GIGABYTE™

MW51-HP0

Intel® Socket LGA2066 processor motherboard

User Manual

Rev. 1.0

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Documentation Classifications

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

- User Manual: detailed information & steps about the installation, configuration and use this product (e.g. motherboard, server barebones), covering hardware and BIOS.
- User Guide: detailed information about the installation & use of an add-on hardware or software component (e.g. BMC firmware, rail-kit) compatible with this product.
- Quick Installation Guide: a short guide with visual diagrams that you can reference easily for installation purposes of this product (e.g. motherboard, server barebones).

Please see the support section of the online product page to check the current availability of these documents

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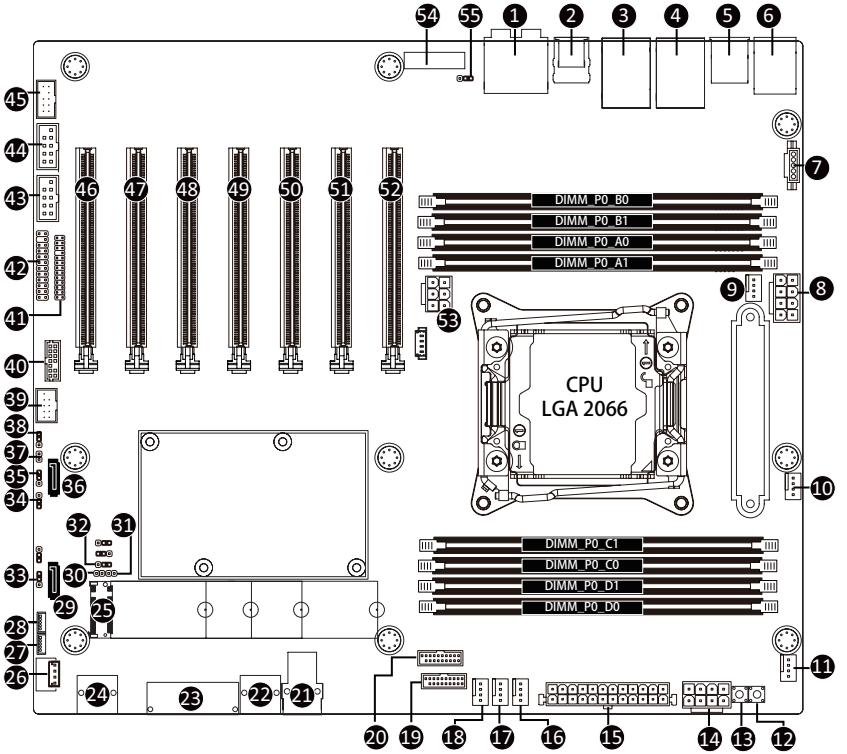
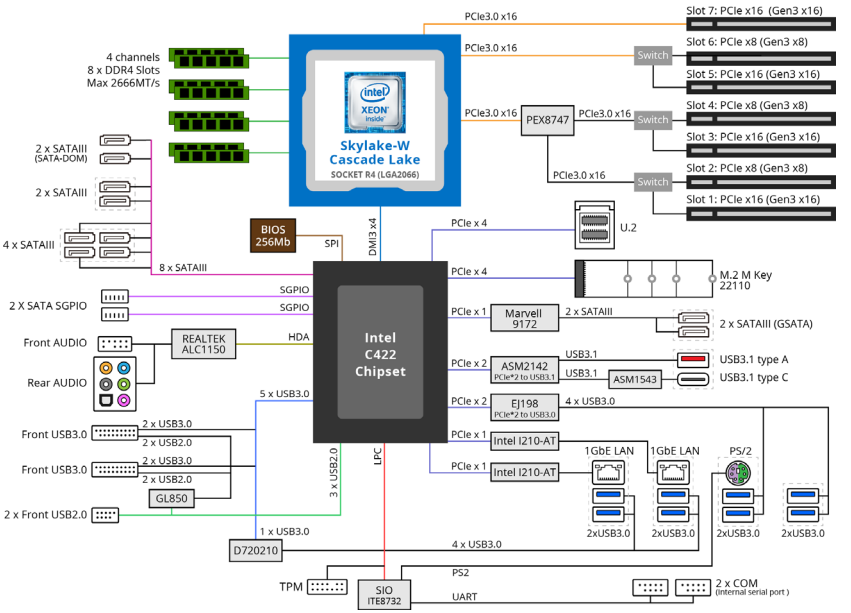
MW51-HP0 Motherboard Layout



Item	Code	Description
1	HD_AUDIO	Audio Connectors
2	RUSB31_1/RUSB31_2	USB 3.1 Type-C Connector (Bottom)/USB 3.1 Type-A Connector (Top)
3	USB3_LAN1	GbE Ethernet LAN port #1 (Top) /USB 3.0 Ports (Bottom)
4	USB3_LAN2	GbE Ethernet LAN port #2 (Top) /USB 3.0 Ports (Bottom)
5	RUSB3_1	USB 3.0 Ports
6	PS2_USB3_1	PS/2 Keyboard Mouse Connector (Top) /USB 3.0 Ports (Bottom)
7	PMBUS	PMBus Connector
8	P12V_AUX1	2x4 Pin 12V Power Connector (For CPU & DDR12V input)
9	SYS_FAN1	System Fan Connector #1
10	CPU0_FAN	CPU Fan Connector
11	SYS_FAN2	System Fan Connector #2
12	RST1	Reset Button
13	PWR1	Power Button
14	P12V_AUX2	2x4 Pin 12V Power Connector (For CPU & DDR12V input)
15	ATX	2x12 Pin Main Power Connector

Item	Code	Description
16	SYS_FAN3	System Fan Connector #3
17	SYS_FAN4	System Fan Connector #4
18	SYS_FAN5	System Fan Connector #5
19	F_USB3_1	Front USB 3.0 Header
20	F_USB3_2	Front USB 3.0 Header
21	U2_1	Mini-SAS HD Connector (PCIe 8Gb/s Signal)
22	GSATA_0_1	SATA III 6Gb/s Connectors
23	SATA_X4	SATA III 6Gb/s Connectors
24	SATA_2_3	SATA III 6Gb/s Connectors
25	M2_M	M.2 slot (PCIe Gen3 x4, Support NGFF-2210, M-Key)
26	SW_RAID	SATA RAID Upgrade Key
27	SATA_SGP1	SATA SGPIO Connector #1
28	SATA_SGP2	SATA SGPIO Connector #2
29	SATA0	SATA III 6Gb/s Connector #0 (SATA DOM Support)
30	EXT_THRM1	Connects the thermistor cable for internal temperature detection
31	EXT_THRM2	Connects the thermistor cable for internal temperature detection
32	BIOS_RCVR	BIOS Recovery Jumper
33	SATA_DOM0	SATA DOM Support Jumper for SATA Port #0
34	BIOS_PWD	Clear Supervisor Password Jumper
35	SATA_DOM1	SATA DOM Support Jumper for SATA Port #1
36	SATA1	SATA III 6Gb/s connector #1 (SATA DOM Support)
37	CASE_OPEN	Case Open Intrusion alert Header
38	ME_UPDATE	Force ME Update Jumper
39	F_USB2	Front USB 2.0 Header
40	TPM	TPM Module Connector
41	BP_1	HDD Back Plane Board Header
42	FP_1	Front Panel Header
43	COM1	Serial Port Cable Connector #1
44	COM2	Serial Port Cable Connector #2
45	F_AUDIO	Front Audio Header
46	PCIE_1	PCIe Express x16 Slot #1
47	PCIE_2	PCI Express x8 Slot #2 (PCIe x8 Signal)
48	PCIE_3	PCIe Express x16 Slot #3
49	PCIE_4	PCI Express x8 Slot #4 (PCIe x8 Signal)
50	PCIE_5	PCIe Express x16 Slot #5
51	PCIE_6	PCI Express x8 Slot #6 (PCIe x8 Signal)
52	PCIE_7	PCIe Express x16 Slot #7
53	P12V_AUX3	2x3 Pin 12V Power Connector (For PCIe Slot 12V Input)
54	BAT	Battery Socket
55	CLR_CMOS	Clear CMOS Jumper

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	◆ Intel® Xeon® W-2200 and W-2100 Processor Family ◆ Processor TDP up to 165W ◆ 1 x LGA 2066 ◆ Socket R4 ◆ Mounting pitch: square ILM (80x80mm)
Chipset	◆ Intel® C422 Express Chipset
Memory	◆ 8 x DIMM slots ◆ DDR4 memory module supported only ◆ Quad channel memory architecture ◆ RDIMM modules up to 64GB supported ◆ LRDIMM modules up to 128GB supported ◆ 1.2V modules: 2666/2400 MHz NOTE: When installing memory modules, make sure to begin with the first socket of each channel, such as DIMM_P0_A0, DIMM_P0_B0, DIMM_P0_C0, DIMM_P0_D0
Audio	◆ Realtek® ALC1150 HD audio codec ◆ Supports 7.1 channel configurations
LAN	◆ 2 x GbE LAN ports (Intel® I210)
Expansion Slots	◆ Slot_7: 1 x PCIe x16 (Gen3 x16 bus) slot from CPU0 ◆ Slot_6: 1 x PCIe x16 (Gen3 x0 or x8 bus) slot ◆ Slot_5: 1 x PCIe x16 (Gen3 x16 or x8 bus) slot, shared with slot_6 ◆ Slot_4: 1 x PCIe x16 (Gen3 x0 or x8 bus) slot ◆ Slot_3: 1 x PCIe x16 (Gen3 x16 or x8 bus) slot, shared with slot_4 ◆ Slot_2: 1 x PCIe x16 (Gen3 x0 or x8 bus) slot ◆ Slot_1: 1 x PCIe x16 (Gen3 x16 or x8 bus) slot, shared with slot_2 ◆ 1 x M.2 slot: - M-key - PCIe Gen3 x4 - Supports NGFF-2242/2260/2280/22110 cards ◆ Support NVIDIA® SLI™ and AMD® CrossFireX™ technologies NOTE: Graphic card requests UEFI-ready
Storage Interface	◆ 8 x SATA III 6Gb/s ports with 2 x SATA DOM supported ◆ 2 x SATA III 6Gb/s ports (Marvell 88SE9172® controller)
RAID	◆ Intel® SATA RAID 0/1/10/5

Internal I/O Connectors	◆ 1 x 24-pin ATX main power connector ◆ 2 x 8-pin ATX 12V power connector for CPU and DDR 12V input ◆ 1 x 6-pin power connector for PCIe slots 12V input ◆ 1 x CPU fan header ◆ 5 x System fan headers ◆ 2 x USB 3.0 headers for 4 ports ◆ 1 x USB 2.0 headers for 2 ports ◆ 1 x Front audio header ◆ 1 x PMBus connector ◆ 1 x Clear CMOS jumper ◆ 10 x SATA III 6Gb/s ports ◆ 2 x SATA DOM jumpers ◆ 2 x SATA DOM SGPIO connectors ◆ 1 x ME update jumper ◆ 1 x M.2 slot ◆ 1 x U.2 connector ◆ 1 x Front panel header ◆ 1 x Back plane board header ◆ 2 x COM headers ◆ 1 x TPM header ◆ 1 x VROC connector ◆ 1 x BIOS recovery jumper ◆ 1 x Buzzer
Rear I/O Connectors	◆ 1 x PS/2 ◆ 8 x USB 3.0 ◆ 2 x USB 3.1 in Type-A(red) and Type-C(red) (5V/3A) ◆ 2 x RJ45 ◆ 5 x Audio jacks ◆ 1 x Optical S/PDIF-Out
TPM	◆ 1 x TPM header with LPC interface ◆ Optional TPM2.0 kit: CTM000
Form Factor	◆ CEB ◆ 304.8W x 266.7D (mm)
GIGABYTE reserves the right to make any changes to the product specifications and product-related information without prior notice.	

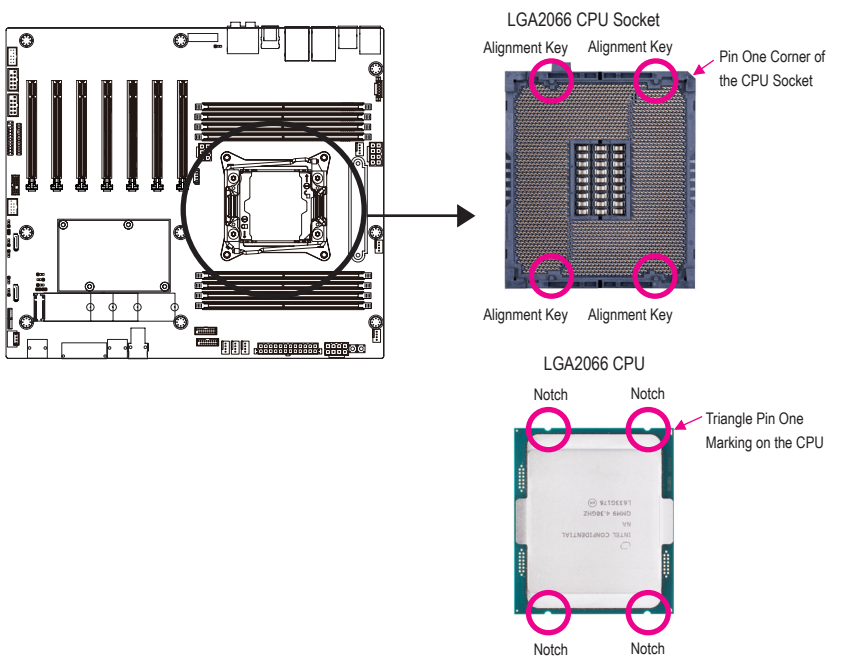
1-3 Installing the CPU and CPU Cooler

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

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

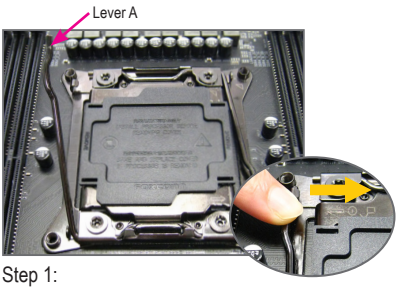
1-3-1 Installing the CPU

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



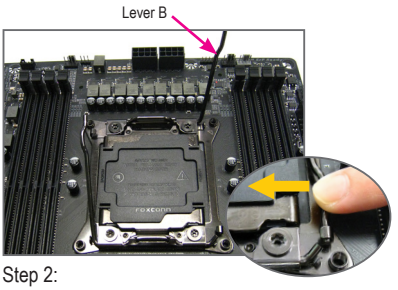
B. Follow the steps below to correctly install the CPU into the motherboard CPU socket.

- **Before installing the CPU, make sure to turn off the computer and unplug the power cord from the power outlet 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.**



Step 1:

Push the lever closest to the "unlock" mark "" (below referred as lever A) down and away from the socket to release it.

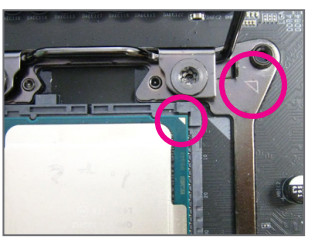


Step 2:

Push the lever closest to the "lock" mark "" (below referred as lever B) down and away from the socket. Then lift the lever.

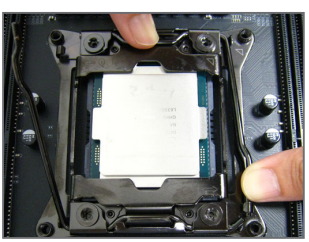
Step 3:

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.



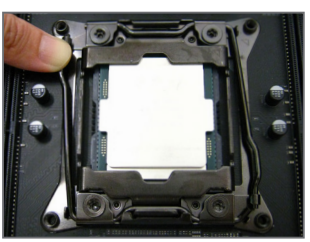
Step 4:

Hold the CPU with your thumb and index fingers. Align the CPU pin one mark (triangle) with the triangle mark on metal socket frame and carefully insert the CPU into the socket vertically.



Step 5:

Once the CPU is properly inserted, carefully replace the load plate. Then secure lever B under its retention tab.

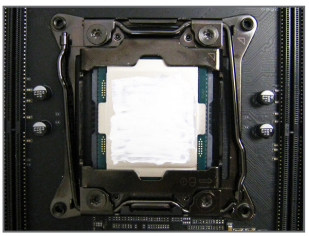


Step 6:

Finally, secure lever A under its retention tab to complete the installation of the CPU. Then carefully remove the plastic cover. Save it properly and always replace it when the CPU is not installed.

1-3-2 Installing the CPU Cooler

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

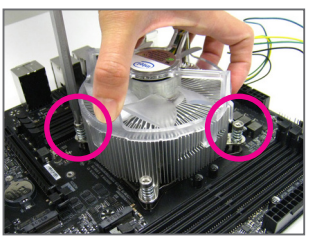


Step 1:

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

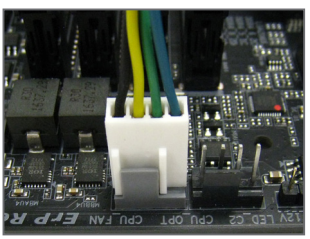
Step 2:

Place the cooler atop the CPU, aligning the four mounting screws with the mounting holes on the ILM.



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.

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

1-4 Installing the Memory

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

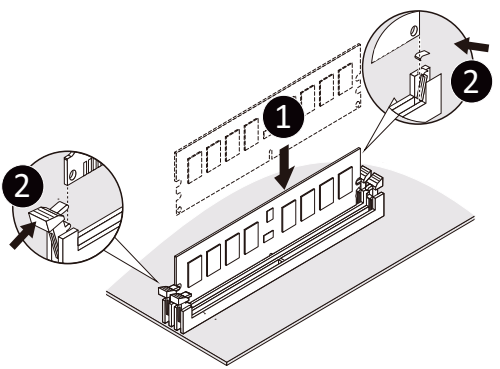
- Make sure that the motherboard supports the memory. It is recommended to use memory of the same capacity, brand, speed, and chips.
- Always turn off the computer and unplug the power cord from the power outlet before installing the memory to prevent hardware damage.
- Memory modules have a foolproof 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 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.



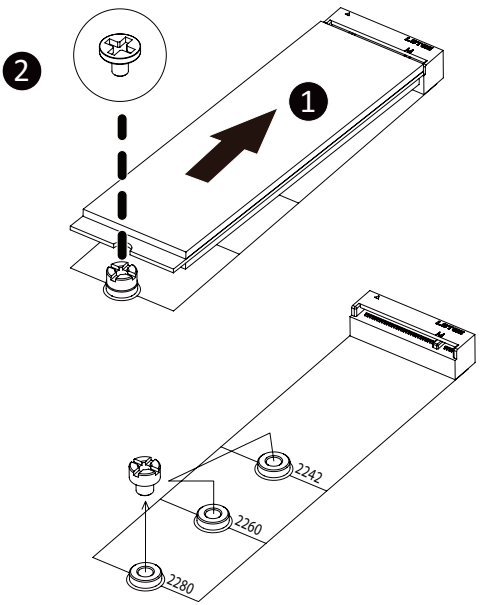
Type	Ranks Per DIMM and Data Width	DIMM Capacity (GB)		Speed (MT/s); Voltage (V) Slot Per Channel(SPC) and DIMM Per Channel (DPC)		
				1 Slot per Channel	2 Slots per Channel	
		DIMM Density		1DPC	1DPC	2DPC
		4Gb	8Gb	1.2V	1.2V	1.2V
RDIMM	SRx4	4GB	8GB	2666	2666	2666
RDIMM	SRx8	8GB	16GB			
RDIMM	DRx8	8GB	16GB			
RDIMM	DRx4	16GB	32GB			
LRDIMM	QRx4	32GB	64GB			

- DIMM must be populated in sequential alphabetic order, starting with bank A.
- When only one DIMM is used, it must be populated in memory slot A0.

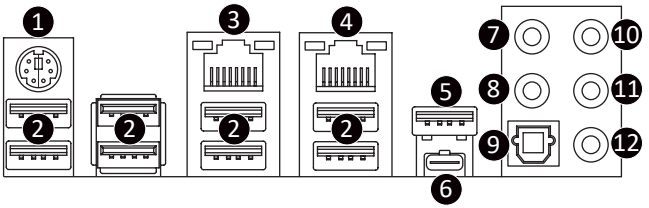
1-5 Installing the M.2 SSD Module

Follow the steps below to install a M.2 SSD module on your motherboard.

Step1. Insert the M.2 SSD module into the slot.
Step2. Secure it with the screw, tightening as necessary to fasten the M.2 SSD module in place.



1-6 Back Panel Connectors



1 PS/2 Keyboard mouse connector

Connects to a PS/2 mouse or keyboard.

2 USB 3.0 Ports

The USB port supports the USB 3.0 specification. Use this port for USB devices.

3 RJ-45 LAN Port #2

The Gigabit Ethernet LAN port provides Internet connection at up to 1 Gbps data rate. See the section below for a description of the states of the LAN port LEDs.

4 RJ-45 LAN Port #1

The Gigabit Ethernet LAN port provides Internet connection at up to 1 Gbps data rate. See the section below for a description of the states of the LAN port LEDs.

5 USB 3.1 Type-A Port

The USB 3.1 Type-A port supports the USB 3.1 Gen 1/2 specification and is compatible to the USB 2.0 specification. Use this port for USB devices.

6 USB 3.1 Type-C Port

The reversible USB port supports the USB 3.1 Gen 1/2 specification and is compatible to the USB 2.0 specification. Use this port for USB devices.

7 Center/Subwoofer Speaker Out Jack (Orange)

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

8 Rear Speaker Out Jack (Black)

Use this audio jack to connect Rear speakers in a 4/5.1/7.1-channel audio configuration.

9 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.

10 Line In Jack (Blue)

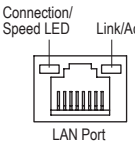
The default Line in jack. Use this audio jack for line in devices such as an optical drive, walkman, etc

11 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.

12 Mic In (Pink)

The default MIC In jack. A microphone can be connected to the MIC In jack.



Connection/Speed LED:

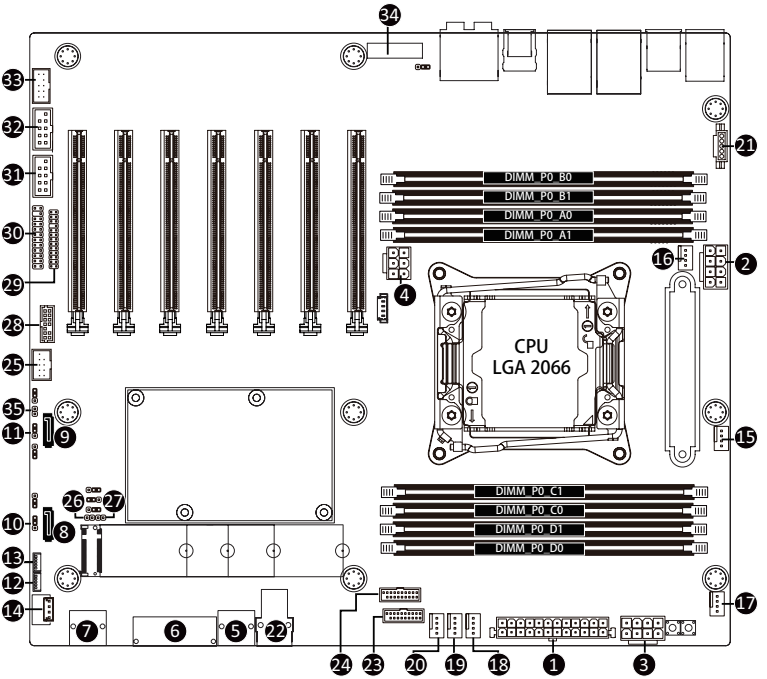
State	Description
Yellow On	1 Gbps data rate
Green On	100 Mbps data rate
Off	10 Mbps data rate

Activity LED:

State	Description
Blinking	Data transmission or receiving is occurring
Off	No data transmission or receiving is occurring

- When removing the cable connected to a back panel connector, first remove the cable from your device and then remove it from the motherboard.
- When removing the cable, pull it straight out from the connector. Do not rock it side to side to prevent an electrical short inside the cable connector.

1-7 Internal Connectors



1)	ATX	19)	SYS_FAN4
2)	P12V_AUX1 (for CPU & DDR 12V Input)	20)	SYS_FAN5
3)	P12V_AUX2 (for CPU & DDR 12V Input)	21)	PMBUS
4)	P12V_AUX3 (for PCIe Slot 12V Input)	22)	U2_1
5)	GSATA_0_1	23)	F_USB3_1
6)	SATA_x4	24)	F_USB3_2
7)	SATA_2_3	25)	F_USB2
8)	SATA0 (Support SATA DOM Power)	26)	EXT_THRM1
9)	SATA1 (Support SATA DOM Power)	27)	EXT_THRM2
10)	SATA_DOM0 (for SATA0)	28)	TPM
11)	SATA_DOM1 (for SATA1)	29)	BP_1
12)	SATA_SGP1	30)	FP_1
13)	SATA_SGP2	31)	COM1
14)	SW_RAID	32)	COM2
15)	CPU0 _FAN	33)	F_AUDIO
16)	SYS_FAN1	34)	BAT
17)	SYS_FAN2	35)	CASE_OPEN
18)	SYS_FAN3		

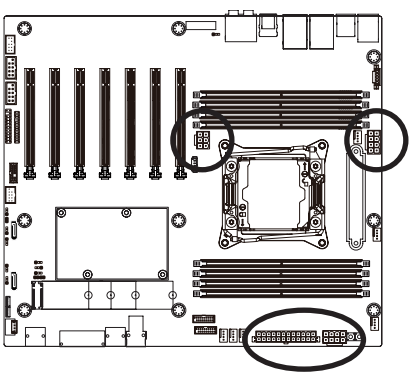
Read the following guidelines before connecting external devices:

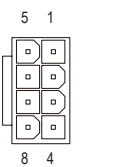
- First make sure your devices are compliant with the connectors you wish to connect.
- Before installing the devices, be sure to turn off the devices and your computer. Unplug the power cord from the power outlet to prevent damage to the devices.
- After installing the device and before turning on the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

1/2/3/4) ATX/P12V_AUX1/P12V_AUX2/P12V_AUX3 (2x12 Main Power Connector and 2x4/2x3 12V Power Connector)

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

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/ P12V_AUX2

Pin No.	Definition
1	GND
2	GND
3	GND
4	GND
5	+12V
6	+12V
7	+12V
8	+12V

ATX

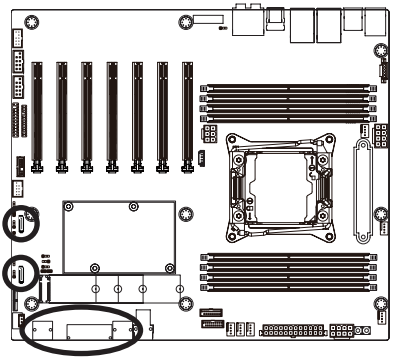
Pin No.	Definition	Pin No.	Definition
1	3.3V	13	3.3V
2	3.3V	14	-12V
3	GND	15	GND
4	+5V	16	PS_ON
5	GND	17	GND
6	+5V	18	GND
7	GND	19	GND
8	Power Good	20	-5V
9	5VSB	21	+5V
10	+12V	22	+5V
11	+12V	23	+5V
12	3.3V	24	GND

P12V_AUX3

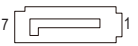
Pin No.	Definition
1	+12V_PCIE
2	+12V_PCIE
3	+12V_PCIE
4	GND
5	GND
6	GND

5/6/7/8/9) GSATA_0_1/SATA_x4/SATA_2_3/SATA0/SATA1 (SATA 6Gb/s Connectors)

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



GSATA_0_1/SATA_x4/SATA_2_3

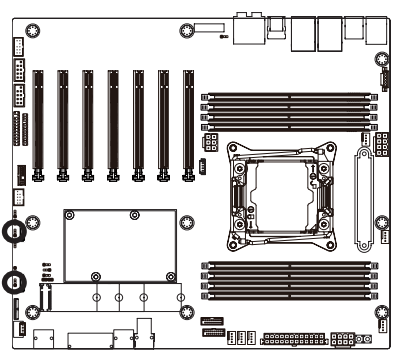


SATA0/SATA1
(Support SATA DOM Power)

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

10/11) SATA_DOM0/ SATA_DOM1 Power Jumpers

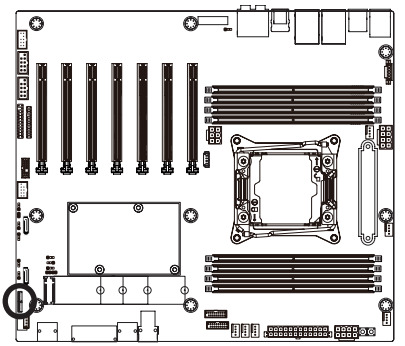
SATA-DOM (Disk on Module) is available to allow for standalone boot and diagnostics direct through SATA connections on the board.



Pin No.	Definition
1	P5V for SATA DOM
2	5V for SATA DOM
3	GND (Default)

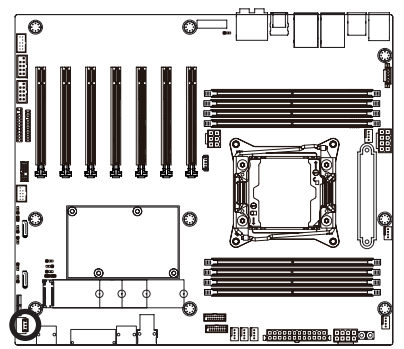
12/13) SATA_SGP1/ SATA_SGP2 (SATA SGPIO) Connector

Serial General Purpose Input/Output (SGPIO) is a communication method used between a host bus adapter (HBA) and a main board.



Pin No.	Definition
1	SGPIO_DATAOUT
2	GND
3	SGPIO_DATAIN
4	SGPIO_LOAD
5	SGPIO_CLOCK

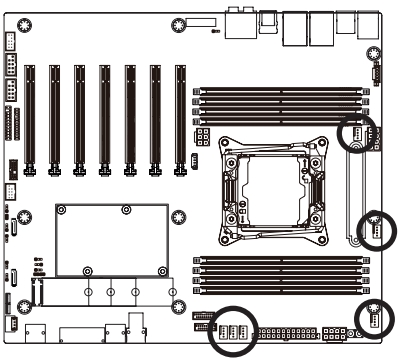
14) SW_RAID (SATA RAID Upgrade Key)



Pin No.	Definition
1	GND
2	P_3V3_AUX pull high
3	GND
4	RAID_KEY

15/16/17/18/19/20) CPU0_FAN/SYS_FAN1/SYS_FAN2/SYS_FAN3/SYS_FAN4/SYS_FAN5 (CPU Fan/System Fan Headers)

The motherboard has one 4-pin CPU fan header (CPU_FAN), and two 4-pin (SYS_FAN) 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.

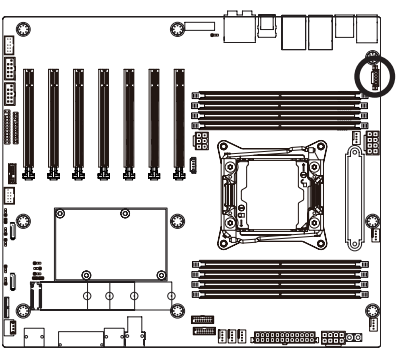


Pin No.	Definition
1	GND
2	+12V
3	Sense
4	Speed Control

- 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.

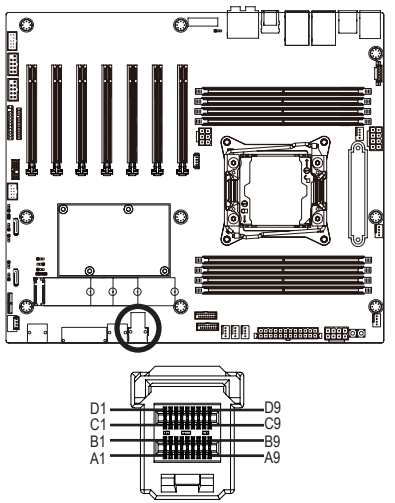
21) PMBus Connector

The Power Management Bus (PMBus) is a variant of the System Management Bus (SMBus) which is targeted at digital management of power supplies.



Pin No.	Definition
1	PMBus Clock
2	PMBus Data
3	PMBus Alert
4	GND
5	3.3V Sense

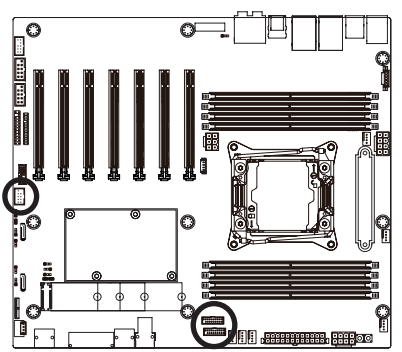
22) U2_1 (U.2 Connector/Support PCIe 8Gb/s Signal)



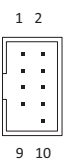
Pin No.	Definition	Pin No.	Definition
A1	100M REF CLK+	C1	NC
A2	100M REF CLK-	C2	NC
A3	GND	C3	GND
A4	PERp1	C4	PETp1
A5	PERn1	C5	PETn1
A6	GND	C6	GND
A7	PERp3	C7	PETp3
A8	PERn3	C8	PETn3
A9	GND	C9	GND
B1	PREST#	D1	SMB DATA
B2	GND	D2	SMB CLK
B3	GND	D3	GND
B4	PERp0	D4	PETp0
B5	PERn0	D5	PETn0
B6	GND	D6	GND
B7	PERp2	D7	PETp2
B8	PERn2	D8	PETn2
B9	GND	D9	GND

23/24/25) F_USB3_1/F_USB3_2/ F_USB2 (USB 3.0/ 2.0 Connectors)

The connectors conform to USB 2.0/ 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.



USB 2.0 Connector



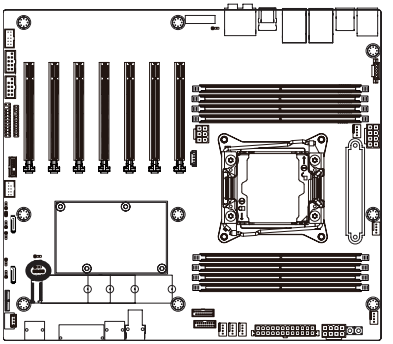
Pin No.	Definition
1	Power (5V)
2	Power (5V)
3	USB DX-
4	USB DY-
5	USB DX+
6	USB DY+
7	GND
8	GND
9	No Pin
10	No Connect

USB 3.0 Connector

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

26/27) EXT_THRM1/EXT_THRM2 ((Temperature Sensor Headers)

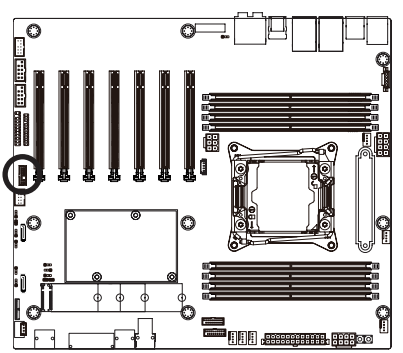
Connect the thermistor cables to the headers for temperature detection.

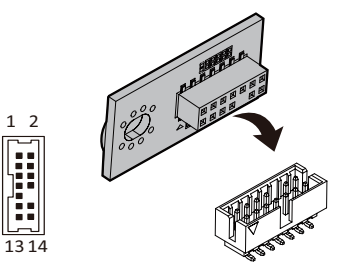


Pin No.	Definition
1	SENSOR IN
2	GND

28) TPM (Trusted Platform Module Connector)

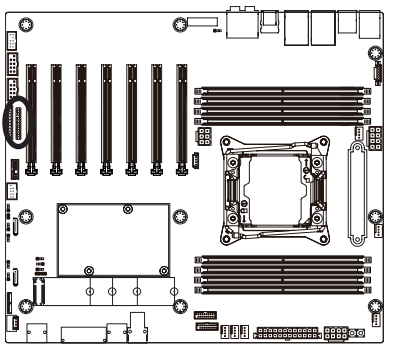
Trusted Platform Module (TPM) is an international standard for a secure cryptoprocessor, a dedicated microcontroller designed to secure hardware through integrated cryptographic keys.

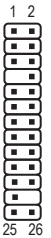




Pin No.	Definition	Pin No.	Definition
1	Clock	8	No Connect
2	P_3V3_AUX	9	LPC_LAD_2
3	LPC_RST	10	No Pin
4	P3V3	11	LPC_LAD_3
5	LPC_LAD_0	12	GND
6	IRQ_SERIAL	13	LPC_FRAME_N
7	LPC_LAD_1	14	GND

29) BP_1 (HDD Backplane Board Header)

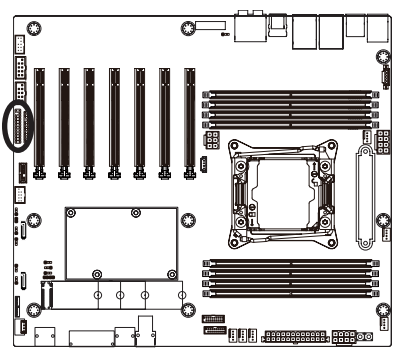




Pin No.	Definition	Pin No.	Definition
1	No Connect	2	No Connect
3	No Connect	4	Fan Gate
5	No Connect	6	GND
7	Key Pin	8	Reset
9	GND	10	BP_LED_A_N
11	BP_LED_G_N	12	GND
13	No Connect	14	No Connect
15	GND	16	SMB_BP_DATA
17	GND	18	SMB_BP_CLK
19	P_3V3_AUX	20	No Connect
21	P_3V3_AUX	22	No Connect
23	GND	24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

30) FP_1 (Front Panel Header)

Connect the power switch, reset switch, speaker, chassis intrusion switch/sensor and system status indicator on the chassis to this header according to the pin assignments below. Note the positive and negative pins before connecting the cables.

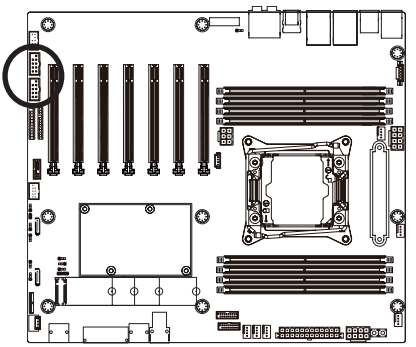


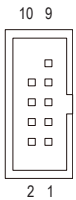
Pin No.	Definition	Pin No.	Definition
1	Power LED+	13	GND
2	5V Standby	14	LAN1 Link LED-
3	No Pin	15	Reset Button
4	ID LED+	16	SMBus Data
5	Power LED-	17	GND
6	ID LED-	18	SMBus Clock
7	HDD LED+	19	No Connect
8	System Status LED+	20	Case Open
9	HDD LED-	21	GND
10	System Status LED-	22	LAN2 Active LED+
11	Power Button	23	NMI Switch
12	LAN1 Active LED+	24	LAN2 Link LED-

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 etc. When connecting your chassis front panel module to this header, make sure the wire assignments and the pin assignments are matched correctly.

31/32) COM1/COM2 (Serial Port Cable Connector)

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

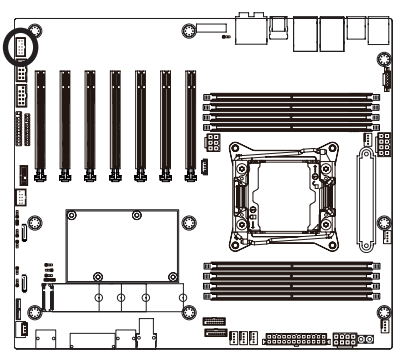


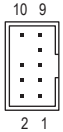


Pin No.	Definition
1	NDCD-
2	NSIN
3	NSOUT
4	NDTR
5	GND
6	NDSR-
7	NRTS-
8	NCTS-
9	NRI-
10	No Pin

33) F_AUDIO (Front Panel Audio Header)

The front panel audio header supports High Definition audio (HD). 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.



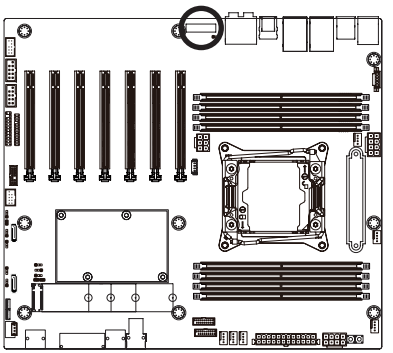


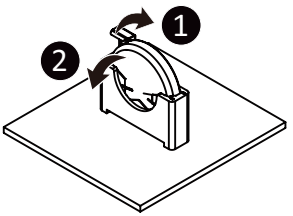
Pin No.	Definition
1	MIC2-L
2	AUD_GND
3	MIC2-R
4	FP_AUDIO_DET
5	LINE2-R-
6	MIC2-JD
7	FRONT-IO-SENSE
8	KEY
9	LINE2-L
10	LINE2-JD

Some chassis provide a front panel audio module that has separated connectors on each wire instead of a single plug. For information about connecting the front panel audio module that has different wire assignments, please contact the chassis manufacturer

34) BAT (Battery Scoket)

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.

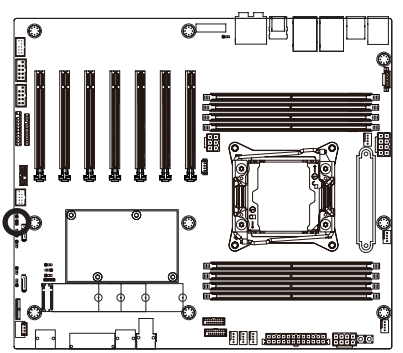




- Always turn off your computer and unplug the power cord before replacing the battery.
- Replace the battery with an equivalent one. Danger of explosion if the battery is replaced with an incorrect model.
- Contact the place of purchase or local dealer if you are not able to replace the battery by yourself or uncertain about the battery model.
- Used batteries must be handled in accordance with local environmental regulations.

35) CASE_OPEN (Case Open Intrusion Alert Header)

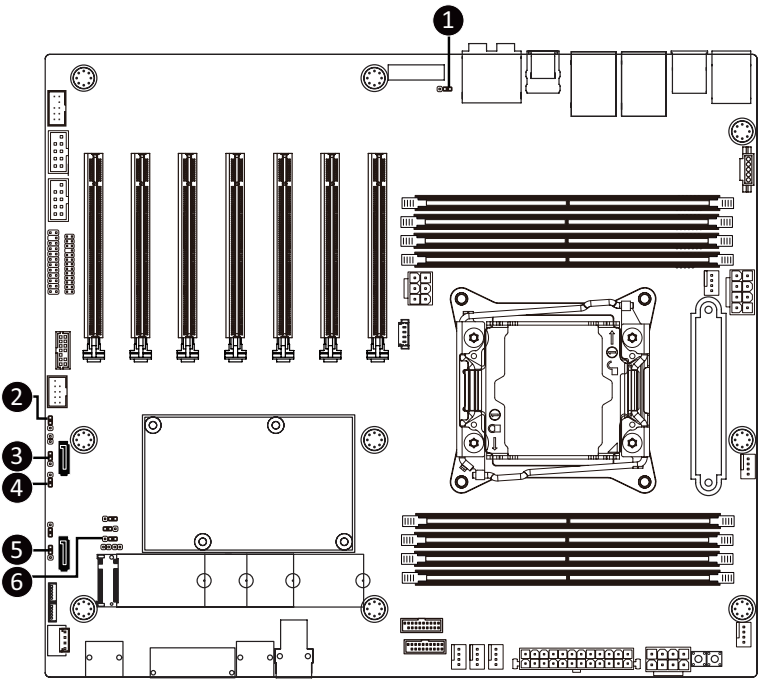
This motherboard provides a chassis detection feature that detects if the chassis cover has beenremoved. This function requires a chassis with chassis intrusion detection design.



Open: Normal Operation (Default)

Closed: Active Chassis Intrusion Alert

1-8 Jumper Settings



No.	Jumper Name	Jumper Setting
1	Clear CMOS	1-2: Nomal operation (Default) 2-3: Clear CMOS data
2	ME Force Update	1-2: Nomal operation (Default) 2-3: Enable ME Force Update
3	SATA1 port DOM support Jumper	1-2: Enable SATA DOM 5V Power 2-3: Ground (Default)
4	Clearing Supervisor Password	1-2: Nomal operation (Default) 2-3: Skip supervisor password
5	SATA0 port DOM support Jumper	1-2: Enable SATA DOM 5V Power 2-3: Ground (Default)
6	BIOS Recovery	1-2: Nomal operation (Default) 2-3: Enable BIOS Recovery

Chapter 2 BIOS Setup

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

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

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

BIOS Setup Program Function Keys

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

- **Main**
  This setup page includes all the items in standard compatible BIOS.
- **Advanced**
  This setup page includes all the items of AMI BIOS special enhanced features.
  (ex: Auto detect fan and temperature status, automatically configure hard disk parameters.)
- **Chipset**
  This setup page includes all the submenu options for configuring the function of processor, network, North Bridge, South Bridge, and System event logs.
- **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.
- **Save & Exit**
  Save all the changes made in the BIOS Setup program to the CMOS and exit BIOS Setup. (Pressing <F10> can also carry out this task.)
  Abandon all changes and the previous settings remain in effect. Pressing <Y> to the confirmation message will exit BIOS Setup. (Pressing <Esc> can also carry out this task.)

2-1 The Main Menu

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

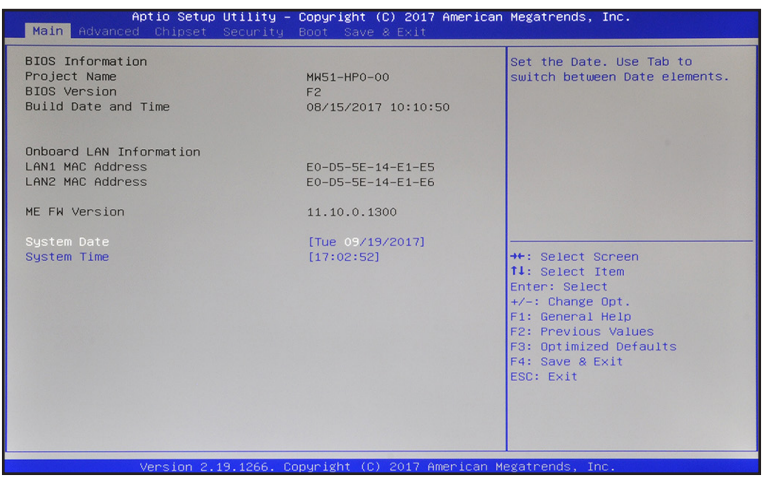
Main Menu Help

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

Submenu Help

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

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



☞ **BIOS Information**

☞ **Project Name**

Displays the project name information.

☞ **BIOS Version**

Displays version number of the BIOS setup utility.

☞ **Build Date and Time**

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

☞ **Onboard LAN Information**

☞ **LAN1 MAC Address**(Note)

Displays LAN1 MAC address information.

☞ **LAN2 MAC Address**(Note)

Displays LAN2 MAC address information.

☞ **ME FW Version**(Note)

Displays ME firmware version information.

☞ **System Date**

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

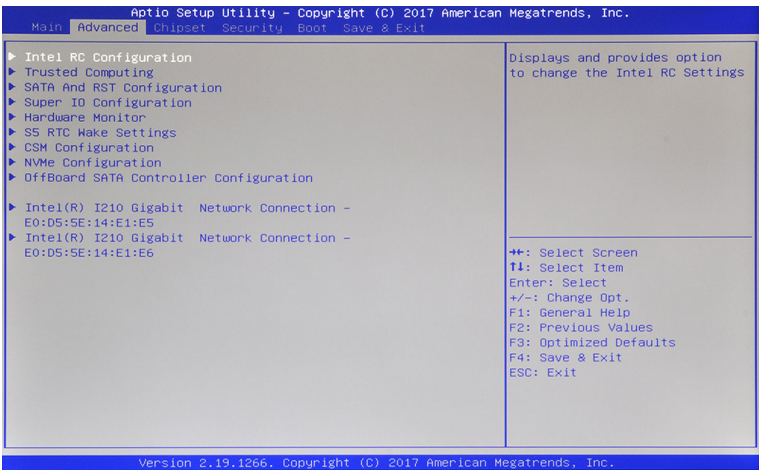
☞ **System Time**

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

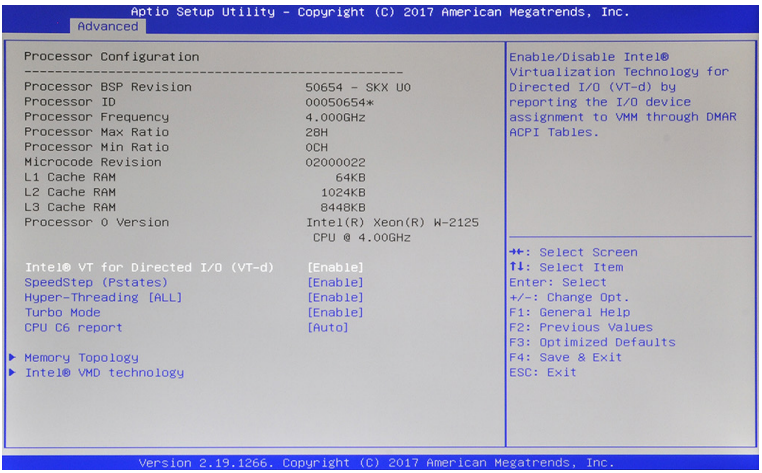
(Note) Functions available on selected models.

2-2 Advanced Menu

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



2-2-1 Intel RC Configuration



Processor Configuration

Displays the processor configurations.

Intel® VT for Directed I/O (VT-d)

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

Options available: Enable/Disable. Default setting is **Enable**.

SpeedStep (Pstates)

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

Options available: Enable/Disable. Default setting is **Enable**.

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: Enable/Disable. Default setting is **Enable**.

Turbo Mode

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

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

Options available: Enable/Disable. Default setting is **Enable**.

CPU C6 report

Allows you to determine whether to let the CPU enter 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 C6 state is a more enhanced power-saving state than C1.

Options available: Enable/Disable/Auto. Default setting is **Auto**.

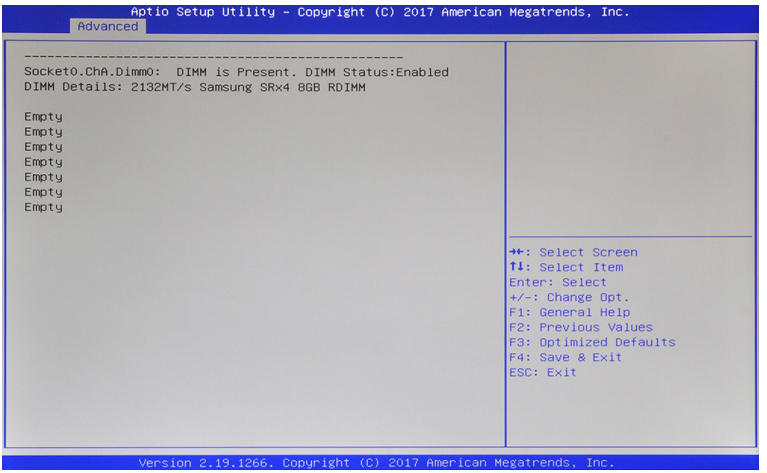
☞ **Memory Topology**

Press [Enter] for configuration of advanced items.

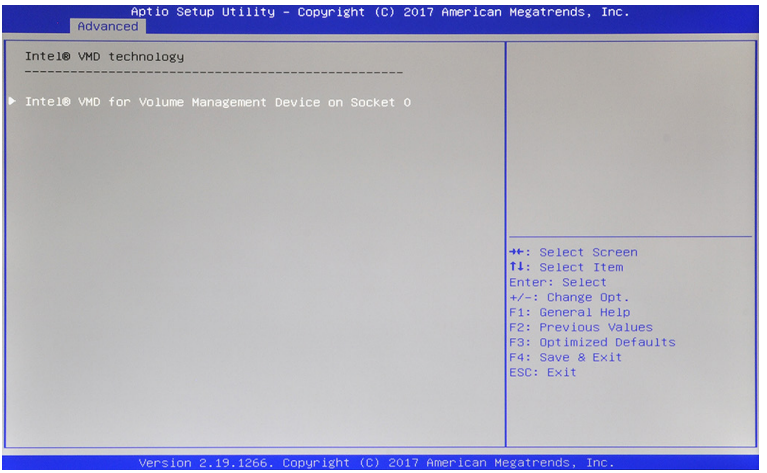
☞ **Intel® VMD technology**

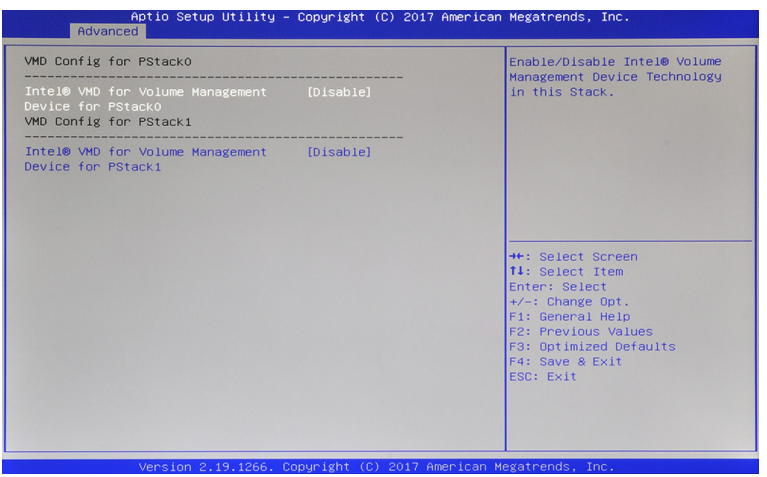
Press [Enter] for configuration of advanced items.

2-2-1-1 Memory Topology



2-2-1-2 Intel® VMD technology





☞ **Intel® VMD technology**

☞ **Intel® VMD for volume Management Device on Socket 0**

Press [Enter] to enable/disable the Intel VMD support function.

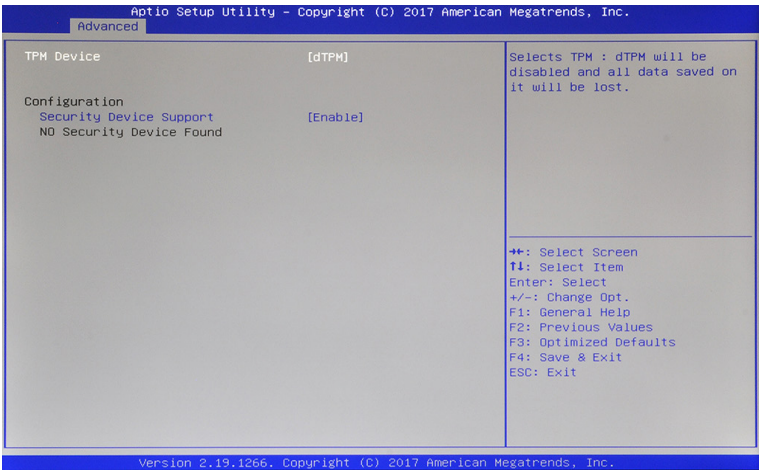
☞ **VMD Config for PStack0/PStack1**

☞ **Intel® VMD for volume Management Device for PStack0/PStack1**

Enable/Disable the Intel VMD technology in this stack.

Options available: Enable/Disable. Default setting is **Disable**.

2-2-2 Trusted Computing



☞ TPM Device

Selects the TPM. Once selected, the dTPM will be disabled and all data saved on it will be lost.

Default setting is **dTPM**.

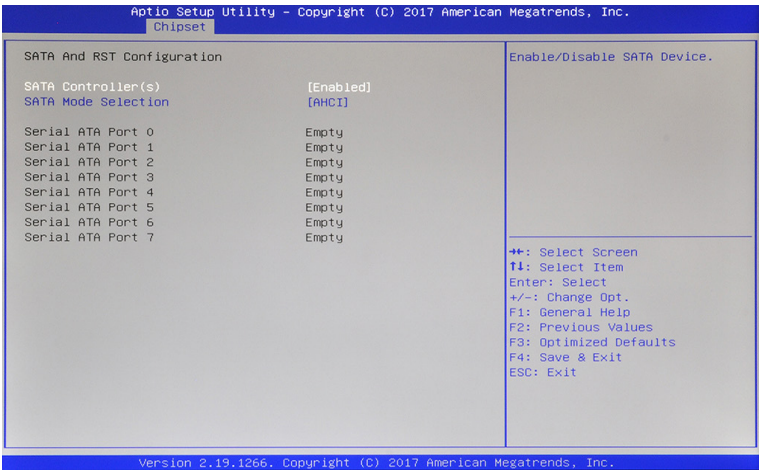
☞ Configuration

☞ Security Device Support

Enable/Disable BIOS support for security device. When enabled, OS will not show Security Device. TCG EFI protocol and INT-1A interface will not be available.

Options available: Enable/Disable. Default setting is **Enable**.

2-2-3 SATA and RST Configuration



☞ **SATA And RST Configuration**

☞ **SATA Controller(s)**

Enable/Disable SATA controller.

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

☞ **SATA Mode Selection**

Determines how SATA controller(s) operate.

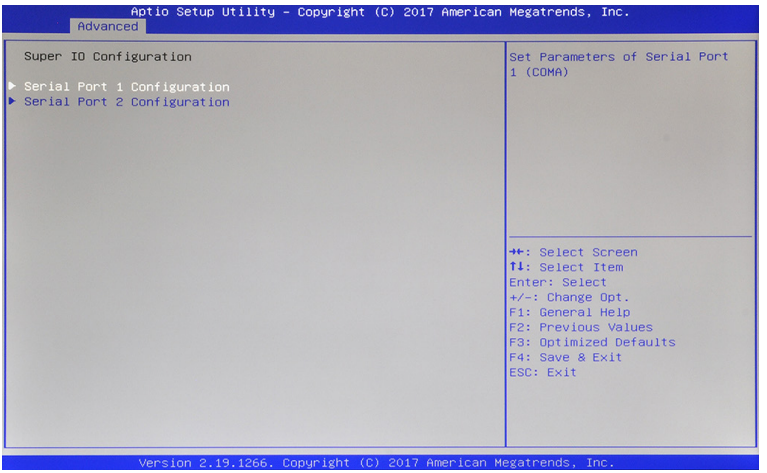
Options available: AHCI/Intel RST Premium. Default setting is **AHCI**.

☞ **Serial ATA Port 0/1/2/3/4/5/6/7**

The category identifies SATA hard drives that are installed in the computer.

System will automatically detect HDD type.

2-2-4 Super IO Configuration

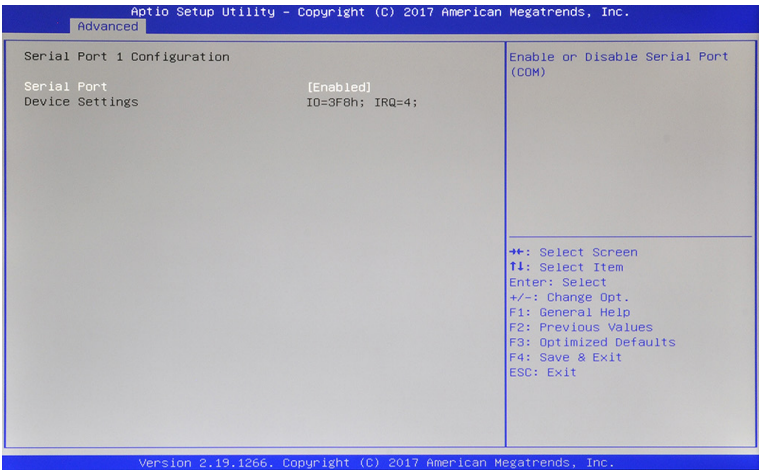


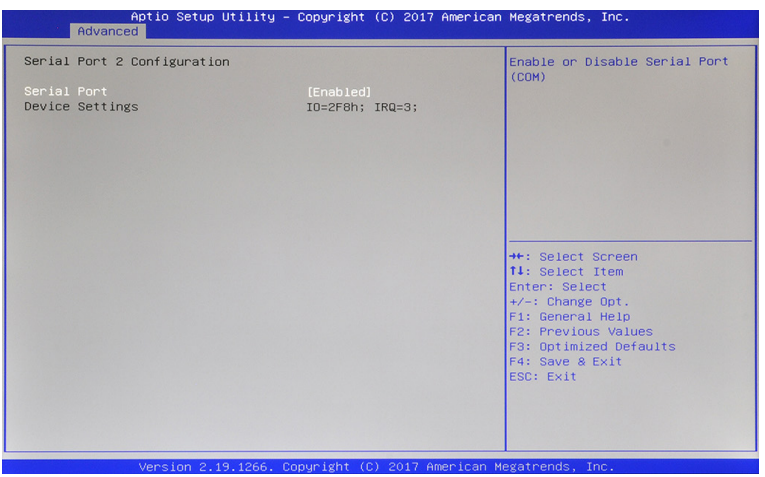
☞ **Super IO Configuration**

☞ **Serial Port 1/2 Configuration**

Press [Enter] for configuration of advanced items.

2-2-4-1 Serial Port 1/2 Configuration





☞ **Serial Port 1/2 Configuration**

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

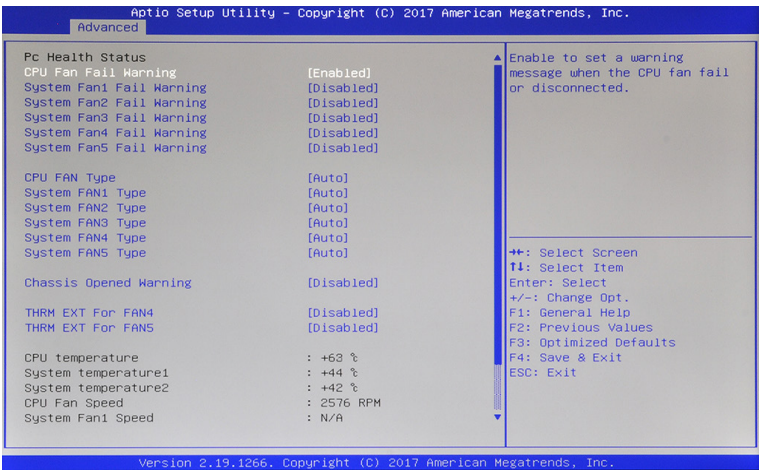
Options available: Enabled/Disabled. Default setting is **Enabled**.

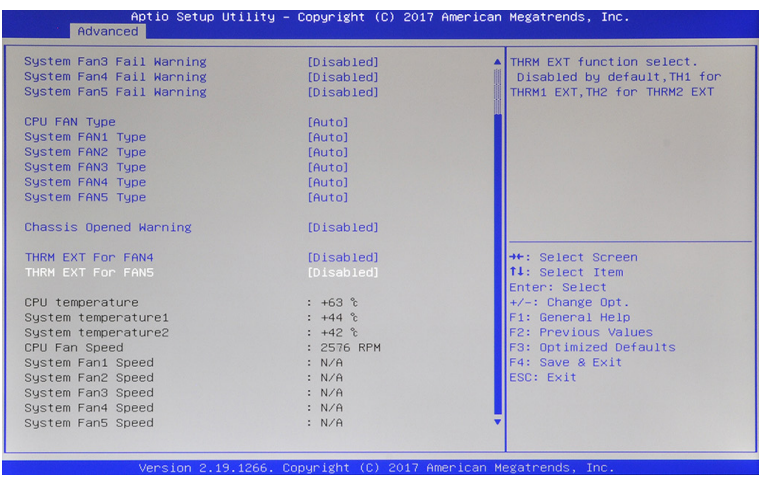
☞ **Device Settings**

Displays the specified Serial Port base I/O address and and IRQ.

2-2-5 Hardware 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





☞ PC Health Status

☞ CPU FAN Fail Warning

Enable/Disable a warning message when the CPU fan failure or disconnected.

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

☞ System FAN 1/2/3/4/5 Fail Warning

Enable/Disable a warning message when the system fan failure or disconnected.

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

☞ **CPU FAN Type**

Selects the CPU fan type.

Options available: 3 Pins/4 Pins/Auto. Default setting is **Auto**.

☞ **System FAN 1/2/3/4/5 Type**

Selects the system fan type.

Options available: 3 Pins/4 Pins/Auto. Default setting is **Auto**.

☞ **Chassis Opened Warning**

Enable/Disable a warning message when the system chassis is opened.

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

☞ **THRM EXT For FAN 4/5**

Selects the THRM EXT function.

This option is disabled by default. For Fan 4, selects TH1 for THRM1 EXT. For Fan 5, selects TH2 for THRM2 EXT.

Options available: Disabled/THRM1/THRM2. Default setting is **Disabled**.

☞ **CPU Temperature**

Displays the current CPU fan temperature.

☞ **System Temperature**

Displays the current system fan temperature.

☞ **CPU Fan Speed**

Displays the current CPU fan speed (RPM).

☞ **System Fan 1/2/3/4/5 Speed**

Displays the current system fan speed (RPM).

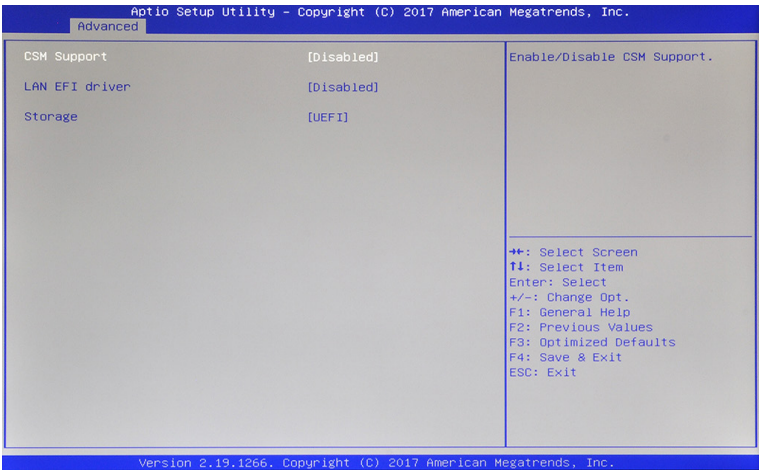
2-2-6 S5 RTC Wake Settings

☞ **Wake system from S5**

Enable/Disable System wake on alarm event. When enabled, System will wake on the hr:min:sec specified.

Options available: Disabled/Fixed Time. Default setting is **Disabled**.

2-2-7 CSM Configuration



☞ CSM Support

Enable/Disable the Compatibility Support Module (CSM) support function

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

- Advanced items prompt and configurable when this item is set to **Enabled**.
- If the **CSM Support** is set to **Disabled**, the following five items will not be able to support Legacy mode.

☞ LAN EFI driver

Enable/Disable LAN EFI driver.

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

Please note that this item is visible when CSM Support is set to Disabled.

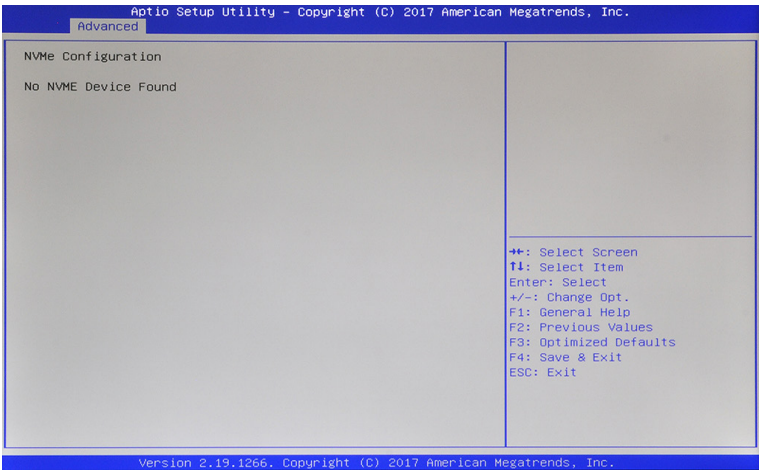
☞ Storage

Controls the execution of UEFI and Legacy Storage Option ROM.

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

Please note that this item is visible when CSM Support is set to Disabled.

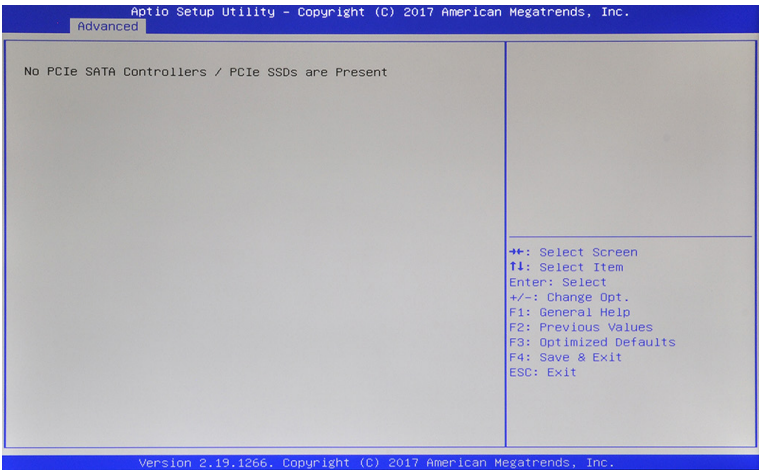
2-2-8 NVMe Configuration



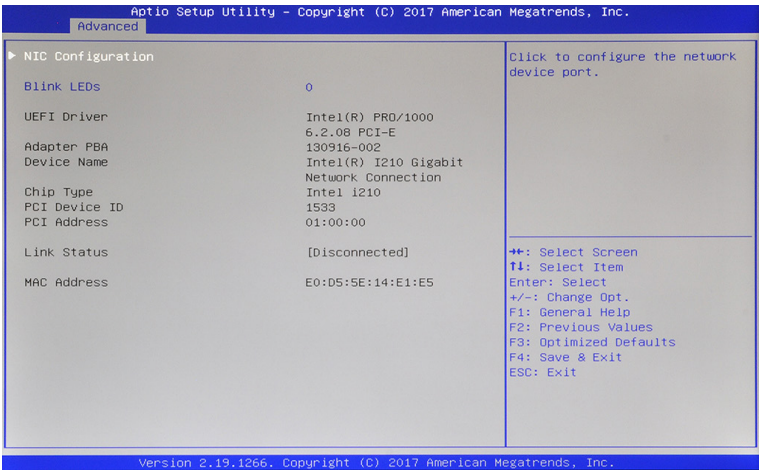
NVMe Configuration

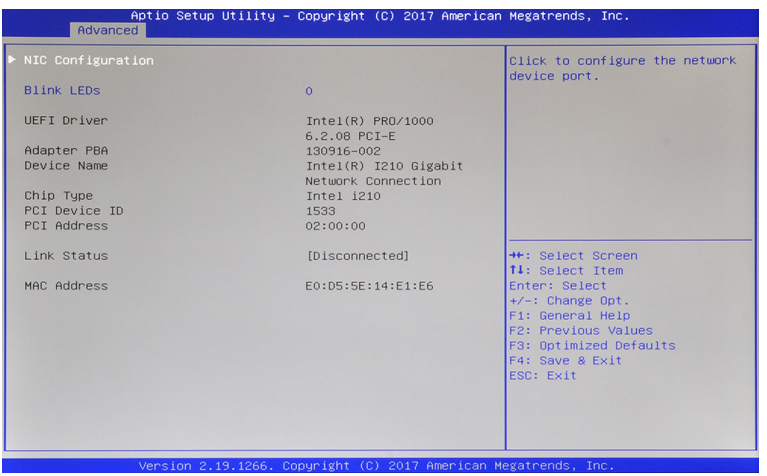
Displays the NVMe devices connected to the system.

2-2-9 OffBoard SATA Controller



2-2-10 Intel(R) I210 Gigabit Network Connection





☞ **NIC Configuration**

Press [Enter] for configuration of advanced items of the selected network device port.

☞ **Blink LEDs**

Identifies the physical network port by blinking the associated LED.
Press the numeric keys to adjust desired values.

☞ **UEFI Driver**

Displays the technical specifications for the Network Interface Controller.

☞ **Adapter PBA**

Displays the technical specifications for the Network Interface Controller

☞ **Device Name**

Displays the technical specifications for the Network Interface Controller..

☞ **Chip Type**

Displays the technical specifications for the Network Interface Controller.

☞ **PCI Device ID**

Displays the technical specifications for the Network Interface Controller.

☞ **PCI Address**

Displays the technical specifications for the Network Interface Controller..

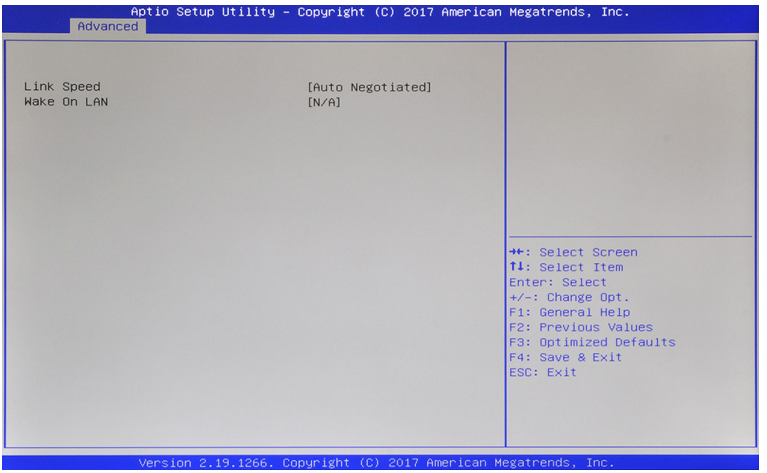
☞ **Link Status**

Displays the technical specifications for the Network Interface Controller

☞ **MAC Address**

Displays the technical specifications for the Network Interface Controller..

2-2-10-1 NIC Configuration



☞ Link Speed

Allows for automatic link speed adjustment. Default setting is **Auto Negotiated**.

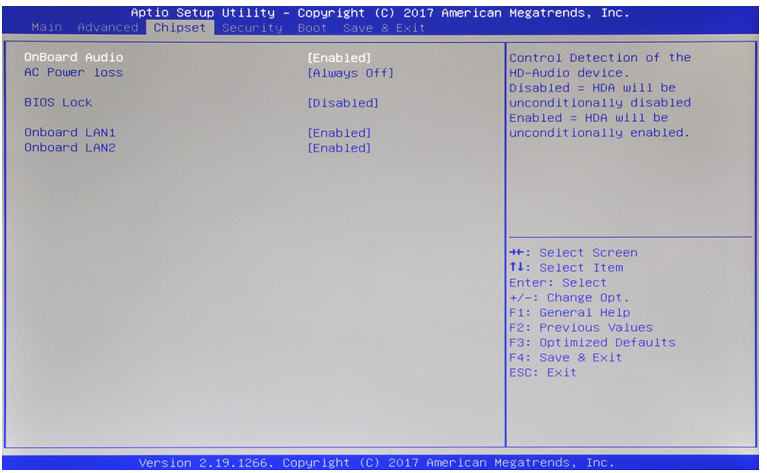
☞ Wake On LAN

Enable/Disable the Wake On LAN feature. Note that configuring Wake on LAN in the operating system does not change the value of this setting, but does override the behavior of Wake on LAN in OS controlled power states.

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

2-3 Chipset Setup Menu

Chipset Setup menu displays submenu options for configuring the function of the North Bridge. Select a submenu item, then press [Enter] to access the related submenu screen.



☞ OnBoard Audio

Enable/Disable the onboard audio controller. When enabled, HD audio will be unconditionally enabled. When disabled, HD audio will be unconditionally disabled

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

☞ AC Power Loss

Specifies what state to go to when the power is re-applied after a power failure.

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

☞ BIOS Lock

Enable/Disable the PCH BIOS Lock Enable feature.

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

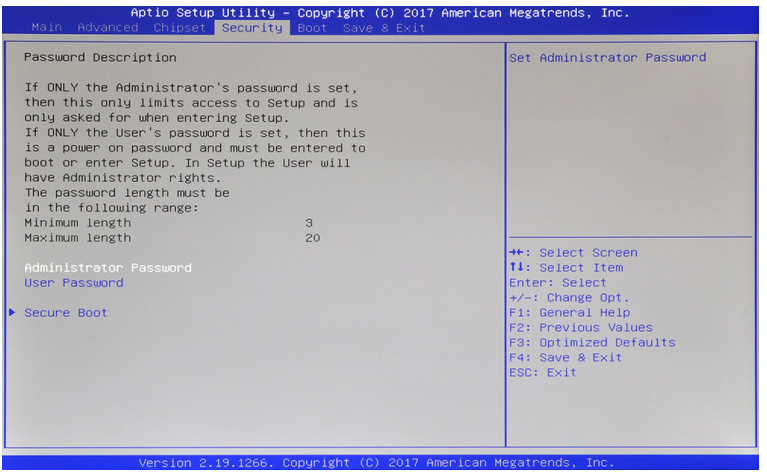
☞ Onboard LAN 1/2

Enable/Disable the onboard LAN 1/2 controller.

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

2-4 Security Menu

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



There are two types of passwords that you can set:

- Administrator Password

  Entering this password will allow the user to access and change all settings in the Setup Utility.

- User Password

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

☞ **Administrator Password**

Press [Enter] to configure the administrator password.

☞ **User Password**

Press [Enter] to configure the user password.

☞ **Secure Boot**

Press [Enter] for configuration of advanced items.

2-4-1 Secure Boot

☞ System Mode

Displays the system is in User mode or Setup mode.

☞ Vendor Keys

Displays the Vendor Keys function is actived or not actived.

☞ Secure Boot Enable

Secure Boot activated when Platform Key (PK) is enrolled, System mode is User/Deployed, and CSM function is disabled.

When this option is set to **Enabled**, an "Platform in Setup Mode!" message will prompt to request re-enroll Platform Key (PK).

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

☞ Secure Boot Mode(Note)

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 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**.

☞ Reset to Setup Mode

Press [Enter] to reset the system mode to Setup mode.

Please note that this item is configurable when System Mode is set to User Mode.

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

☞ Restore Factory Keys

Press [Enter] to restore all secure boot database to factory default keys.

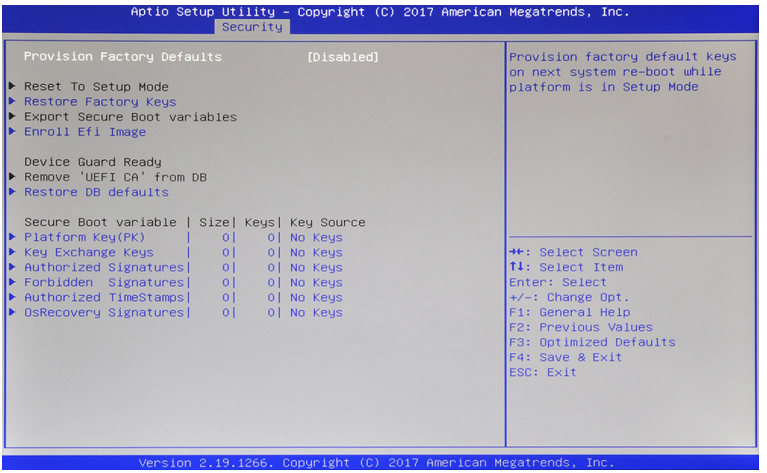
Please note that this item is configurable when Secure Boot Mode is set to Custom.

☞ Key Management

Press [Enter] for configuration of advanced items.

Please note that this item is configurable when Secure Boot Mode is set to Custom.

2-4-1-1 Key Management



☞ Provision Factory Defaults

Allows to provision factory default Secure Boot keys when system is in Setup Mode.
Options available: Enabled/Disabled. Default setting is **Disabled**.

☞ Reset To Setup mode

Press [Enter] to reset the system to Setup mode.
Please note that this item is configurable when System Mode is in User Mode.

☞ Restore Factory Keys

Press [Enter] to restore all Secure Boot Keys and key variables to factory defaults.

☞ Export Secure Boot variables

Press [Enter] to export all Secure Boot Keys and key variables.

☞ Enroll Efi Image

Press [Enter] to enroll SHA256 hash of the binary into Authorized Signature Database (DB).

☞ Device Guard Ready

☞ Remove 'UEFI CA' from DB

Press [Enter] to remove Microsoft UEFI CA from Secure Boot DB.
Please note that this item is configurable when the system is not in Device Guard Ready state.

☞ Restore DB defaults

Press [Enter] to restore all DB variables to factory defaults.

☞ Secure Boot variable

Displays the current status of the variables used for secure boot.

☞ Platform Key (PK)

Displays the current status of the Platform Key (PK).
Press [Enter] to enroll the PK.
Options available: Update.

☞ **Key Exchange Keys (KEK)**

Displays the current status of the Key Exchange Key Database (KEK).
Press [Enter] to enroll a new KEK or load additional KEK from storage devices.
Options available: Update/Append.

☞ **Authorized Signatures (DB)**

Displays the current status of the Authorized Signature Database.
Press [Enter] to enroll a new DB or load additional DB from storage devices.
Options available: Update/Append.

☞ **Forbidden Signatures (DBX)**

Displays the current status of the Forbidden Signature Database.
Press [Enter] to enroll a new dbx or load additional dbx from storage devices.
Options available: Update/Append.

☞ **Authorized TimeStamps (DBT)**

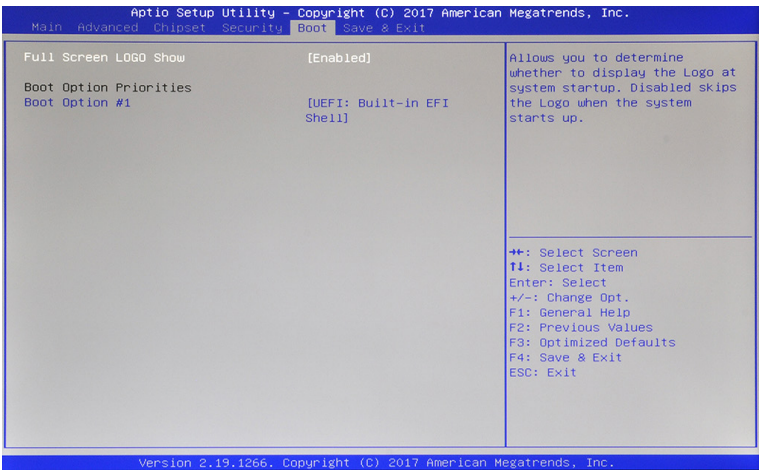
Displays the current status of the Authorized TimeStamps Database.
Press [Enter] to enroll a new DBT or load additional DBT from storage devices.
Options available: Update/Append.

☞ **OsRecovery Signatures**

Displays the current status of the OsRecovery Signature Database.
Press [Enter] to enroll a new OsRecovery Signature or load additional OsRecovery Signature from storage devices.
Options available: Update/Append.

2-5 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.



☞ Full Screen LOGO Show

Enable/Disable whether the Logo displays on the full screen when the system starts up.

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

☞ Boot Option Priorities

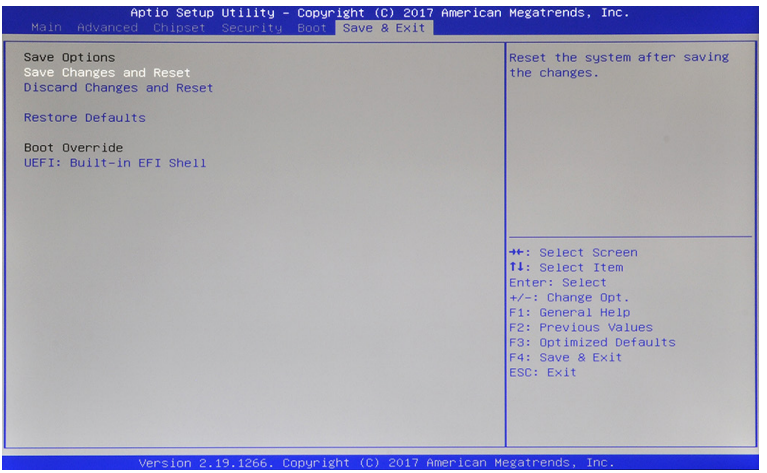
☞ Boot Option #1

Press [Enter] to configure the boot priority. It allows you to specify the boot device priority from the available UEFI applications during system boot-up.

Options available: UEFI: Built-in EFI Shell/Disabled. Default setting is **UEFI: Built-in EFI Shell**.

2-6 Save & Exit Menu

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



☞ Save Options

☞ Save Changes and Reset

Restarts the system after saving the changes made.

Options available: Yes/No.

☞ Discard Changes and Reset

Restarts the system without saving any changes.

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.

2-7 BIOS POST Beep code (AMI standard)

2-7-1 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

2-7-2 DXE 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
8	Platform PCI resource requirements cannot be met

2-8 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 1AUCR009.rom.
2. Copy 1AUCR009.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.