

GA-6PXS V4

LGA 2011 socket motherboard for Intel® E5-1600/E5-2600 series processors

User's Manual

Rev. 1001

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Documentation Classifications

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

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

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

<http://www.gigabyte.com>

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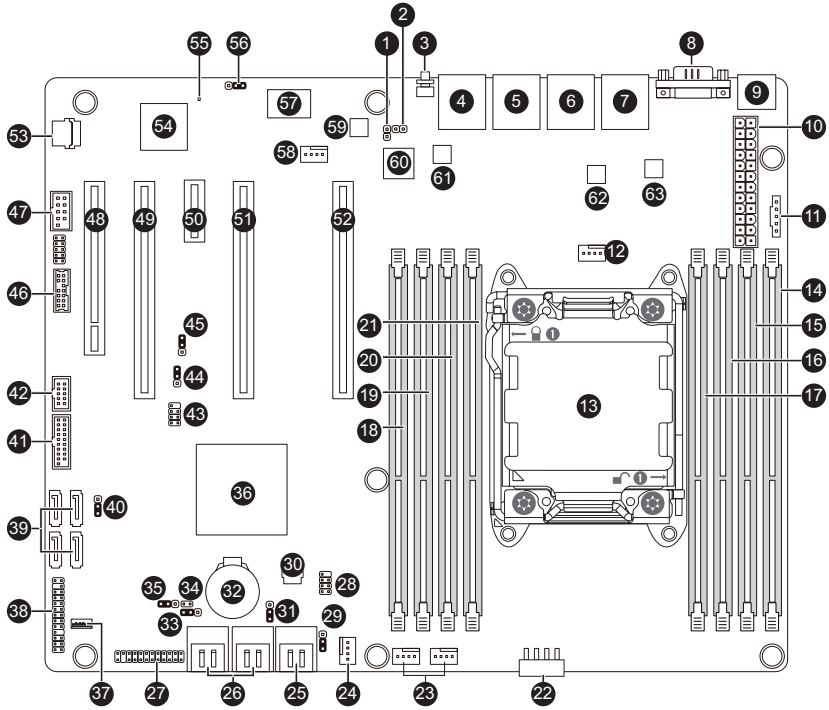
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Box Contents

- GA-6PXSIV4 motherboard
- Driver CD
- Two SATA cables
- I/O Shield

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

GA-6PXSIV4 Motherboard Layout



Item	Code	Description
1	LAN3_ACT	LAN3 active LED
2	LAN4_ACT	LAN4 active LED
3	ID_SW	ID button
4	MLAN	10/100 Management LANport
5	USB3_LAN1	RJ45 LAN port (top)/USB 3.0 ports (bottom)
6	USB3_LAN2	RJ45 LAN port (top)/USB 3.0 ports (bottom)
7	LAN3_4	RJ45 LAN port
8	VGA_COM1	COM port (top)/VGA port (bottom)
9	PS2_USB2	USB 2.0 ports (top)/PS/2 connector (bottom)
10	P1	24 pin power connector
11	PWR_DET1	PMBus connector
12	CPU_FAN1	CPU fan connector
13	CPU0	Intel LGA 2011 socket
14	DDR3_P0_A0	DIMM slot (channel 1 slot 0)
15	DDR3_P0_A1	DIMM slot (channel 1 slot 1)
16	DDR3_P0_B0	DIMM slot (channel 2 slot 0)
17	DDR3_P0_B1	DIMM slot (channel 2 slot 1)
18	DDR3_P0_C0	DIMM slot (channel 3 slot 0)
19	DDR3_P0_C1	DIMM slot (channel 3 slot 1)
20	DDR3_P0_D0	DIMM slot (channel 4 slot 0)
21	DDR3_P0_D1	DIMM slot (channel 4 slot 1)
22	P1_CPU	8 pin power connector
23	SYS_FAN1/3	System fan #1/#3 connectors
24	SYS_FAN2	System fan #2 connector
25	SATA0/1	SATA 6Gb/s connectors
26	SATA2/3/4/5	SATA 3Gb/s connectors
27	F_PANEL_1	Front panel header
28	SATA_SGPIO	SATA SGPIO header
29	SATA_DOM1	SATA port 1 DOM support jumper
30	U83	BIOS Upgrade ROM
31	SATA_DOM0	SATA port 0 DOM support jumper
32	BAT1	Battery socket
33	PASSWORD1	Clear password jumper
34	CASE_OPEN1	Chassis intrusion jumper
35	CLR_CMOS1	Clear CMOS jumper
36	PBG_HS1	Intel BD82C604 (X79) chipset

37	USB_A	USB Type A connector
38	BP_1	Back plane board header
39	SAS0/1/2/3	SAS 3Gb/s connectors
40	BIOS_RCVR	BIOS Recovery jumper
41	F_USB3_1	USB 3.0 header
42	F_USB_1	USB 2.0 header
43	SAS_SGPIO	SAS SGPIO header
44	BIOS_WP	BIOS Write Protect jumper
45	BMC_FRB1	Force to Stop FRB3 Timer jumper
46	TPM	TPM module connector
47	COM2	Serial port cable header
48	PCI_1	PCI 32bit/33MHz slot
49	PCIE1	PCI-E x16 slot (Shared badwidth with PCIE3 slot)
50	PCIE2	PCI-E x1 slot
51	PCIE3	PCI-E x16 slot (Shared badwidth with PCIE1 slot)
52	PCIE4	PCI-E slot
53	U393	BMC Upgrade ROM
54	U392	ASPEED AST2300 chipset
55	BMC_LED1	BMC readiness LED
56	SSB_ME1	ME Recovery jumper
57	U17	iTE IT8728F Super I/O
58	SYS_FAN4	System fan #4 connector
59	U430	Intel 82574L chipset
60	U15	EtronTech EJ188H chipset
61	U432	Intel 82574L chipset
62	U442	Intel 82574L chipset
63	U444	Intel 82574L chipset



CAUTION! If a SATA type hard drive is connected to the motherboard, please ensure the jumper is closed and set to **2-3 pins** (Normal mode), in order to reduce any risk of hard disk damage. Please refer to Page 32 for SATA_DOM0 and SATA_DOM1 jumper setting instruction.










Chapter 1 Hardware Installation






1-1 Installation Precautions

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

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

1-2 Product Specifications

	CPU	<ul style="list-style-type: none"> ◆ Support for Intel® Xeon® E5 series processors in the LGA2011 package ◆ L3 cache varies with CPU
	Chipset	<ul style="list-style-type: none"> ◆ Intel® BD82C604 (X79) PCH
	Memory	<ul style="list-style-type: none"> ◆ 8 x 1.5V DDR3 DIMM sockets supporting up to 64GB (UDIMM) and 256GB (RDIMM) of system memory ◆ Four channel memory architecture ◆ Support for 1600/1333/1066 memory modules ◆ Support for ECC memory modules
	LAN	<ul style="list-style-type: none"> ◆ 4 x Intel® 82574 supports 10/100/1000 Mbps
	Expansion Slots	<ul style="list-style-type: none"> ◆ 1 x PCI Express x16 slot, running at x16 (Gen3/PCIe4) ◆ 1 x PCI Express x16 slot, running at x16 (Gen3/PCIe3) ◆ 1 x PCI Express x16 slot, running at x8 (Gen3/PCIe3/The slot shares bandwidth with the PCIe1 slot. When the this slot is populated, the PCIe3 slot will operate at up to x8 mode.) ◆ 1 x PCI Express x1 slot (PCIe2) ◆ 1 x PCI Express x16 slot, running at x8 (Gen3/PCIe1) ◆ 1 x PCI 32bit/33Mhz slot
	Onboard Audio	<ul style="list-style-type: none"> ◆ Realtek® ACL892 HD
	Storage Interface	<ul style="list-style-type: none"> ◆ 2 x SATA 6Gb/s connectors (SATA0/1) ◆ 4 x SATA 3Gb/s connectors (SATA2/3/4/5) ◆ 4 x SATA 3Gb/s connectors (SAS0/1/2/3/via SCU) ◆ Support for Intel RSTe SATA RAID 0, RAID 1, RAID 10, RAID 5
	USB (onboard header)	<ul style="list-style-type: none"> ◆ 4 x USB 2.0/1.1 ports (2 via the USB brackets connected to the internal USB headers/2 at back panel) ◆ Up to 6 USB 3.0 ports (2 via the USB brackets connected to the internal USB headers/4 at back panel) ◆ 1 x Type A connector
	Internal Connectors	<ul style="list-style-type: none"> ◆ 1 x 24-pin ATX main power connector ◆ 1 x 8-pin ATX 12V power connector ◆ 8 x SATA 3Gb/s connectors ◆ 2 x SATA 6Gb/s connectors ◆ 1 x CPU fan header ◆ 4 x System fan header ◆ 1 x Front panel header ◆ 1 x Back plane board header ◆ 1 x USB3.0 header ◆ 1 x USB2.0 header ◆ 1 x TPM header ◆ 1 x Serial port header ◆ 1 x PMBus header ◆ 1 x SATA SGPIO header ◆ 1 x SAS SGPIO header

	Back Panel Connectors	<ul style="list-style-type: none"> ◆ 1 x PS/2 connector ◆ 1 x COM port ◆ 1 x VGA port ◆ 2 x USB 2.0/1.1 ports ◆ 4 x USB 3.0 ports ◆ 4 x RJ-45 LAN ports ◆ 1 x 10/100 Management LAN port ◆ 1 x ID Switch button
	I/O Controller	<ul style="list-style-type: none"> ◆ iTE IT8728 chip
	Hardware Monitor	<ul style="list-style-type: none"> ◆ System voltage detection ◆ CPU/System temperature detection ◆ CPU/System/Power fan speed detection ◆ CPU overheating warning ◆ CPU/System/Power fan fail warning ◆ CPU/System fan speed control
	BIOS	<ul style="list-style-type: none"> ◆ 1 x 64 Mbit flash ◆ AMI BIOS
	Form Factor	<ul style="list-style-type: none"> ◆ 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

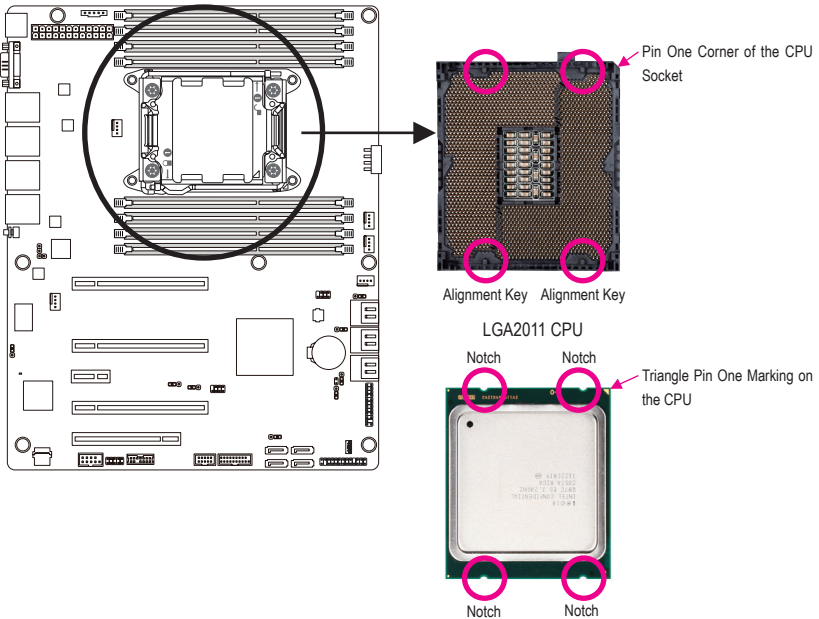


Read the following guidelines before you begin to install the CPU:

- Make sure that the motherboard supports the CPU.
(Go to GIGABYTE's website for the latest CPU support list.)
- 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

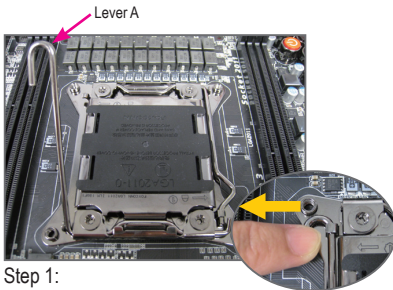
A. Locate the alignment keys on the motherboard CPU socket and the notches on the CPU.



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

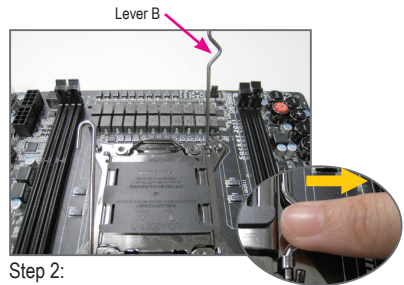


- Before installing the CPU, make sure to turn off the computer and unplug the power cord from the power outlet to prevent damage to the CPU.
- To protect the socket contacts, do not remove the protective plastic cover unless the CPU is inserted into the CPU socket. Save the cover properly and replace it if the CPU is removed.



Step 1:

Push the lever closest to the "unlock" 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.



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.

1-4 Installing the Memory



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

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

1-4-1 Four Channel Memory Configuration

This motherboard provides four DDR3 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 double the original memory bandwidth.

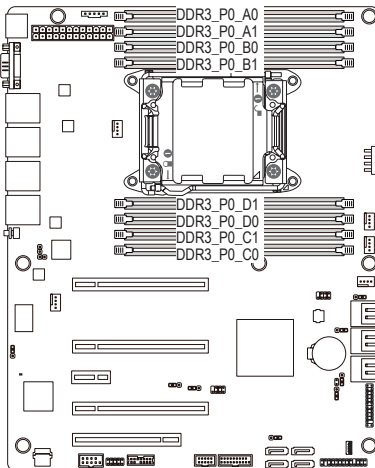
The eight DDR3 memory sockets are divided into four channels and each channel has two memory sockets as following:

Channel 1: DDR3_P0_A0, DDR3_P0_A1

Channel 2: DDR3_P0_B0, DDR3_P0_B1

Channel 3: DDR3_P0_C0, DDR3_P0_C1

Channel 4: DDR3_P0_D0, DDR3_P0_D1



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 DDR3 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 DDR3 DIMMs on this motherboard.

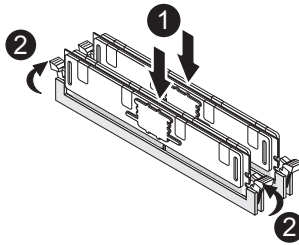
Installation Step:

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

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

Note: For dual-channel and four-channel operation, DIMMs must be installed in matched pairs.

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

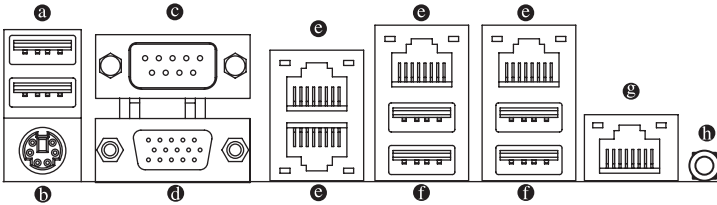


1-4-3 DIMM Population Table

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

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

1-5 Back Panel Connectors



a USB 2.0/1.1 Port

The USB port supports the USB 2.0/1.1 specification. Use this port for USB devices such as a USB keyboard/mouse, USB printer, USB flash drive and etc.

b PS/2 Keyboard/Mouse Port

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

c Serial Port

Connects to serial-based mouse or data processing devices.

d Video Port

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

e RJ-45 LAN Port

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

f USB 3.0 Port

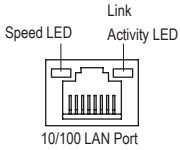
The USB port supports the USB 3.0 specification. Use this port for USB devices such as a USB keyboard/mouse, USB printer, USB flash drive and etc.

g KVM Server Management 10/100 LAN Port

The LAN port provides Internet connection with data transfer speeds of 10/100Mbps.

h ID Switch Button

This button provide the selected unit identification function.

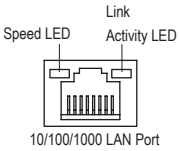


MLAN Speed LED:

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

Link/Activity LED:

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



82574 Speed LED:

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

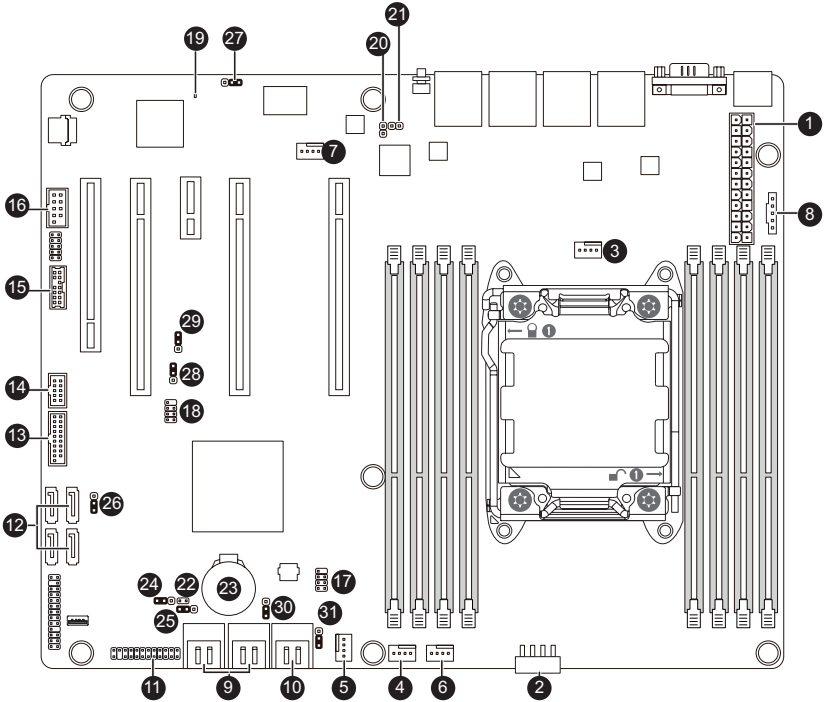
Link/Activity LED:

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



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

1-6 Internal Connectors



1)	P1	17)	SATA_SGPIO
2)	P1_CPU	18)	SAS_SGPIO
3)	CPU_FAN1 (CPU Fan)	19)	BMC_LED1
4)	SYS_FAN1 (System Fan)	20)	LAN3_ACT
5)	SYS_FAN2 (System Fan)	21)	LAN4_ACT
6)	SYS_FAN3 (System Fan)	22)	CASE_OPEN1
7)	SYS_FAN4 (System Fan)	23)	BAT1
8)	PWR_DET1 (PMBus)	24)	CLR_CMOS1
9)	SATA45/SATA23	25)	PASSWORD1
10)	SATA0/1	26)	BMC_FRB1BIOS_RCVR
11)	F_PANEL	27)	SSB_ME1
12)	SAS0/1/2/3	28)	BIOS_WP
13)	F_USB3_1	29)	BMC_FRB1
14)	F_USB1	30)	SATA_DOM0
15)	TPM	31)	SATA_DOM1
16)	COM2		



Read the following guidelines before connecting external devices:

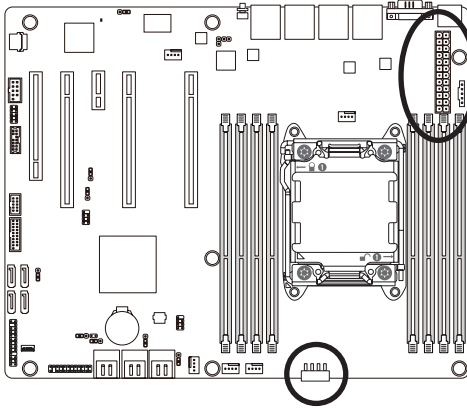
- First make sure your devices are compliant with the connectors you wish to connect.
- Before installing the devices, be sure to turn off the devices and your computer. Unplug the power cord from the power outlet to prevent damage to the devices.
- After installing the device and before turning on the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

1/2) P1/P1_CPU (2x12 Main Power Connector and 2x4 12V Power Connector)

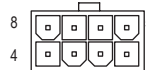
With the use of the power connector, the power supply can supply enough stable power to all the components on the motherboard. Before connecting the power connector, first make sure the power supply is turned off and all devices are properly installed. The power connector possesses a foolproof design. 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.

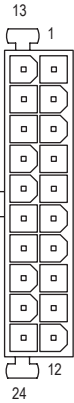


P1_CPU



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

P1

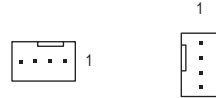
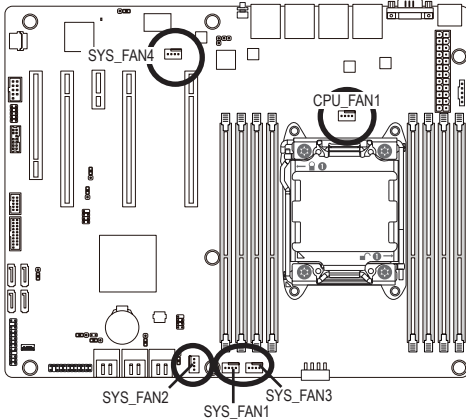


Pin No.	Definition	Pin No.	Definition
1	3.3V	13	3.3V
2	3.3V	14	-12V
3	GND	15	GND
4	+5V	16	PS_ON
5	GND	17	GND
6	+5V	18	GND
7	GND	19	GND
8	Power Good	20	-5V
9	5VSB (stand by +5V)	21	+5V
10	+12V	22	+5V
11	+12V	23	+5V
12	3.3V	24	GND

3/4/5/6/7) CPU_FAN1/SYS_FAN1/SYS_FAN2/SYS_FAN3/SYS_FAN4

(CPU Fan/System Fan Headers)

The motherboard has a 4-pin CPU fan header (CPU_FAN1), four 4-pin (SYS_FAN1/SYS_FAN2/SYS_FAN3) system fan headers. Most fan headers possess a foolproof insertion design. When connecting a fan cable, be sure to connect it in the correct orientation (the black connector wire is the ground wire). The motherboard supports CPU fan speed control, which requires the use of a CPU fan with fan speed control design. For optimum heat dissipation, it is recommended that a system fan be installed inside the chassis.

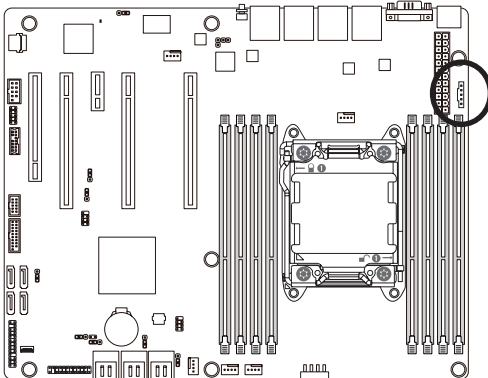


Pin No.	Definition
1	GND
2	+12V
3	Sense
4	Speed Control



- 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.

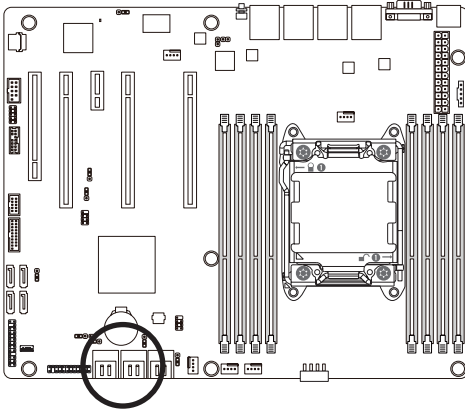
8) PWR_DET1 (PMBus connector)



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

9) SATA45/23 (SATA 3Gb/s Connectors)

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



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

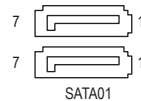
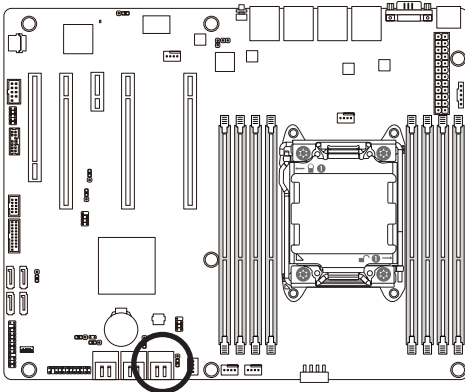


- A RAID 0 or RAID 1 configuration requires at least two hard drives. If more than two hard drives are configured, the total number of hard drives must be an even number.
- A RAID 10 configuration requires four hard drives.

(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.

10) SATA01 (SATA 6Gb/s Connectors)

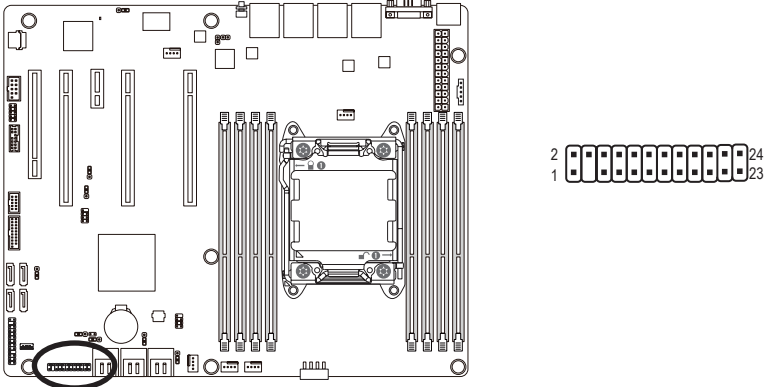
The SATA connectors conform to SATA 6Gb/s standard and are compatible with SATA 3Gb/s and 1.5Gb/s standard. Each SATA connector supports a single SATA device.



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

11) F_PANEL1 (Front Panel Header)

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



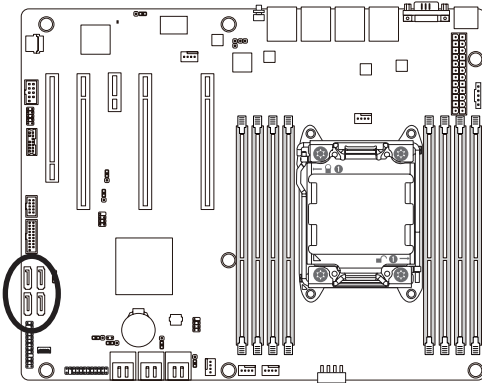
Pin No.	Signal Name	Definition
1	PWLED+	Power LED Signal anode (+)
2	5VSB	5V Standby Power
3	NC	No Pin
4	ID_LED+	ID LED Signal anode (+)
5	PWLED-	Power LED Signal cathode(-)
6	ID_LED-	ID LED Signal cathode(-)
7	HD+	Hard Disk LED Signal anode (+)
8	F_SYSRDY	System Front board LED Signal
9	HD-	Hard Disk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

12) SAS01/2/3 (SATA 3Gb/s connectors)

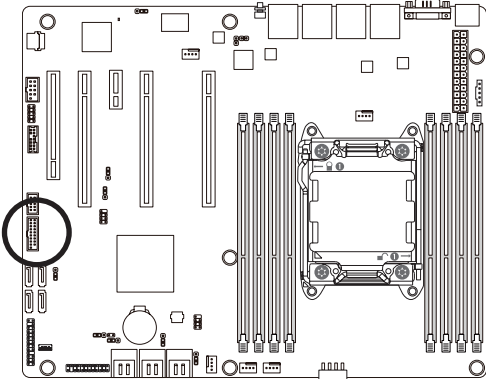
These SATA connectors conform to SAS 3Gb/s standard and are compatible with SATA 3Gb/s standard.



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

13) F_USB3_1 (USB 3.0 Header)

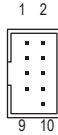
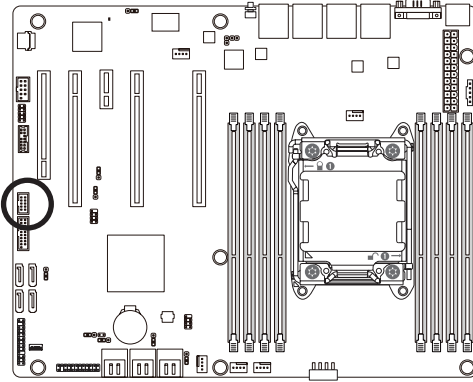
The headers conform to USB 3.0 specification. Each USB header can provide two USB ports via an optional USB bracket. For purchasing the optional USB bracket, please contact the local dealer.



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

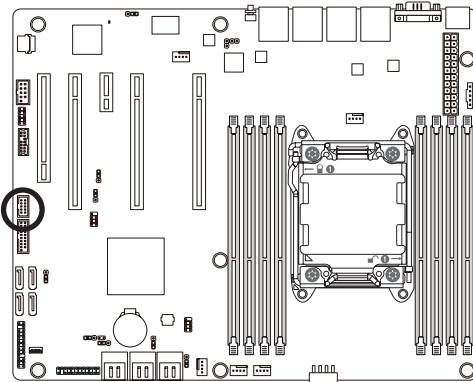
14) F_USB1 (Front USB Header)

The headers conform to USB 2.0/1.1 specification. Each USB header can provide two USB ports via an optional USB bracket. For purchasing the optional USB bracket, please contact the local dealer.



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

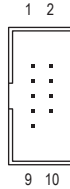
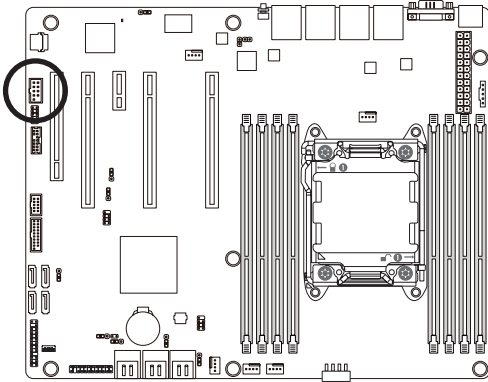
15) TPM (TPM Module connector)



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

16) COM2 (Serial Port Header)

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

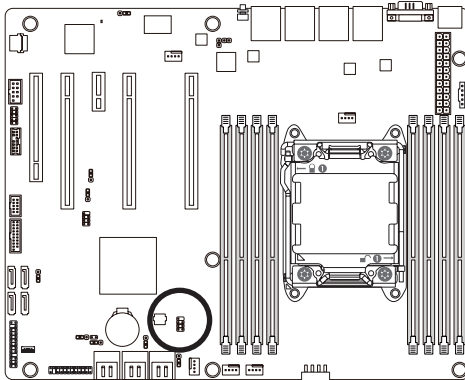


Pin No.	Definition
1	NDCD-
2	NDSR-
3	NSIN
4	NRST-
5	NSOUT
6	NCTS-
7	NDTR-
8	NRI
9	GND
10	No Pin

17) SATA_SGPIO (SATA SGPIO Header)

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.

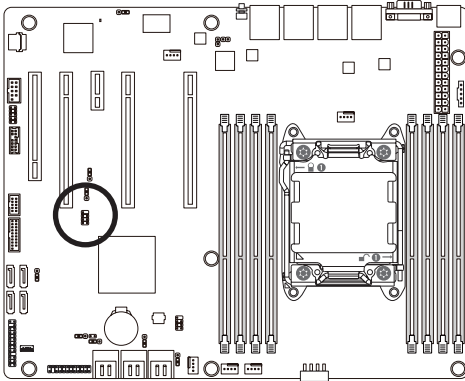
This header provides the SATA interface of SGPIO function.



Pin No.	Definition
1	SGPIO_SATA_DATAIN
2	No Pin
3	SGPIO_SATA_DATAOUT
4	GND
5	GND
6	SGPIO_SATA_LOAD
7	NC
8	SGPIO_SATA_CLOCK

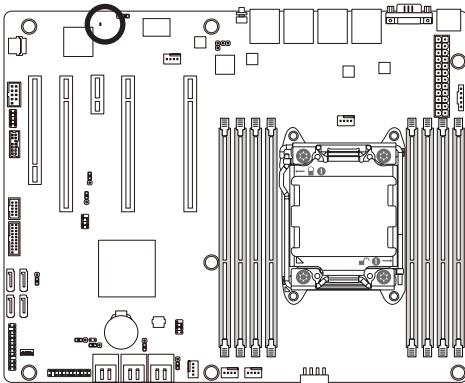
18) SAS_SGPIO (SAS SGPIO Header)

This header provides the SAS interface of SGPIO function.



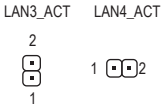
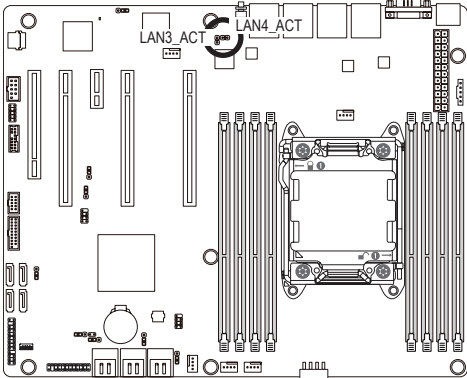
Pin No.	Definition
1	SGPIO_SAS_DATAIN
2	No Pin
3	SGPIO_SAS_DATAOUT
4	GND
5	GND
6	SGPIO_SAS_LOAD
7	NC
8	SGPIO_SAS_CLOCK

19) BMC_LED1 (BMC Firmware Readiness LED)



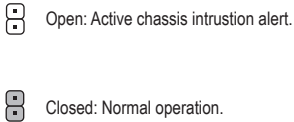
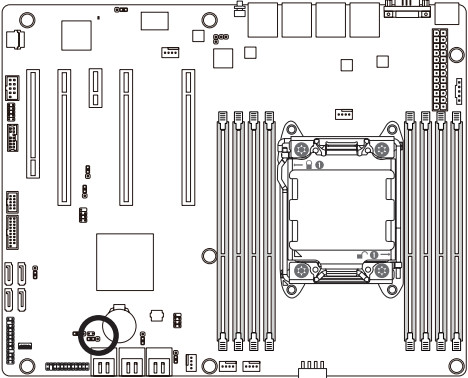
State	Description
On	BMC firmware is initial
Blinking	BMC firmware is ready
Off	System is powered off

20/21) LAN3_ACT/LAN4_ACT (LAN3/LAN4 link/active LED Headers)



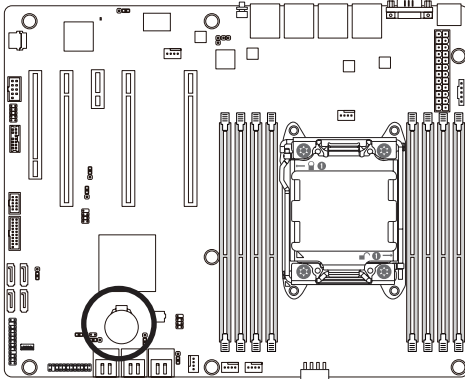
Pin No.	Definition
1	3.3V
2	Active

22) CASE_OPEN1 (Case open intrusion header)



23) BAT1 (Battery)

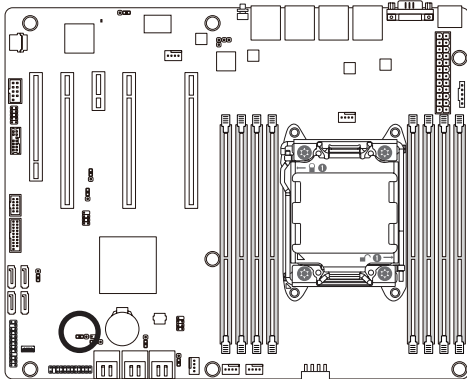
The battery provides power to keep the values (such as BIOS configurations, date, and time information) in the CMOS when the computer is turned off. Replace the battery when the battery voltage drops to a low level, or the CMOS values may not be accurate or may be lost.





- 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.

24) CLR_CMOS1 (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.



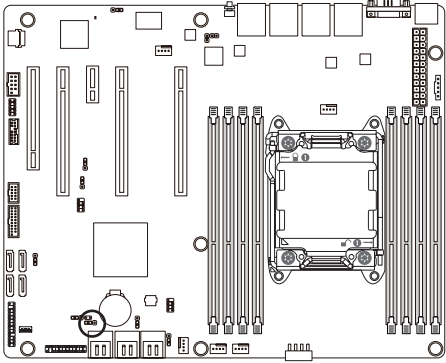
1  1-2 Close: Normal operation (Default setting)

1  2-3 Close: Clear CMOS data



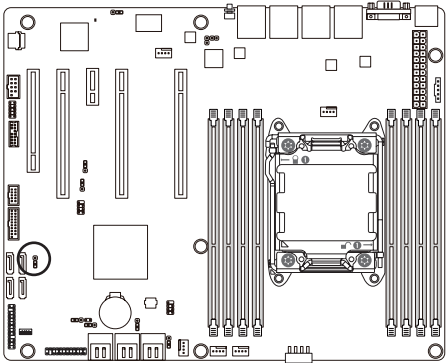
- Always turn off your computer and unplug the power cord from the power outlet before clearing the CMOS values.
- After clearing the CMOS values and before turning on your computer, be sure to remove the jumper cap from the jumper. Failure to do so may cause damage to the motherboard.
- After system restart, go to BIOS Setup Exit menu and load factory defaults (select **Load Default Values**) or manually configure the BIOS settings (refer to Chapter 2, "BIOS Setup," for BIOS configurations).

25) PASSWORD1 (Clearing Supervisor Password Jumper)



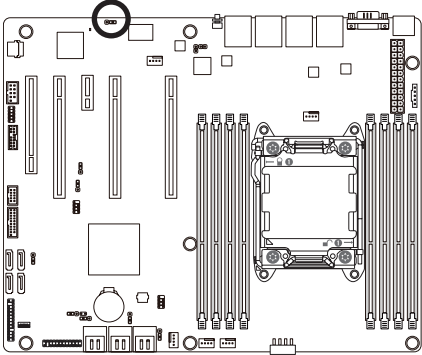
- 1 1-2 Close: Normal operation. (Default setting)
- 1 2-3 Close: Clear supervisor password.



26) BIOS_RCVR (BIOS Recovery Jumper)



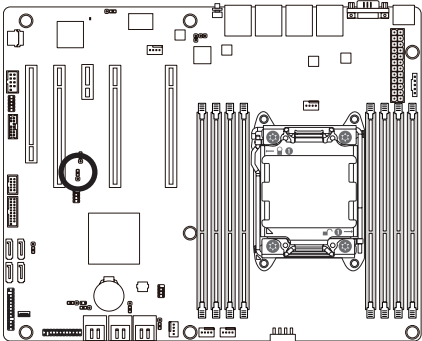
- 1 1-2 Close: Normal operation. (Default setting)
- 1 2-3 Close: BIOS recovery mode.



27) SSB_ME1 (ME Recovery Jumper)



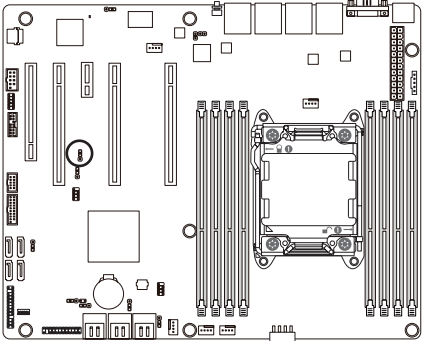
- 1  1-2 Close: Enable ME recovery.
- 1  2-3 Close: Disable ME recovery. (Default setting)

28) BIOS_WP (BIOS Write Protect Jumper)



- 1  1-2 Close: Normal operation. (Default setting)
- 1  2-3 Close: Enable BIOS write protect function.

29) BMC_FRB1 (Force to Stop FRB3 Timer Jumper)

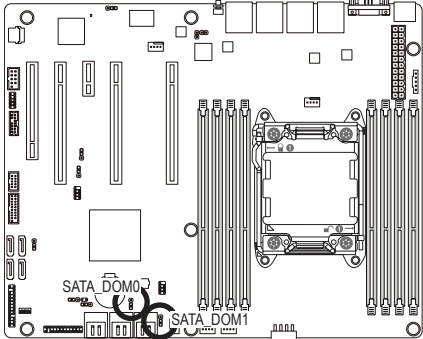


- 1
 - 1-2 Close: Normal operation. (Default setting)
- 1
 - 2-3 Close: Force to Stop FRB3 Timer.

30/31) SATA_DOM0/SATA_DOM1 (SATA DOM Jumpers)



CAUTION! If a SATA type hard drive is connected to the motherboard, please ensure the jumper is closed and set to **2-3 pins** (Normal mode), in order to reduce any risk of hard disk damage.



- 1
 - 1-2 Close: Enable SATA port 0 and SATA port 1 DOM support.
- 1
 - 2-3 Close: Normal mode. (Default setting)

Pin No.	Definition
1	P5V
2	GND
3	GND

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
<Enter>	Execute command or enter the submenu
<Esc>	Main Menu: Exit the BIOS Setup program Submenus: Exit current submenu
<F1>	Show descriptions of general help
<F3>	Restore the previous BIOS settings for the current submenus
<F9>	Load the Optimized BIOS default settings for the current submenus
<F10>	Save all the changes and exit the BIOS Setup program

■ **Main**

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

■ **Advanced**

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

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

■ **Chipset**

This setup page includes all the submenu options for configuring the function of North Bridge and South Bridge.

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

■ **Security**

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

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

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

■ **Server Management**

Server additional features enabled/disabled setup menus.

■ **Boot Options**

This setup page provides items for configuration of boot sequence.

■ **Boot Manager**

This setup page provides configuration of boot up devices.

■ **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 **Load Default Values** 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.

```
Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.
Main Advanced Chipset Security Server Management Boot Options Boot Manager
BIOS Information
BIOS Version                F02a
Memory Information
Total Memory                 4096 MB (DDR3)
System Date                  [Wed 01/23/2013]
System Time                  [11:01:10]
Access Level                 Administrator
Set the date. Use <Tab> to
switch between data
elements.
+-: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F3: Previous Values
F9: Optimized Defaults
F10: Save  ESC: Exit
Version 2.14.1216. Copyright (C) 2011 American Megatrends, Inc.
```

☞ **BIOS Information**

☞ **BIOS Version**

Display version number of the BIOS setup utility.

☞ **Memory Information**

☞ **Total Memory**

Determines how much total memory is present during the POST.

☞ **System Date**

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

☞ **System Time**

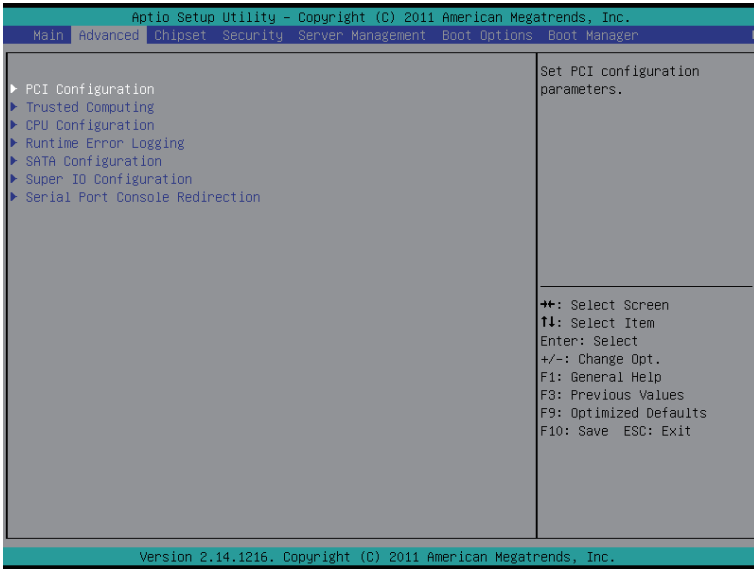
Set the system time following the hour-minute- second format.

☞ **Access Level**

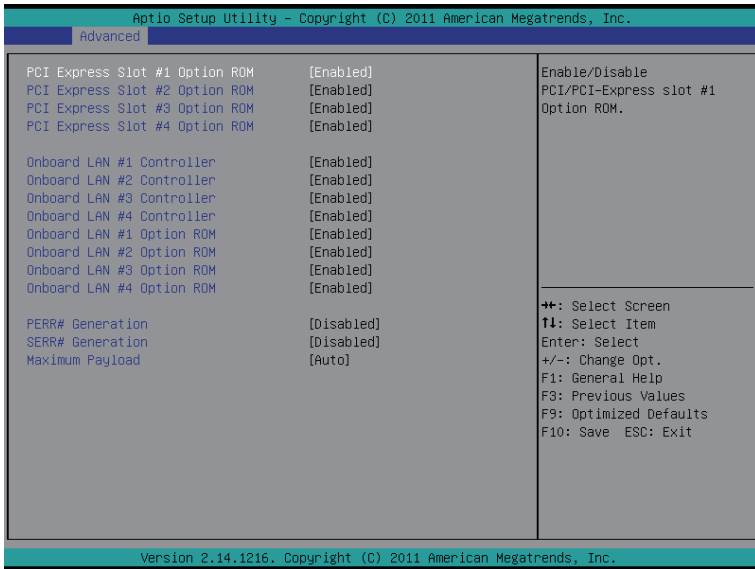
Display the current accessing level information.

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 PCI Configuration



PCI Express Slot 1/2/3/4 I/O ROM

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

Onboard LAN1/2/3/4 Controller

Enable/Disable Onboard LAN #1/#2/#3/#4 controllers . Options available: Enabled/Disabled. Default setting is **Enabled**.

LAN1/2/3/4 Option ROM

Enable/Disable onboard LAN1 device and initialize device expansion ROM. Options available: Enabled/Disabled. Default setting is **Enabled**.

PERR Generation

When this item is set to enabled, PCI bus parity error (PERR) is generated and is routed to NMI. Options available: Enabled/Disabled. Default setting is **Disabled**.

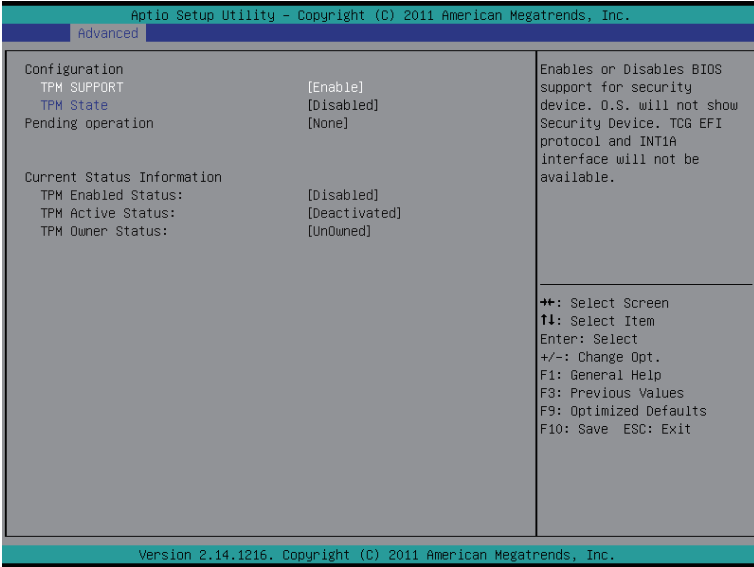
SERR Generation

When this item is set to enabled, PCI bus system error (SERR) is generated and is routed to NMI. Options available: Enabled/Disabled. Default setting is **Disabled**.

Maximum Payload

Set maximum payload for PCI Express Device or allow system BIOS to select the value. Options available: Auto/128 Bytes/256 Bytes/512 Bytes/1024 Bytes/2048 Bytes/4096 Bytes. Default setting is **Auto**.

2-2-2 Trusted Computing



TPM Support

Select Enabled to activate TPM support feature.

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

TPM State ^(Note)

Select Enabled to activate TPM State function.

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

Pending Operation ^(Note)

Determine the action when operation is pending.

Options available: None. Default setting is **None**.

Current Status Information

Display current TPM status information.

(Note) This item appears when the TPM module is attached.

2-2-3 CPU Configuration

Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.

Advanced

<p>CPU Configuration</p> <p>▶ Socket 0 CPU Information</p> <p>CPU Speed 64-bit Supported</p> <p>Active Processor Cores [All] Limit CPUID Maximum [Disabled] Execute Disable Bit [Enabled] Energy Performance [Performance] Intel Virtualization Technology [Enabled]</p> <p>▶ CPU Power Management Configuration</p>	<p>Socket specific CPU Information</p> <hr/> <p>++: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F3: Previous Values F9: Optimized Defaults F10: Save ESC: Exit</p>
--	--

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Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.

Advanced

<p>Socket 0 CPU Information</p> <p>Intel(R) Xeon(R) CPU E5-2603 0 @ 1.80GHz</p> <p>CPU Signature 206d6 Microcode Patch 619 Max CPU Speed 1800 MHz Min CPU Speed 1200 MHz Processor Cores 4 Intel HT Technology Not Supported Intel VT-x Technology Supported</p> <p>L1 Data Cache 32 kB x 4 L1 Code Cache 32 kB x 4 L2 Cache 256 kB x 4 L3 Cache 10240 kB</p>	<hr/> <p>++: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F3: Previous Values F9: Optimized Defaults F10: Save ESC: Exit</p>
---	---

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☞ **Socket 0 Information**

☞ **CPU Signature**

Displays the processor ID information.

☞ **Microcode Patch**

Display the Microcode patch information.

☞ **Max CPU Speed**

Display the maximum processor speed.

☞ **Min CPU Speed**

Display the minimum processor speed.

☞ **Processor Cores**

Display the information of the processor core.

☞ **Intel HT Technology**

Display Intel Hyper Threading Technology function support information.

☞ **Intel VT-x Technology**

Display Intel Virtualization Technology function support information.

☞ **Cache Information**

☞ **L1 Data Cache**

Display the information of L1 Data Cache.

☞ **L1 Code Cache**

Display the information of L1 Code Cache.

☞ **L2 Cache**

Display the information of L2 Cache per Core.

☞ **L3 Cache**

Display the information of total L3 Cache per socket.

☞ **CPU Speed**

Display the current installed CPU speed.

☞ **64-bit**

Display the supported information of installed CPU.

☞ **Active Processor Cores** ^(Note)

Allows you to determine whether to enable all CPU cores.

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

☞ **Limit CPUID Maximum**

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

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

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

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

☞ **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**.

☞ **Energy Performance**

Energy Performance Bias is Intel CPU function.

The larger value in MSR_ENERGY_PERFORMANCE_BIAS register, CPU will save more power but lose more performance.

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

Options available:

Performance : Write value 0 into MSR_ENERGY_PERFORMANCE_BIAS

Balanced Performance: Write value 7 into MSR_ENERGY_PERFORMANCE_BIAS

Balanced Energy: Write value 11 into MSR_ENERGY_PERFORMANCE_BIAS

Energy Efficient: Write value 15 into MSR_ENERGY_PERFORMANCE_BIAS

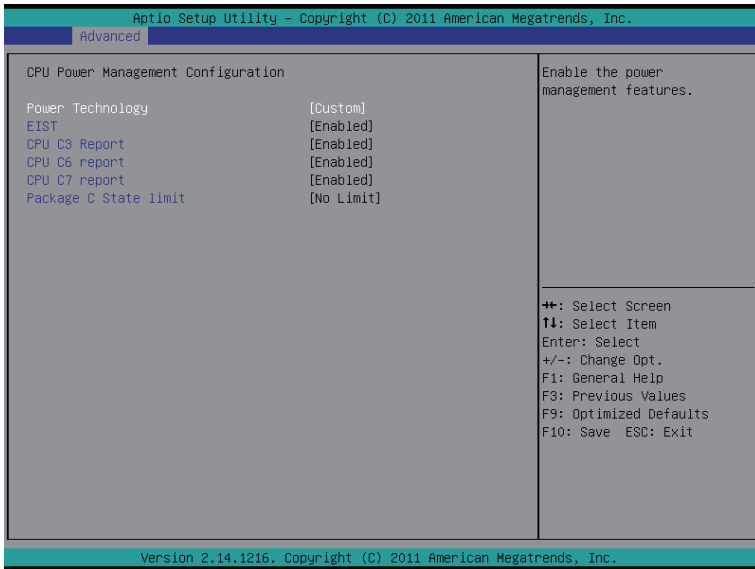
Default setting is **Balanced Performance**.

☞ **Intel Virtualization Technology**

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

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

2-2-3-1 CPU Power Management Configuration



☞ CPU Power Management Configuration

☞ Power Technology

Configure the power management features.

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

☞ EIST (Enhanced Intel SpeedStep Technology)

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

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

☞ CPU C3/C6 Report ^(Note)

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

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

☞ CPU C7 Report ^(Note)

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

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

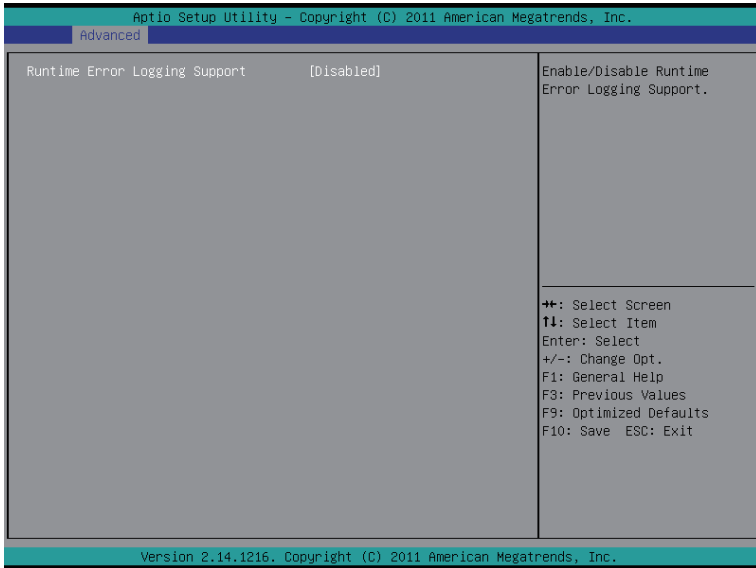
☞ Package C State Limit

Configure state for the C-State package limit.

Options available: C0/C1/C6/C7/No Limit. Default setting is **No Limit**.

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

2-2-4 Runtime Error Logging



☞ Runtime Error Logging Support

Enable/Disable Runtime error logging support.

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

☞ **SATA Port 0/1/2/3/4/5** (Note1)

Displays the installed HDD devices information.

☞ **SATA Mode**

Select the on chip SATA type.

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

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

AHCI 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/AHCI/Disabled. Default setting is **AHCI Mode**.

☞ **Serial ATA Controller 0/1** (Note2)

Determine the onboard SATA controller mode.

Compatible: SATA and PATA drives are auto-detected and placed in Legacy mode.

Enhanced: SATA and PATA drives are auto-detected and placed in Native mode.

Options available: Disabled/Enhanced/Compatible.

Default setting for Serial ATA 0 is **Compatible**.

Default setting for Serial ATA 1 is **Enhanced**.

(Note)

1. This item will not appear when the SATA mode is set to RAID mode.
2. This item will appear when the SATA mode is set to IDE mode.

2-2-6 Super IO Configuration

Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.	
Advanced	
Serial Port 1 Configuration	Enable or Disable Serial Port (COM)
Serial Port	[Enabled]
Device Settings	IO=3F8h; IRQ=4;
Change Settings	[Auto]
Device Mode	[Standard Serial Port Mode]
++: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F3: Previous Values F9: Optimized Defaults F10: Save ESC: Exit	
Version 2.14.1216, Copyright (C) 2011 American Megatrends, Inc.	

Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.	
Advanced	
Serial Port 2 Configuration	Enable or Disable Serial Port (COM)
Serial Port	[Enabled]
Device Settings	IO=2F8h; IRQ=3;
Change Settings	[Auto]
Device Mode	[Standard Serial Port Mode]
++: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F3: Previous Values F9: Optimized Defaults F10: Save ESC: Exit	
Version 2.14.1216, Copyright (C) 2011 American Megatrends, Inc.	

☞ **Serial Port 1/2 Configuration**

☞ **Serial Port**

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 Serial Port 1/2 base I/O address and IRQ.

☞ **Change Settings**

Change Serial Port 1/2 device settings. When set to Auto allows the server's BIOS or OS to select a configuration.

Options available: Auto/IO=3F8; IRQ=4/IO=3F8h; IRQ=3,4,5,6,7,10,11,12/

IO=2F8h; IRQ=3,4,5,6,7,10,11,12 /IO=3E8h; IRQ=3,4,5,6,7,10,11,12/IO=2E8h; IRQ=3,4,5,6,7,10,11,12.

Default setting is **Auto**.

☞ **Device Mode**

Change the Serial Port mode.

Options available: Standard Serial Port Mode (Normal Mode)/IrDA 1.0 (HP SIR) Mode (High Speed)/ASKIRfdgdg Mode. Default setting is **Standard Serial Port Mode**.

2-2-7 Serial Port Console Redirection

Aptio Setup Utility – Copyright (C) 2011 American Megatrends, Inc.

Advanced

<p>COM1 Console Redirection [Disabled] ▶ Console Redirection Settings</p> <p>COM2 Console Redirection [Disabled] ▶ Console Redirection Settings</p> <p>Serial Port for Out-of-Band Management/ Windows Emergency Management Services (EMS) Console Redirection [Disabled] ▶ Console Redirection Settings</p> <p>BMC SQL Serial Port Switch [Disabled]</p>	<p>Console Redirection Enable or Disable.</p> <hr/> <p> ++: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F3: Previous Values F9: Optimized Defaults F10: Save ESC: Exit </p>
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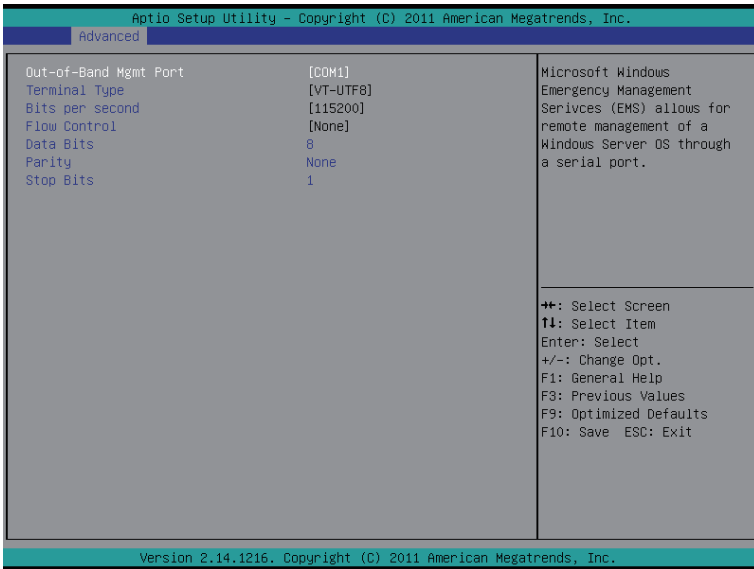
Version 2.14.1216. Copyright (C) 2011 American Megatrends, Inc.

Aptio Setup Utility – Copyright (C) 2011 American Megatrends, Inc.

Advanced

<p>COM1 Console Redirection Settings</p> <p>Terminal Type [ANSI] Bits per second [115200] Data Bits [8] Parity [None] Stop Bits [1] Flow Control [None] VT-UTF8 Combo Key Support [Enabled]</p>	<p>Emulation: ANSI: Extended ASCII char set. VT100: ASCII char set. VT100+: Extends VT100 to support color, function keys, etc. VT-UTF8: Uses UTF8 encoding to map Unicode chars onto 1 or more bytes.</p> <hr/> <p> ++: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F3: Previous Values F9: Optimized Defaults F10: Save ESC: Exit </p>
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☞ **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 (COM1 & COM2)**

Press [Enter] to enter advanced menu for console redirection settings.

☞ **Terminal Type**

Select a terminal type to be used for console redirection.

Options available: VT100/VT100+/ANSI /VT-UTF8.

☞ **Bits per second**

Select the baud rate for console redirection.

Options available: 9600/19200/57600/115200.

☞ **Data Bits**

Select the data bits for console redirection.

Options available: 7/8.

☞ **Parity**

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

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

Odd: parity bit is 0 if num of 1's 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.

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

☞ **Stop Bits**

Stop bits indicate the end of a serial data packet. (A start bit indicates the beginning). The standard setting is 1 stop bit. Communication with slow devices may require more than 1 stop bit.

Options available: 1/2.

☞ **Flow Control**

Flow control can prevent data loss from buffer overflow. When sending data, if the receiving buffers are full, a 'stop' signal can be sent to stop the data flow. Once the buffers are empty, a 'start' signal can be sent to re-start the flow. Hardware flow control uses two wires to send start/stop signals.

Options available: None/Hardware RTS/CTS.

☞ **VT-UTF8 Combo Key Support**

Enable/Disable VT-UTF8 Combo Key Support.

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

☞ **Serial Port for Out-of-Band Management/Windows Emergency Service (EMS)**

☞ **Console Redirection** ^(Note)

Select whether to enable console redirection for specified device. Console redirection enables users to manage the system from a remote location.

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

☞ **Console Redirection Settings**

Press [Enter] to enter advanced menu for console redirection settings.

☞ **Out-of-Band Mgmt Port**

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

Options available: COM1

☞ **Terminal Type**

Select a terminal type to be used for console redirection.

Options available: VT100/VT100+/ANSI /VT-UTF8.

☞ **Bits per second**

Select the baud rate for console redirection.

Options available: 9600/19200/57600/115200.

☞ **Data Bits**

Select the data bits for console redirection.

Options available: 7/8.

☞ **Parity**

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

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

Odd: parity bit is 0 if num of 1's 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.

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

☞ **Stop Bits**

Stop bits indicate the end of a serial data packet. (A start bit indicates the beginning). The standard setting is 1 stop bit. Communication with slow devices may require more than 1 stop bit.

Options available: 1/2.

☞ **Flow Control**

Flow control can prevent data loss from buffer overflow. When sending data, if the receiving buffers are full, a 'stop' signal can be sent to stop the data flow. Once the buffers are empty, a 'start' signal can be sent to re-start the flow. Hardware flow control uses two wires to send start/stop signals.

Options available: None/Hardware RTS/CTS.

☞ **VT-UTF8 Combo Key Support**

Enable/Disable VT-UTF8 Combo Key Support.

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

☞ **BMC SOL Serial Port Switch**

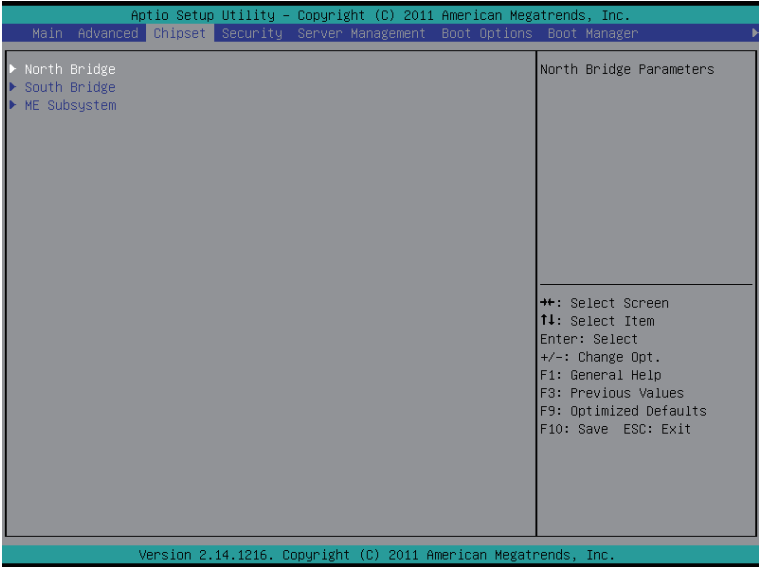
Enabled: COM1 Switch to AST2300 SOL UART.

Disabled: COM1 Switch to IT8728 SOL UART1.

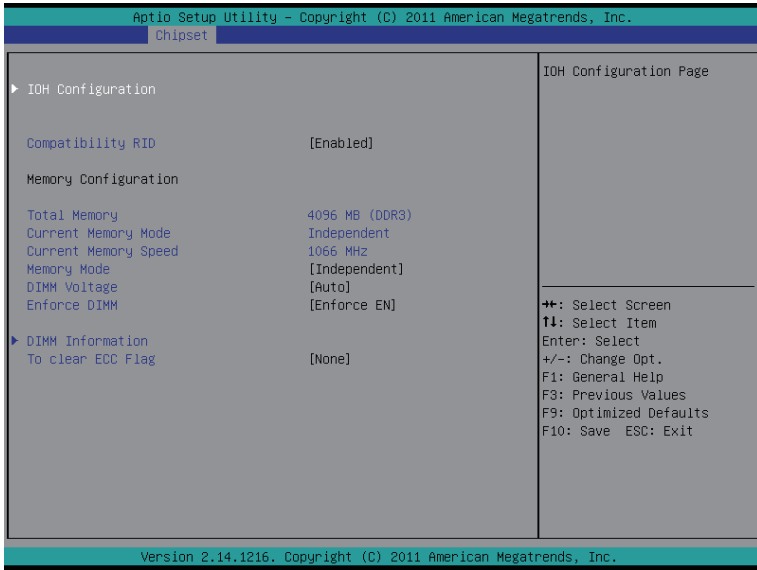
Options available: Enabled/Disabled. Default setting is **Disabled**.

2-3 Chipset Menu

The Chipset menu display submenu options for configuring the function of North Bridge and South Bridge. Select a submenu item, then press Enter to access the related submenu screen.



2-3-1 North Bridge Configuration



☞ **Compatibility RID**

Enable/Disable Compatibility RID function.

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

☞ **Memory Configuration**

☞ **Total Memory**

Determines how much total memory is present during the POST.

☞ **Current Memory Mode**

Displays the current memory mode. Memory mode can be determined in **Memory Mode** item.

☞ **Current Memory Speed**

Displays the current memory speed.

☞ **Memory Mode**

Determine the memory mode.

When set to Independent mode, all DIMMs are available to the operation system.

When set to Mirroring mode, the motherboard maintains two identical (redundant) copies of all data in memory.

When set to Lockstep mode, the motherboard uses two areas of memory to run the same set of operations in parallel.

When set to Sparing mode, a preset threshold of correctable errors is used to trigger fail-over.

The spare memory is put online and used as active memory in place of the failed memory.

Options available: Independent /Mirroring/ Lockstep/Sparing.

☞ **DIMM Voltage**

Configure the DIMM voltage.

Options available: Auto/ Force 1.5v/Force 1.35v. Default setting is **Auto**.

☞ **Enforce DIMM**

To enforce POR function. When disabled, the system will enforce 1600MHz LRDIMM.

Options available: Enforce EN/Stretch EN/Enforce DIS. Default setting is **Enforce EN**.

☞ **To clear ECC Flag**

To clear ECC flag function.

Options available: None. Default setting is **None**.

2-3-1-1 IOH Configuration

Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.		
Chipset		
<p>▶ Intel(R) VT for Directed I/O Configuration</p> <p>VGA Priority [Offboard] Gen3 Equalization WA's [Disabled] MMDFG BASE [MMDFG BASE CHANGE TO 2G]</p> <p>IOH 0 PCIe port Bifurcation Control</p> <p>PCIe Slot1 Speed [GEN2] PCIe Slot2 Speed [GEN2]</p>	<p>Intel(R) VT for Directed I/O Configuration</p>	<p>++: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F3: Previous Values F9: Optimized Defaults F10: Save ESC: Exit</p>
Version 2.14.1216. Copyright (C) 2011 American Megatrends, Inc.		

Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.		
Chipset		
<p>Intel(R) VT-d [Enabled] ATS Support [Disabled]</p>	<p>Enable/Disable Intel(R) Virtualization Technology for Directed I/O.</p>	<p>++: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F3: Previous Values F9: Optimized Defaults F10: Save ESC: Exit</p>
Version 2.14.1216. Copyright (C) 2011 American Megatrends, Inc.		

☞ **IOH Configuration**

☞ **Intel(R) VT for Directed I/O Configuration**

☞ **VGA Priority**

Define the display device priority.

☞ **Gen3 Equalization WA's**

Enable/Disable the support for Gen3 Equalization Workaround.

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

☞ **MMCFG BASE (Base address of the Memory Mapped Configuration Space)**

Configure the MMCFG base address.

Options available: MMCFG CASE Chage TO 2G. Default setting is **MMCFG CASE Chage TO 2G**.

☞ **IOH 0 PCIe port Bifurcation Control**

☞ **PCIe Slot1 Speed**

Options available: GEN1/GEN2/GEN3.

☞ **PCIe Slot2 Speed**

Options available: GEN1/GEN2/GEN3.

☞ **Intel(R) VT-d**

Enable/Disable Intel VT-d Technology function.

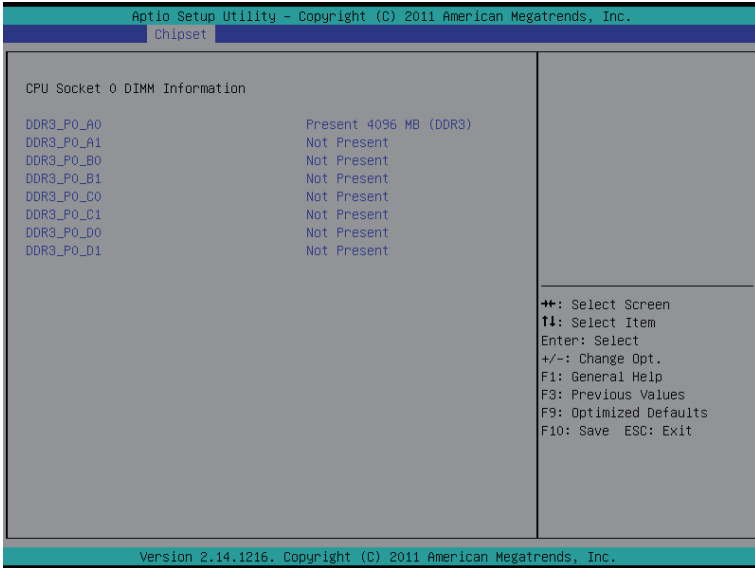
Options available: Enabled/Disabled. Default setting is **Disabled**.

☞ **ATS Support**

Enable/Disable VT-d Engine Aggress Translation Service (ATS) support.

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

2-3-1-2 DIMM Information



☞ DIMM Information:

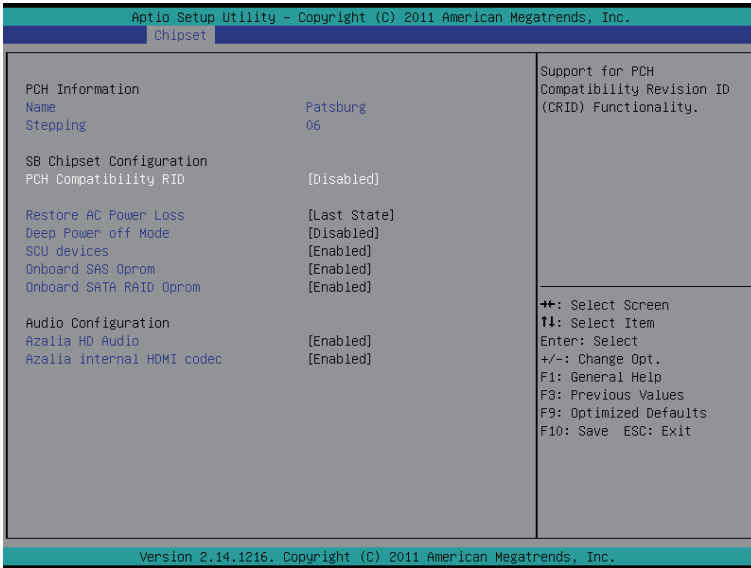
☞ DIMM Group: CPU Socket 0 DIMM Information

CPU Socket 0:

**DDR3_P0_A0/DDR3_P0_A1/DDR3_P0_B0/DDR3_P0_B1/DDR3_P0_C0/DDR3_P0_C1
DDR3_P0_D0/DDR3_P0_D1 Status**

The size of memory installed on each of the DDR3 slots.

2-3-2 South Bridge Configuration



☞ PCH Information:

☞ Name/Stepping Information

Displays the name and stepping information of the south bridge.

☞ SB Chipset Configuration

☞ PCH Compatibility RID

Enable/Disable PCH Compatibility RID support.

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

☞ Restore on AC Power Loss ^(Note)

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

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

☞ Deep Power off Mode

Enable/Disable Deep Power off Mode.

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

☞ SCU devices

Enable/Disable Patsburg SCU devices.

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

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

☞ **Onboard SAS oprom**

Enable/Disable onboard SAS option ROM.

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

☞ **Onboard SATA RAID oprom**

Enable/Disable onboard SATA RAID option ROM.

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

☞ **Audio Configuration**

☞ **Azalia HD Audio**

Enable/Disable onboard Audio controller.

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

☞ **Azalia internal HDMI codec**

Enable/Disable internal HDMI codec.

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

2-3-3 ME Subsystem

Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.	
Chipset	
Intel ME Subsystem Configuration	ME Subsystem Help
ME Subsystem [Enabled]	
ME BIOS Interface Version 1.2	
ME Version 2.1.5.73	
ME FW Status Value : 0xf0345	
ME FW State : SPS ME FW Active	
ME FW Operation State : MO without UMA	
ME FW Error Code : No Error	
ME Ext FW Status Value : 0x39004301	
BIOS Booting Mode : Performance Optimized mode	
Cores Disabled : 0	
ME FW SKU Information : SiEn NM	
	++ : Select Screen ↑↓ : Select Item Enter: Select +/-: Change Opt. F1: General Help F3: Previous Values F9: Optimized Defaults F10: Save ESC: Exit

Version 2.14.1216. Copyright (C) 2011 American Megatrends, Inc.

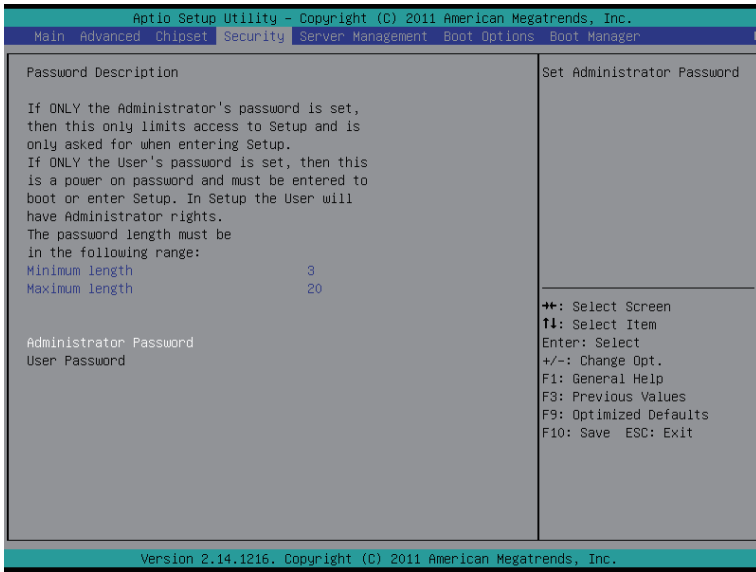
ME Subsystem Configuration

Enable/Disable ME subsystem configuration.

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.

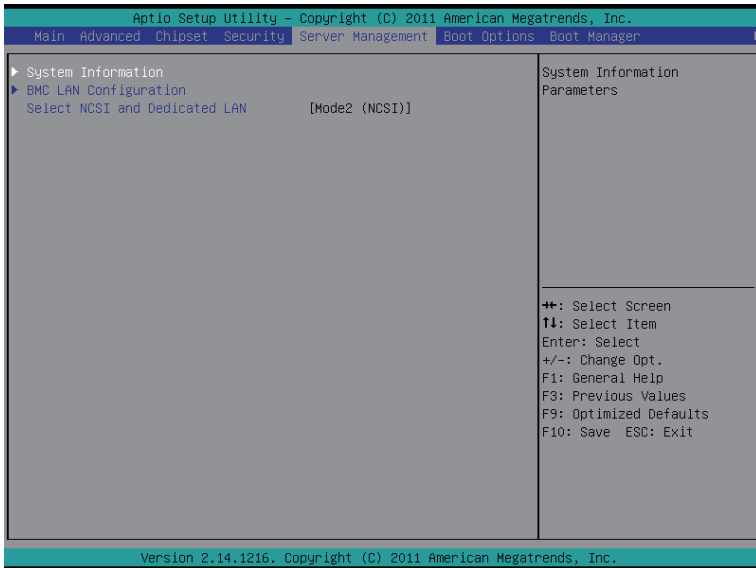
⤵ **Administrator Password**

Press Enter to configure the Administrator password.

⤵ **User Password**

Press Enter to configure the user password.

2-5 Server Management Menu



☞ System Information

Displays basic system ID information, as well as BIOS version. Press Enter to access the related submenu.

☞ BMC LAN Configuration

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

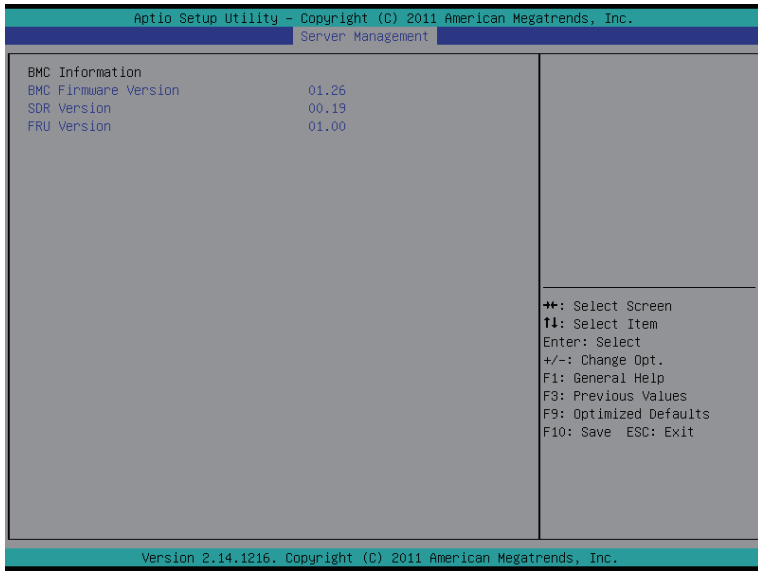
☞ Select NCSI and Dedicated LAN

Switch NCSI and dedicated LAN and send KCS command.

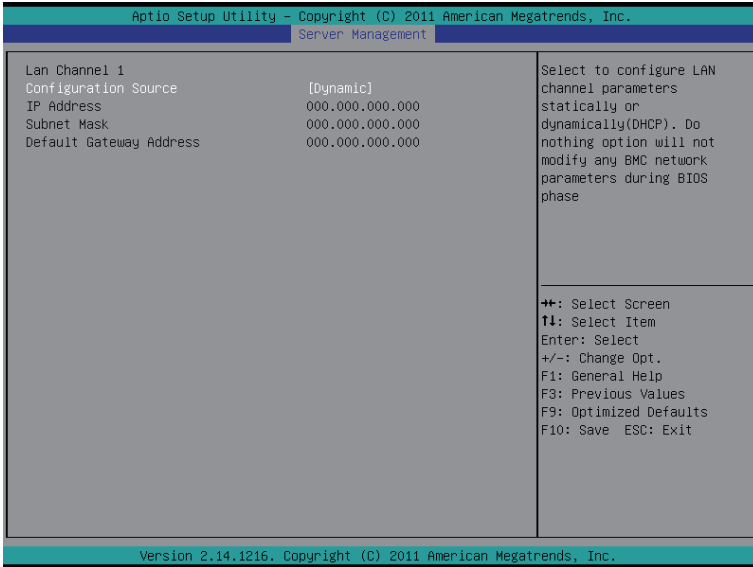
Options available: Mode2(NCSI)/ Mode1 (Dedicated). Default setting is **Mode2(NCSI)**.

2-5-1 System Information

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



2-5-2 BMC LAN Configuration



☞ Lan Channel 1

☞ Configuration Source

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

Options available: Static/Dynamic/Do Nothing.

☞ IP Address

Display IP Address information.

☞ Subnet Mask

Display Subnet Mask information.

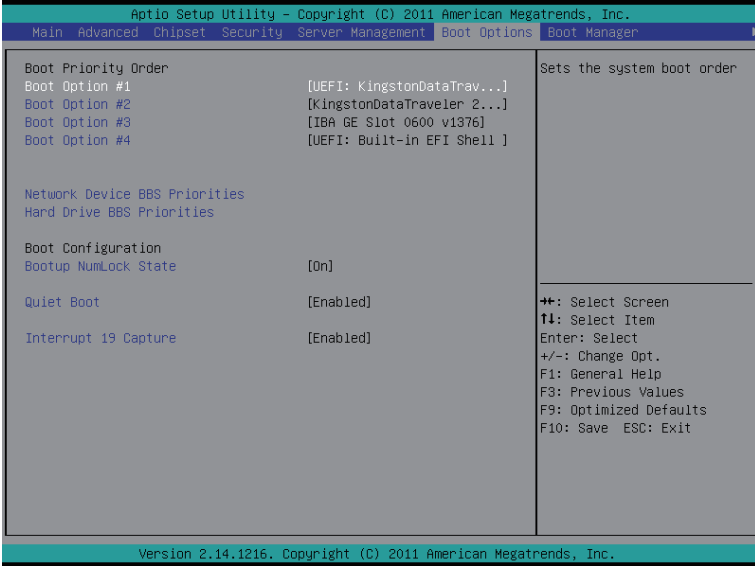
Please note that the IP address must be in three digitals, for example, 192.168.000.001.

☞ Default Gateway Address

Display Default Gateway Address information.

2-6 Boot Options Menu

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



⌄ Boot Priority Order

⌄ Boot Option #1/#2/#3/#4

Press Enter to configure the boot priority.

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

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

⌄ Network Device BBS Priorities

Press Enter to configure the boot priority.

⌄ Hard Drive BBS Priorities

Press Enter to configure the boot priority.

⌄ Bootup Configuration

⌄ 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**.

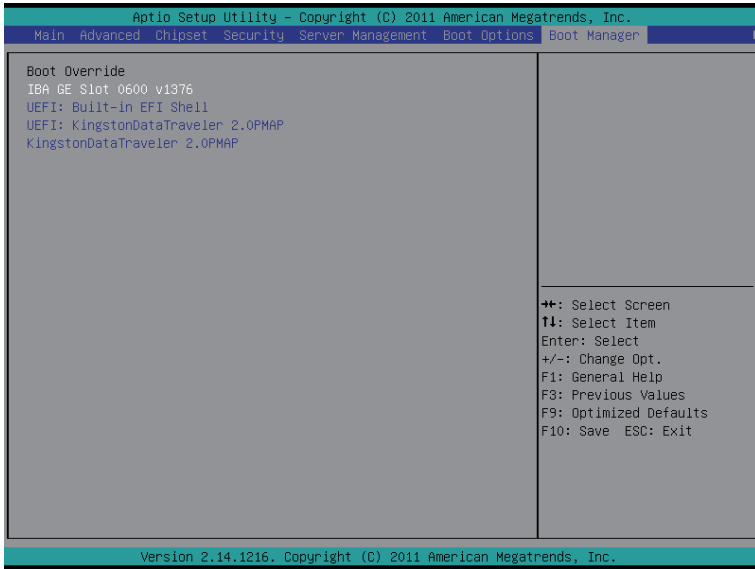
☞ **Interrupt 19 Capture**

Interrupt 19 is the software interrupt that handles the boot disk function. When enabled, this BIOS feature allows the ROM BIOS of those host adaptors to "capture" Interrupt 19 during the boot process so that drives attached to these adaptors can function as bootable disks.

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

2-7 Boot Manager

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



⌘ **Boot Override**

⌘ **IBA GE Slot 0600 v1376**

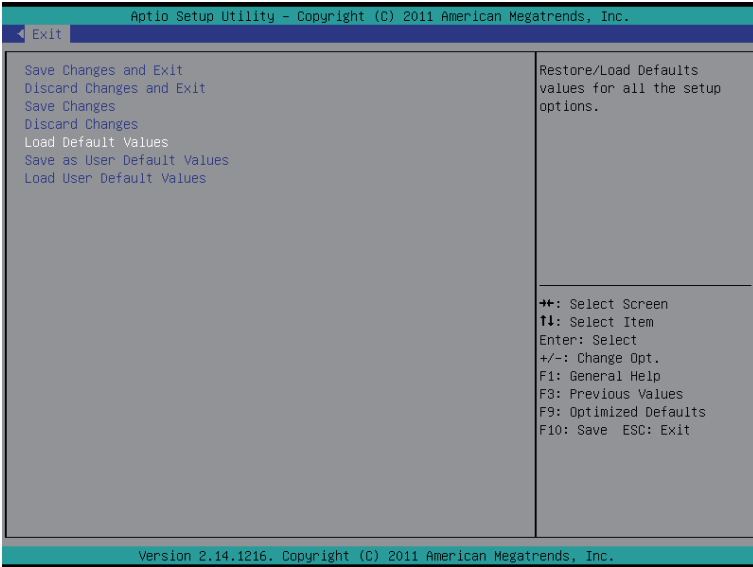
Press Enter to configure the device as the boot-up drive.

⌘ **UEFI: Built-in EFI Shell**

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

2-8 Exit Menu

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



☞ **Save Changes and Exit**

Saves changes made and close the BIOS setup.

Options available: Yes/No.

☞ **Discard Changes and Exit**

Discards changes made and close the BIOS setup.

Options available: Yes/No.

☞ **Save Changes**

Saves changes made in the BIOS setup.

Options available: Yes/No.

☞ **Discard Changes**

Discards all changes made in the BIOS setup.

Options available: Yes/No.

☞ **Load Default Values**

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.

☞ **Save as User Default Values**

Saves as user default and close the BIOS setup.

Options available: Yes/No.

☞ **Load User Default Values**

Loads the user default settings for all BIOS setup parameters.

Options available: Yes/No.

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.