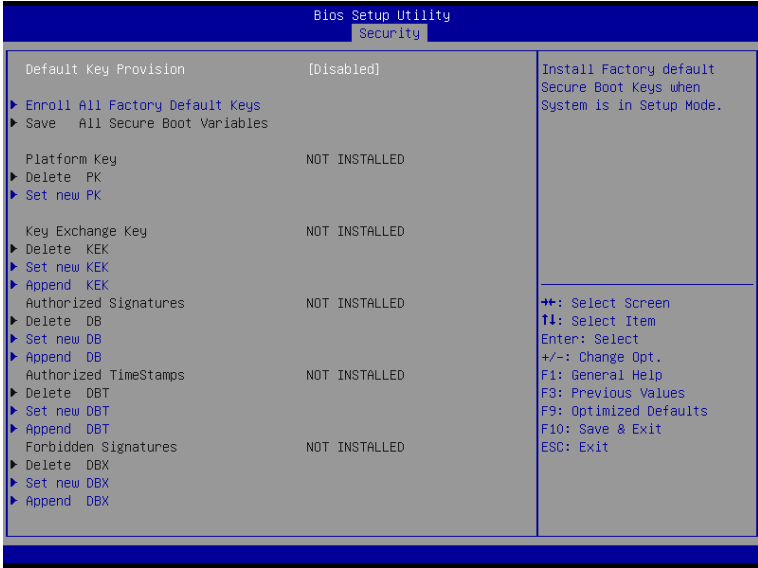
Options available: Standard/Custom. Default setting is **Custom**.

☞ Key Management(Note)

Press [Enter] for configuration of advanced items.

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

2-5-1-1 Key Management

```
                          Bios Setup Utility
                             Security

   Default Key Provision          [Disabled]                 Install Factory default
                                                             Secure Boot Keys when
 ▶ Enroll All Factory Default Keys                           System is in Setup Mode.
 ▶ Save  All Secure Boot Variables

   Platform Key                   NOT INSTALLED
 ▶ Delete  PK
 ▶ Set new PK

   Key Exchange Key               NOT INSTALLED
 ▶ Delete  KEK
 ▶ Set new KEK
 ▶ Append  KEK
   Authorized Signatures          NOT INSTALLED             �↑: Select Screen
 ▶ Delete  DB                                               ↑↓: Select Item
 ▶ Set new DB                                               Enter: Select
 ▶ Append  DB                                               +/-: Change Opt.
   Authorized TimeStamps          NOT INSTALLED             F1: General Help
 ▶ Delete  DBT                                              F3: Previous Values
 ▶ Set new DBT                                              F9: Optimized Defaults
 ▶ Append  DBT                                              F10: Save & Exit
   Forbidden Signatures           NOT INSTALLED             ESC: Exit
 ▶ Delete  DBX
 ▶ Set new DBX
 ▶ Append  DBX
```

☞ **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**.

☞ **Enroll All Factory Default Keys**

Press [Enter] to install all factory default keys.

☞ **Save All Secure Boot Variables**

Press [Enter] to save all Secure Boot Variables.

☞ **Platform Key (PK)**

Display the status of Platform Key.

☞ **Delete the PK**

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

☞ **Set new PK File**

Press [Enter] to configure a new PK.

☞ **Key Exchange Key Database (KEK)**

Display the status of Platform Key.

☞ **Delete KEK**

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

☞ **Set new KEK**

Press [Enter] to configure a new KEK.

☞ **Append Var to KEK**

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

☞ **Authorized Signature Database (DB)**

　Display the status of Authorized Signature Database.

☞ **Delete DB**

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

☞ **Set new DB**

　Press [Enter] to configure a new db.

☞ **Append aVar to DB**

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

☞ **Forbidden Signature Database (DBX)**

　Display the status of Forbidden Signature Database.

☞ **Delete the DBX**

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

☞ **Set DBX from File**
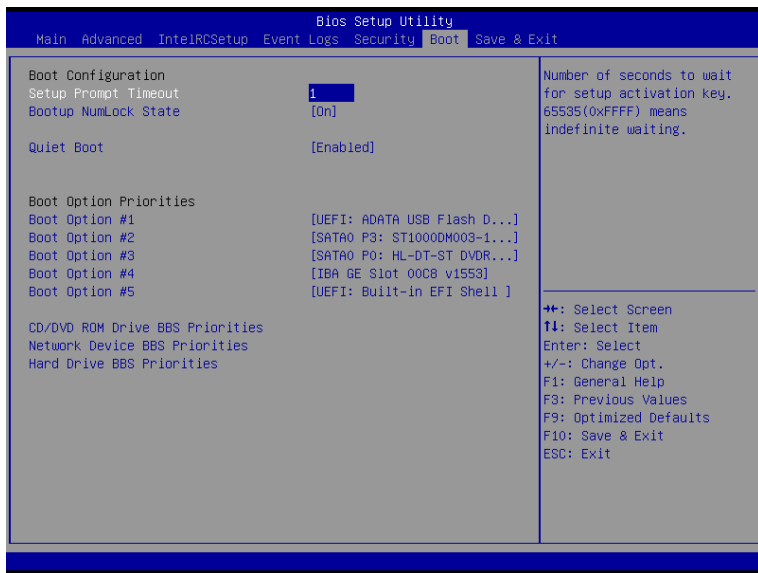
　Press [Enter] to configure a new dbx.

☞ **Append Var to DBX**

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

2-6   Boot Menu

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

```
                            Bios Setup Utility
     Main  Advanced  IntelRCSetup  Event Logs  Security  Boot  Save & Exit

     Boot Configuration                                    Number of seconds to wait
     Setup Prompt Timeout              1                   for setup activation key.
     Bootup NumLock State              [On]                65535(0xFFFF) means
                                                           indefinite waiting.
     Quiet Boot                        [Enabled]


     Boot Option Priorities
     Boot Option #1                    [UEFI: ADATA USB Flash D...]
     Boot Option #2                    [SATA0 P3: ST1000DM003-1...]
     Boot Option #3                    [SATA0 P0: HL-DT-ST DVDR...]
     Boot Option #4                    [IBA GE Slot 00C8 v1553]
     Boot Option #5                    [UEFI: Built-in EFI Shell ]
                                                           ↔: Select Screen
     CD/DVD ROM Drive BBS Priorities                       ↑↓: Select Item
     Network Device BBS Priorities                         Enter: Select
     Hard Drive BBS Priorities                             +/-: Change Opt.
                                                           F1: General Help
                                                           F3: Previous Values
                                                           F9: Optimized Defaults
                                                           F10: Save & Exit
                                                           ESC: Exit
```

☞ **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 Option Priorities**

☞ **Boot Option #1/#2/#3#4#5**

   Press Enter to configure the boot priority.
   By default, the server searches for boot devices in the following secquence:

   1.   UEFI device.
   2.   Primary Hard drive.
   3.   Secondary Hard drive.
   4.   Network device.
   5.   USB device

   ☞ **CD/DVD ROM Drive BBS Priorities**

     Press Enter to configure the boot priority.

   ☞ **Network Device BBS Priorities**
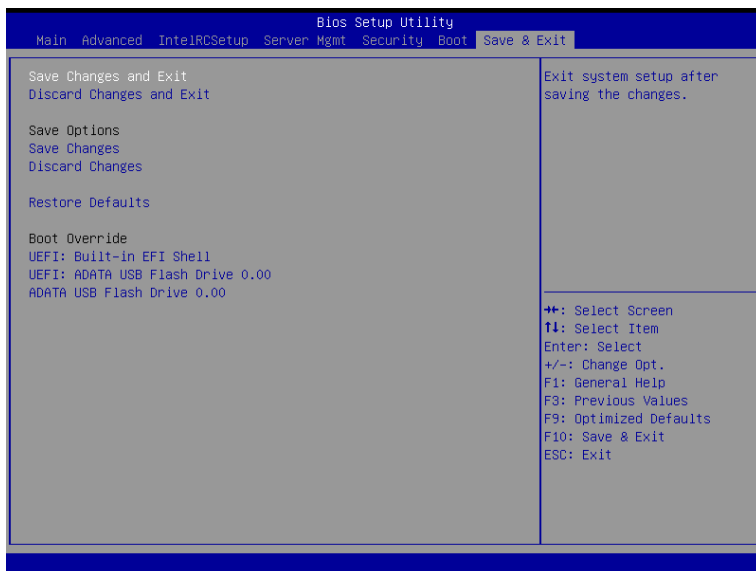
     Press Enter to configure the boot priority.

   ☞ **Hard Drive BBS Priorities**

     Press Enter to configure the boot priority.

2-7 Save & Exit Menu

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

```
                          Bios Setup Utility
     Main  Advanced  IntelRCSetup  Server Mgmt  Security  Boot  Save & Exit

  Save Changes and Exit                              Exit system setup after
  Discard Changes and Exit                           saving the changes.

  Save Options
  Save Changes
  Discard Changes

  Restore Defaults

  Boot Override
  UEFI: Built-in EFI Shell
  UEFI: ADATA USB Flash Drive 0.00                   →←: Select Screen
  ADATA USB Flash Drive 0.00                         ↑↓: Select Item
                                                     Enter: Select
                                                     +/-: Change Opt.
                                                     F1: General Help
                                                     F3: Previous Values
                                                     F9: Optimized Defaults
                                                     F10: Save & Exit
                                                     ESC: Exit
```

☞ **Save Changes and Exit**

Saves changes made and close the BIOS setup.
Options available: Yes/No.

☞ **Discard Changes and Exit**

Discards changes made and exit the BIOS setup.
Options available: Yes/No.

☞ **Save Options**

☞ **Save Changes**

Saves changes made in the BIOS setup.
Options available: Yes/No.

☞ **Discard Changes**

Discards changes made and close the BIOS setup.
Options available: Yes/No.

☞ **Restore Defaults**

Loads the default settings for all BIOS setup parameters. Setup Defaults are quite demanding in terms of resources consumption. If you are using low-speed memory chips or other kinds of low-performance components and you choose to load these settings, the system might not function properly.
Options available: Yes/No.

☎ **Boot Override**

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

☎ **UEFI: Built-in in EFI Shell**

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

2-8   BIOS POST Codes

PEI_CORE_STARTED	0x10
PEI_CAR_CPU_INIT	0x11
// reserved for CPU 0x12 - 0x14	
PEI_CAR_NB_INIT	0x15
// reserved for NB 0x16 - 0x18	
PEI_CAR_SB_INIT	0x19
// reserved for SB 0x1A - 0x1C	
PEI_MEMORY_SPD_READ	0x1D
PEI_MEMORY_PRESENCE_DETECT	0x1E
PEI_MEMORY_TIMING	0x1F
PEI_MEMORY_CONFIGURING	0x20
PEI_MEMORY_INIT	0x21
// reserved for OEM use: 0x22 - 0x2F	
// reserved for AML use: 0x30	
PEI_MEMORY_INSTALLED	0x31
PEI_CPU_INIT	0x32
PEI_CPU_CACHE_INIT	0x33
PEI_CPU_BSP_SELECT	0x34
PEI_CPU_AP_INIT	0x35
PEI_CPU_SMM_INIT	0x36
PEI_MEM_NB_INIT	0x37
// reserved for NB 0x38 - 0x3A	
PEI_MEM_SB_INIT	0x3B
// reserved for SB 0x3C - 0x3E	
// reserved for OEM use: 0x3F - 0x4E	
PEI_DXE_IPL_STARTED	0x4F
//Recovery	
PEI_RECOVERY_AUTO	0xF0
PEI_RECOVERY_USER	0xF1
PEI_RECOVERY_STARTED	0xF2
PEI_RECOVERY_CAPSULE_FOUND	0xF3
PEI_RECOVERY_CAPSULE_LOADED	0xF4
//S3	
PEI_S3_STARTED	0xE0
PEI_S3_BOOT_SCRIPT	0xE1
PEI_S3_VIDEO_REPOST	0xE2
PEI_S3_OS_WAKE	0xE3
//DXE_STATUS_CODE	
DXE_CORE_STARTED	0x60
DXE_NVRAM_INIT	0x61

DXE_SBRUN_INIT	0x62
DXE_CPU_INIT	0x63
//reserved for CPU 0x64 - 0x67	
DXE_NB_HB_INIT	0x68
DXE_NB_INIT	0x69
DXE_NB_SMM_INIT	0x6A
//reserved for NB 0x6B - 0x6F	
DXE_SB_INIT	0x70
DXE_SB_SMM_INIT	0x71
DXE_SB_DEVICES_INIT	0x72
//reserved for SB 0x73 - 0x77	
DXE_ACPI_INIT	0x78
DXE_CSM_INIT	0x79
//reserved for AMI use: 0x7A - 0x7F	
//reserved for OEM use: 0x80 - 0x8F	
DXE_BDS_STARTED	0x90
DXE_BDS_CONNECT_DRIVERS	0x91
DXE_PCI_BUS_BEGIN	0x92
DXE_PCI_BUS_HPC_INIT	0x93
DXE_PCI_BUS_ENUM	0x94
DXE_PCI_BUS_REQUEST_RESOURCES	0x95
DXE_PCI_BUS_ASSIGN_RESOURCES	0x96
DXE_CON_OUT_CONNECT	0x97
DXE_CON_IN_CONNECT	0x98
DXE_SIO_INIT	0x99
DXE_USB_BEGIN	0x9A
DXE_USB_RESET	0x9B
DXE_USB_DETECT	0x9C
DXE_USB_ENABLE	0x9D
//reserved for AMI use: 0x9E - 0x9F	
//reserved for AML use: 0xA0	
DXE_IDE_BEGIN	0xA1
DXE_IDE_RESET	0xA2
DXE_IDE_DETECT	0xA3
DXE_IDE_ENABLE	0xA4
DXE_SCSI_BEGIN	0xA5
DXE_SCSI_RESET	0xA6
DXE_SCSI_DETECT	0xA7
DXE_SCSI_ENABLE	0xA8
DXE_SETUP_VERIFYING_PASSWORD	0xA9
//reserved for AML use: 0xAA	
DXE_SETUP_START	0xAB

DXE_SETUP_INPUT_WAIT	0xAC
DXE_READY_TO_BOOT	0xAD
DXE_LEGACY_BOOT	0xAE
DXE_EXIT_BOOT_SERVICES	0xAF
RT_SET_VIRTUAL_ADDRESS_MAP_BEGIN	0xB0
RT_SET_VIRTUAL_ADDRESS_MAP_END	0xB1
DXE_LEGACY_OPROM_INIT	0xB2
DXE_RESET_SYSTEM	0xB3
DXE_USB_HOTPLUG	0xB4
DXE_PCI_BUS_HOTPLUG	0xB5
DXE_NVRAM_CLEANUP	0xB6
DXE_CONFIGURATION_RESET	0xB7
//reserved for AMI use: 0xB8 - 0xBF	
//reserved for OEM use: 0xC0 - 0xCF	
//PEI_STATUS_CODE	
//Errors	
//Regular boot	
PEI_MEMORY_INVALID_TYPE	0x50
PEI_MEMORY_INVALID_SPEED	0x50
PEI_MEMORY_SPD_FAIL	0x51
PEI_MEMORY_INVALID_SIZE	0x52
PEI_MEMORY_MISMATCH	0x52
PEI_MEMORY_NOT_DETECTED	0x53
PEI_MEMORY_NONE_USEFUL	0x53
PEI_MEMORY_ERROR	0x54
PEI_MEMORY_NOT_INSTALLED	0x55
PEI_CPU_INVALID_TYPE	0x56
PEI_CPU_INVALID_SPEED	0x56
PEI_CPU_MISMATCH	0x57
PEI_CPU_SELF_TEST_FAILED	0x58
PEI_CPU_CACHE_ERROR	0x58
PEI_CPU_MICROCODE_UPDATE_FAILED	0x59
PEI_CPU_NO_MICROCODE	0x59
PEI_CPU_INTERNAL_ERROR	0x5A
PEI_CPU_ERROR	0x5A
PEI_RESET_NOT_AVAILABLE	x5B
//reserved for AMI use: 0x5C - 0x5F	
//Recovery	
PEI_RECOVERY_PPI_NOT_FOUND	0xF8
PEI_RECOVERY_NO_CAPSULE	0xF9
PEI_RECOVERY_INVALID_CAPSULE	0xFA
//reserved for AMI use: 0xFB - 0xFF	

//S3 Resume	
PEI_MEMORY_S3_RESUME_FAILED	0xE8
PEI_S3_RESUME_PPI_NOT_FOUND	0xE9
PEI_S3_BOOT_SCRIPT_ERROR	0xEA
PEI_S3_OS_WAKE_ERROR	0xEB
//reserved for AMI use: 0xEC - 0xEF	
// DXE_STATUS_CODE	
DXE_CPU_ERROR	0xD0
DXE_NB_ERROR	0xD1
DXE_SB_ERROR	0xD2
DXE_ARCH_PROTOCOL_NOT_AVAILABLE	0xD3
DXE_PCI_BUS_OUT_OF_RESOURCES	0xD4
DXE_LEGACY_OPROM_NO_SPACE	0xD5
DXE_NO_CON_OUT	0xD6
DXE_NO_CON_IN	0xD7
DXE_INVALID_PASSWORD	0xD8
DXE_BOOT_OPTION_LOAD_ERROR	0xD9
DXE_BOOT_OPTION_FAILED	0xDA
DXE_FLASH_UPDATE_FAILED	0xDB
DXE_RESET_NOT_AVAILABLE	0xDC
//reserved for AMI use: 0xDE - 0xDF	

2-9   BIOS POST Beep code

2-9-1   PEI Beep Codes

# of Beeps	Description
1	Memory not Installed.
1	Memory was installed twice (InstallPeiMemory routine in PEI Core called twice)
2	Recovery started
3	DXEIPL was not found
3	DXE Core Firmware Volume was not found
4	Recovery failed
4	S3 Resume failed
7	Reset PPI is not available

2-9-2   DEX Beep Codes
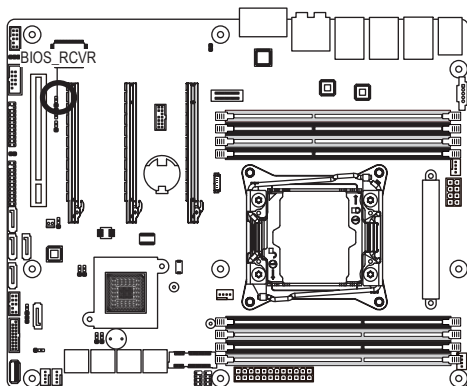
# of Beeps	Description
1	Invalid password
4	Some of the Architectural Protocols are not available
5	No Console Output Devices are found
5	No Console Input Devices are found
6	Flash update is failed
7	Reset protocol is not available

2-10   BIOS Recovery Instruction
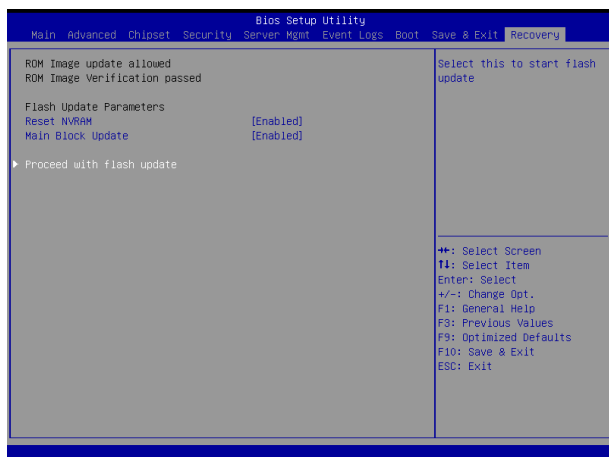
The system has an embedded recovery technique. In the event that the BIOS becomes corrupt the boot block can be used to restore the BIOS to a working state. To restore your BIOS, please follow the instructions listed below:

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.

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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.