OPEN
Industry Standard, Flexible Architecture

GREEN
Less Heat, Less Power Consumption

STABLE
Robust Design, Quality Parts

Stable and
Reliable Solution

Server/Workstation
Motherboard

EP2C621D16HM2-M3

User Manual

English

Version 1.0
Published March 2020

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(2) this device must accept any interference received, including interference that may cause undesired operation.

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The Lithium battery adopted on this motherboard contains Perchlorate, a toxic substance controlled in Perchlorate Best Management Practices (BMP) regulations passed by the California Legislature. When you discard the Lithium battery in California, USA, please follow the related regulations in advance.
"Perchlorate Material-special handling may apply, see www.dtsc.ca.gov/hazardouswaste/perchlorate"

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Contact Information

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Contents

Chapter 1 Introduction

Thank you for purchasing ASRock Rack ***EP2C621D16HM2-M3*** motherboard, a reliable motherboard produced under ASRock Rack's consistently stringent quality control. It delivers excellent performance with robust design conforming to ASRock Rack's commitment to quality and endurance.

In this manual, chapter 1 and 2 contains introduction of the motherboard and step-by-step guide to the hardware installation. Chapter 3 and 4 contains the configuration guide to BIOS setup and information of the Support CD.

Because the motherboard specifications and the BIOS software might be updated, the content of this manual will be subject to change without notice. In case any modifications of this manual occur, the updated version will be available on ASRock Rack website without further notice. You may find the latest memory and CPU support lists on ASRock Rack website as well. ASRock Rack's Website: www.ASRockRack.com

If you require technical support related to this motherboard, please visit our website for specific information about the model you are using.
http://www.asrockrack.com/support/

1.1 Package Contents

- ASRock Rack EP2C621D16HM2-M3 Motherboard
  (Half Form Factor: 20-in x 6.5-in, 50 cm x 16.5 cm)
- Quick Installation Guide
- 1 x Screw for M.2 Socket
- 2 x OCP3.0 Plastic Guide Rails

If any items are missing or appear damaged, contact your authorized dealer.

English

1.2 Specifications

EP2C621D16HM2-M3	
MB Physical Status	
Form Factor	Half Width
Dimension	20" x 6.5" (50cm x 16.5 cm)
Processor System	
CPU	Intel® Xeon® Scalable Processor
Socket	Dual Socket P, LGA3647
Chipset	Intel® C621
System Memory	
Capacity	16 DIMM slots
Type	- Six Channels Memory Technology - Support DDR4 RDIMM and LRDIMM
DIM Size per DIMM	- RDIMM: 2666/2400 MHz - LRDIMM: 2666/2400 MHz
DIMM Frequency	RDIMM: 32GB, 16GB, 8GB, 4GB LRDIMM: 64GB, 32GB
Voltage	1.2V
Expansion Slot	
PCIe 3.0 x 16	SLOT1: Gen3 x16 link from CPU1 SLOT2: Gen3 x16 link from CPU1
M.2	1 (2280, support PCIE(x4) or SATA3 M.2)
Mezzanine slot	1 x16 supports Type OCP 3.0
Storage	
SATA Controller	5 x SATA3 (including 1x MINISAS HD port and 1x M.2 port)
Management	
BMC Controller	ASPEED AST2500
IPMI Dedicated GLAN	1 x Realtek RTL8211E for dedicated management GLAN
Features	- Watch Dog - NMI
Graphics	
Controller	ASPEED AST2500
VRAM	DDR4 16MB
Rear Panel I/O	
VGA Port	1 x D-Sub (Adapter Cable Required)
USB 3.0 Port	2
LAN Port	1 (IPMI) LAN Port (RJ45) LAN Ports with LED (ACT/LINK LED and SPEED LED)
UID Button/ UID LED	1

Internal Connector	
Auxiliary Panel Header	1 (includes chassis intrusion, location button & LED, front LAN LED)
Front Panel	1
TPM Header	1
IPMB Header	1
+12V Power Connector	2 x (8-pin)
Fan Header	4 x System Fan (6-pin)
M.2	1 (up to 2280)
NMI Button	1
ME Recovery	1
SMBus from BMC	1
PWR_SMB	1
HSBP_1	1
PSU Header	1 (J4)
System BIOS	
BIOS Type	256Mb AMI UEFI Legal BIOS
BIOS Features	- Plug and Play (PnP) - ACPI 2.0 Compliance Wake Up Events - SMBIOS 2.8 Support - ASRock Rack Instant Flash
Hardware Monitor	
Temperature	- CPU Temperature Sensing - System Temperature Sensing
Fan	- CPU/Rear/Front Fan Tachometer - CPU Quiet Fan (Allow Chassis Fan Speed Auto-Adjust by CPU Temperature) - CPU/Rear/Front Fan Multi-Speed Control
Voltage	Voltage Monitoring: +12V, +5V, +3.3V, CPU Vcore, DRAM, 1.05V_PCH, +BAT, 3VSB, 5VSB
Support OS	
OS	Microsoft® Windows® (Server OS): - Server 2012 R2 (64 bit) - Server 2016 (64 bit) Linux: - RedHat Enterprise Linux Server 6.8 (64 bit) / 7.2 (64 bit) - CentOS 6.8 (64 bit) / 7. 2 (64 bit) - SUSE Enterprise Linux Server 11 SP4 (64 bit) /12 SP3 (64 bit) - FreeBSD 11 (64 bit) - Ubuntu 16.04/15.10 (64 bit)

	Virtual: - VMWare® ESXi 6.5 ** Please refer to our website for the latest OS support list.* ** Before installing the Linux OS, please first enter the BIOS settings, go to "Advanced" > "Chipset Configuration" and set "IGPU Multi-Monitor" option to "Disabled".*
Environment	
Temperature	Operation temperature: 10°C ~ 35°C / Non operation temperature: -40°C ~ 70°C

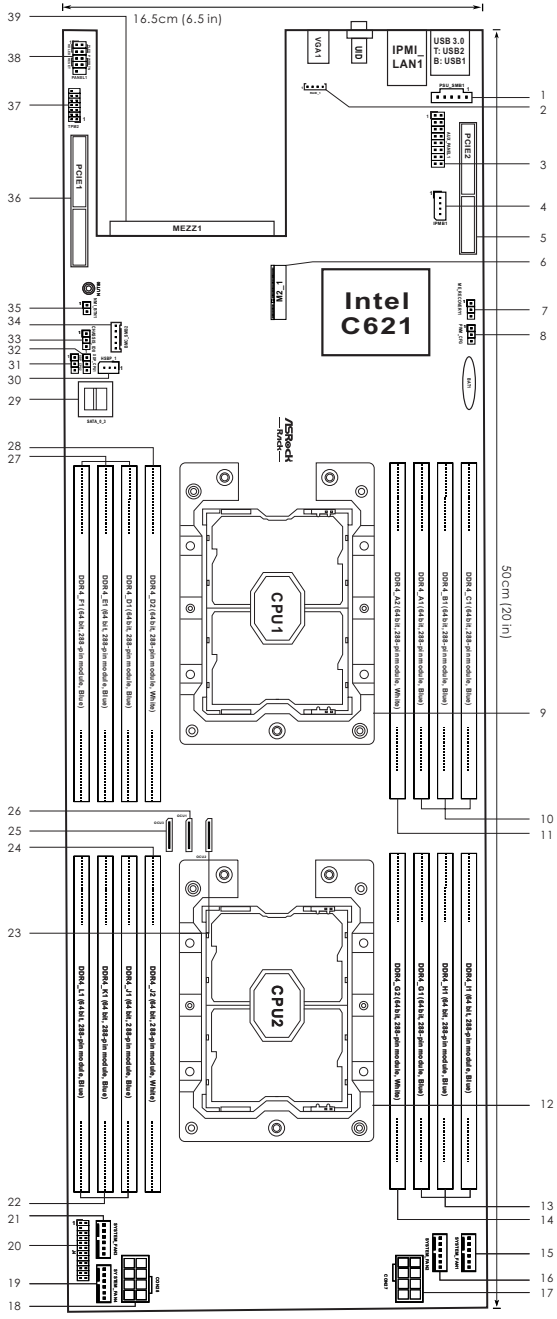
This motherboard supports Wake from on Board LAN. To use this function, please make sure that the "Wake on Magic Packet from power off state" is enabled in Device Manager > Intel® Ethernet Connection > Power Management. And the "PCI Devices Power On" is enabled in UEFI SETUP UTILITY > Advanced > ACPI Configuration. After that, onboard LAN1&2 can wake up S5 under OS.

If you install Intel® LAN utility or Marvell SATA utility, this motherboard may fail Windows® Hardware Quality Lab (WHQL) certification tests. If you install the drivers only, it will pass the WHQL tests.

1.3 Unique Features

ASRock Rack Instant Flash is a BIOS flash utility embedded in Flash ROM. This convenient BIOS update tool allows you to update system BIOS without entering operating systems first like MS-DOS or Windows®. With this utility, you can press the <F6> key during the POST or the <F2> key to enter into the BIOS setup menu to access ASRock Rack Instant Flash. Just launch this tool and save the new BIOS file to your USB flash drive, floppy disk or hard drive, then you can update your BIOS only in a few clicks without preparing an additional floppy diskette or other complicated flash utility. Please be noted that the USB flash drive or hard drive must use FAT32/16/12 file system.

1.4 Motherboard Layout

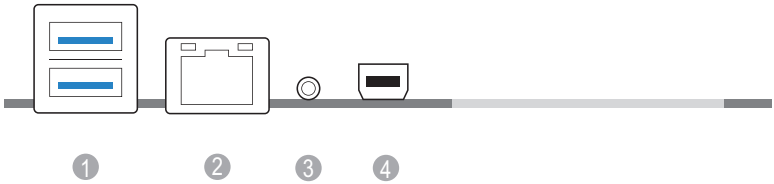


No.	Description
1	PSU SMBus Header (PSU_SMB1)
2	Virtual RAID On CPUHeader (RAID_1)
3	Auxiliary Panel Header (AUX_PANEL1)
4	Intelligent Platform Management Bus Header (IPMB1)
5	PCI Express 3.0 x16 Slot (PCIE2)
6	M.2 Socket (M2_1) (Type 2280)
7	ME Recovery Jumper (ME_RECOVERY1)
8	PWM Configuration Header (PWM_CFG)
9	CPU Socket 1 LGA-3647 (Socket P) (CPU1)
10	3 x 288-pin DDR4 DIMM Slots (DDR4_A1, DDR4_B1, DDR4_C1, Blue)*
11	1 x 288-pin DDR4 DIMM Slot (DDR4_A2, White)*
12	CPU Socket 2 LGA-3647 (Socket P) (CPU2)
13	3 x 288-pin DDR4 DIMM Slots (DDR4_G1, DDR4_H1, DDR4_I1, Blue)*
14	1 x 288-pin DDR4 DIMM Slot (DDR4_G2, White)*
15	System Fan Connector (SYSTEM_FAN1)
16	System Fan Connector (SYSTEM_FAN2)
17	ATX 12V Power Connector (CON27)
18	ATX 12V Power Connector (CON28)
19	System Fan Connector (SYSTEM_FAN4)
20	PSU Header (J4)
21	System Fan Connector (SYSTEM_FAN3)
22	3 x 288-pin DDR4 DIMM Slots (DDR4_J1, DDR4_K1, DDR4_L1, Blue)*
23	OCuLink x4 Connector (OCU2)
24	1 x 288-pin DDR4 DIMM Slot (DDR4_J2, White)*
25	OCuLink x4 Connector (OCU3)
26	OCuLink x4 Connector (OCU1)
27	3 x 288-pin DDR4 DIMM Slots (DDR4_D1, DDR4_E1, DDR4_F1, Blue)*
28	1 x 288-pin DDR4 DIMM Slot (DDR4_D2, White)*
29	Mini SAS HD Connector (SATA_0_3)
30	Backplane PCI Express Hot-Plug Connector (HSBP_1)
31	CPU2 Bypass Jumper (XDP_CPU2)
32	CPU1 Bypass Jumper(XDP_CPU1)
33	Chassis ID0 Jumper (CHASSIS_ID0)

No.	Description
34	BMC SMBus Header (BMC_SMB2)
35	Non Maskable Interrupt Button (NMI_BTN1)
36	PCI Express 3.0 x16 Slot (PCIE1)
37	TPM Header (TPM2)
38	System Panel Header (PANEL1)
39	Mezzanine Card Slot (MEZZ1)

**For DIMM installation and configuration instructions, please see p.16 (Installation of Memory Modules (DIMM)) for more details.*

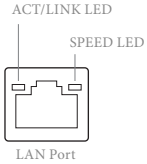
1.5 I/O Panel



No.	Description	No.	Description
1	USB 3.0 Ports (USB3_1_2)	3	UID Switch (UID)
2	LAN RJ-45 Port (IPMI_LAN1)*	4	VGA Port (VGA1)

LAN Port LED Indications

*There are two LED next to the LAN port. Please refer to the table below for the LAN port LED indications.

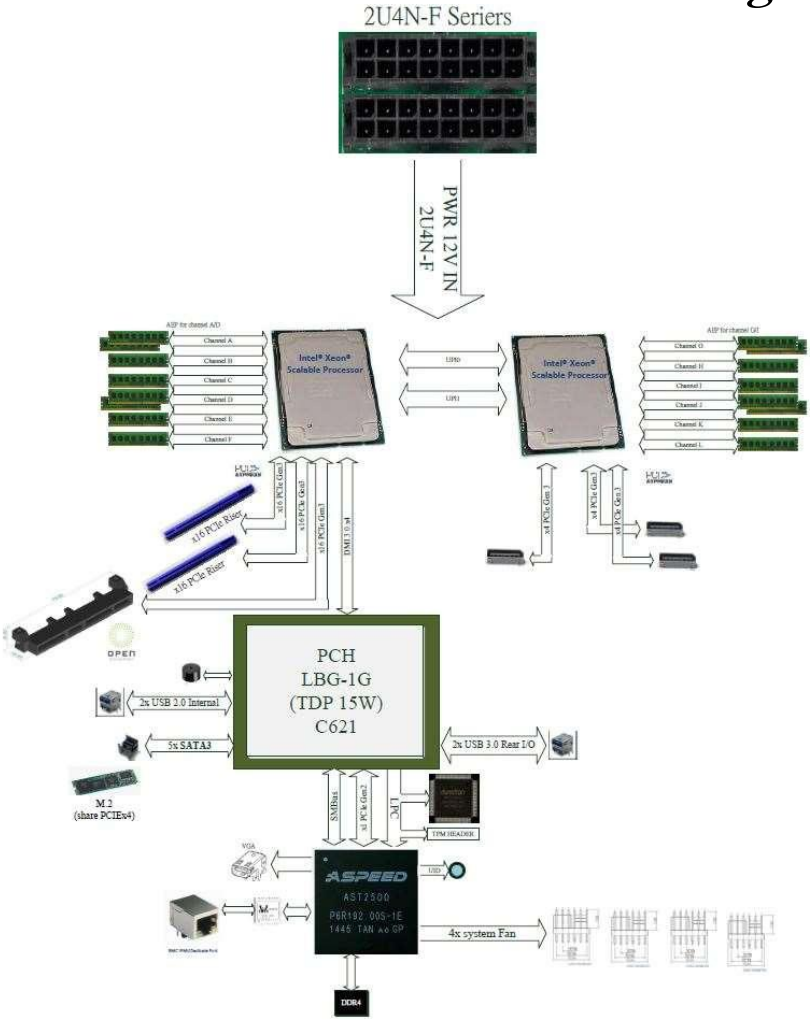


Dedicated IPMI LAN Port LED Indications

Activity / Link LED		Speed LED	
Status	Description	Status	Description
Off	No Link	Off	10M bps connection or no link
Blinking Yellow	Data Activity	Yellow	100M bps connection
On	Link	Green	1Gbps connection

1.6 Block Diagram

EP2C621D16HM2-M3 Block Diagram



Chapter 2 Installation

This is a half form factor (20" x 6.5", 50 cm x 16.5 cm) motherboard. Before you install the motherboard, study the configuration of your chassis to ensure that the motherboard fits into it.

EP2C621 Series are dual socket motherboards that support Intel® Xeon® Scalable Processor. Please install a primary processor (BootStrap Processor) into "CPU1" socket and then install a non-Primary Processor (Application Processors) into "CPU2" socket. *For a single CPU, please install it into "CPU1" socket (framed by a square).

Make sure to unplug the power cord before installing or removing the motherboard. Failure to do so may cause physical injuries to you and damages to motherboard components.

2.1 Screw Holes

Place screws into the holes indicated by circles to secure the motherboard to the chassis.

Do not over-tighten the screws! Doing so may damage the motherboard.

2.2 Pre-installation Precautions

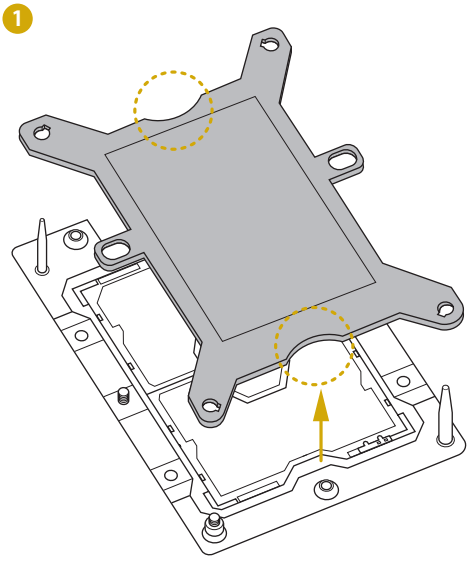
Take note of the following precautions before you install motherboard components or change any motherboard settings.

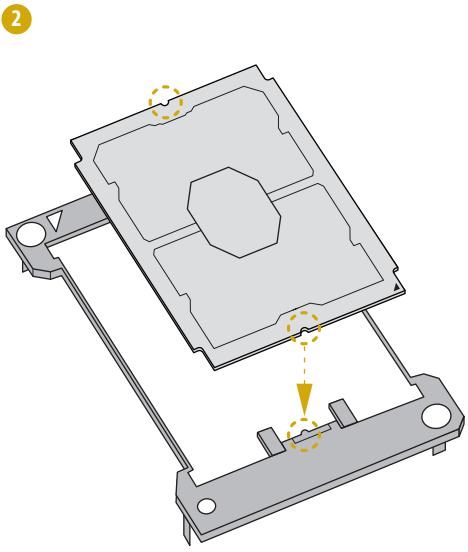
1. Unplug the power cord from the wall socket before touching any components.
2. To avoid damaging the motherboard's components due to static electricity, NEVER place your motherboard directly on the carpet or the like. Also remember to use a grounded wrist strap or touch a safety grounded object before you handle the components.
3. Hold components by the edges and do not touch the ICs.
4. Whenever you uninstall any component, place it on a grounded anti-static pad or in the bag that comes with the component.
5. When placing screws into the screw holes to secure the motherboard to the chassis, please do not over-tighten the screws! Doing so may damage the motherboard.

Before you install or remove any component, ensure that the power is switched off or the power cord is detached from the power supply. Failure to do so may cause severe damage to the motherboard, peripherals, and/or components.

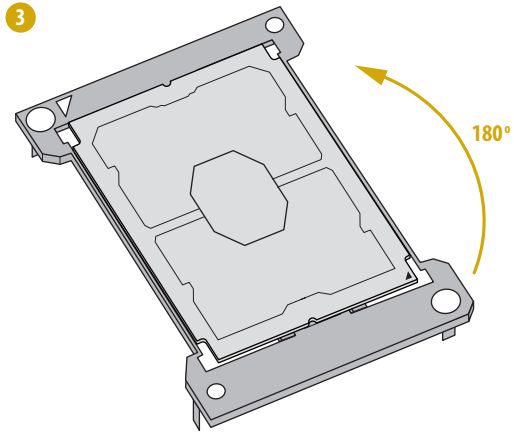
2.3 Installing the CPU and Heatsink

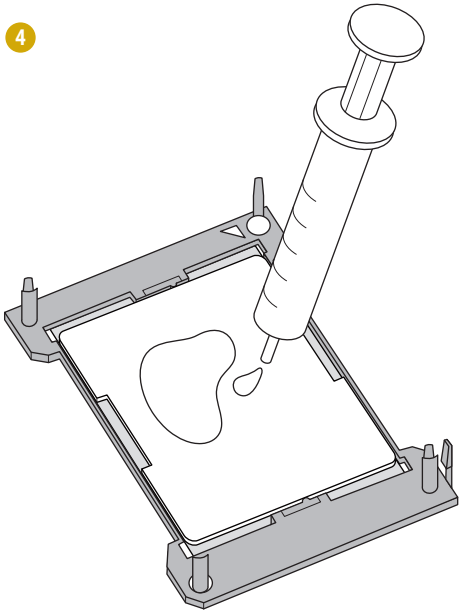
1. *Before you insert the CPU into the socket, please check if the PnP cap is on the socket, if the CPU surface is unclean, or if there are any bent pins in the socket. Do not force to insert the CPU into the socket if above situation is found. Otherwise, the CPU will be seriously damaged.*
2. *Unplug all power cables before installing the CPU.*



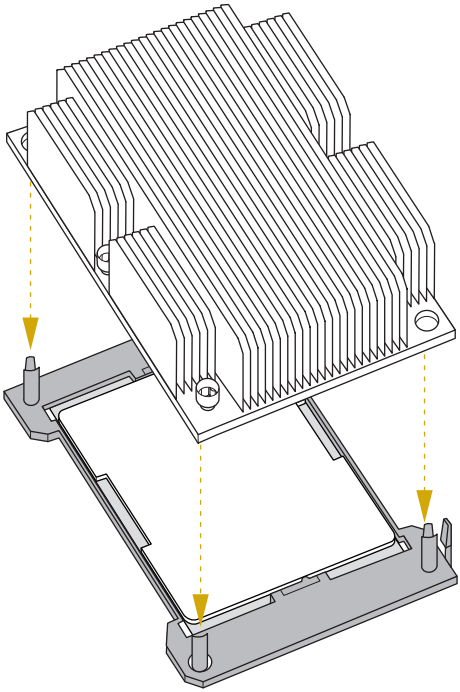


1. *Before you installed the heatsink, you need to spray thermal interface material between the CPU and the heatsink to improve heat dissipation.*
2. *Illustration in this documentation are examples only. Heatsink or fan cooler type may differ.*

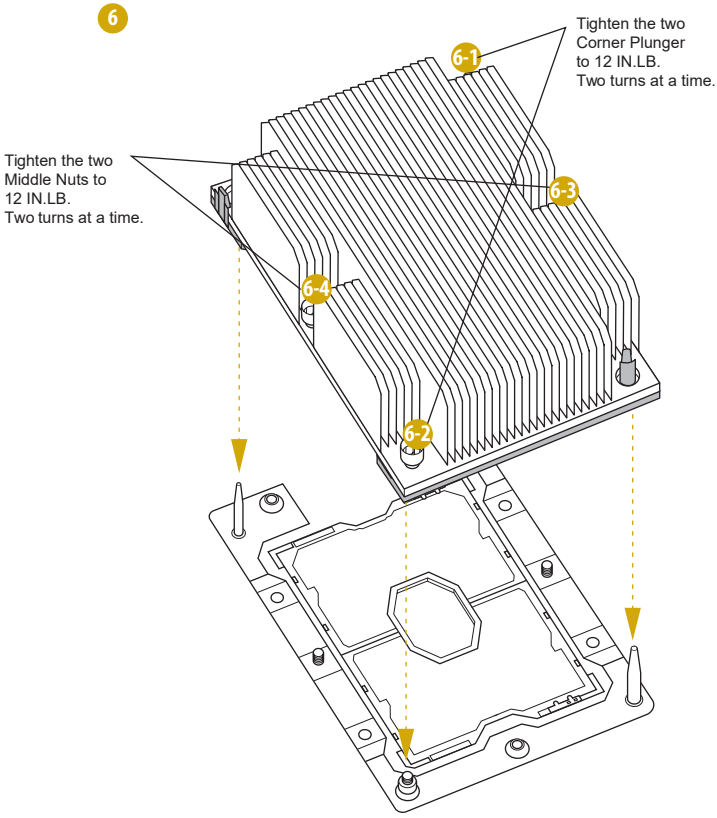




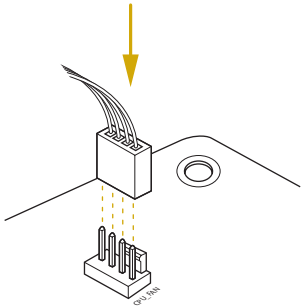
5



6


Tighten the two
Corner Plunger
to 12 IN.LB.
Two turns at a time.
Tighten the two
Middle Nuts to
12 IN.LB.
Two turns at a time.
6-1
6-2
6-3
6-4

7



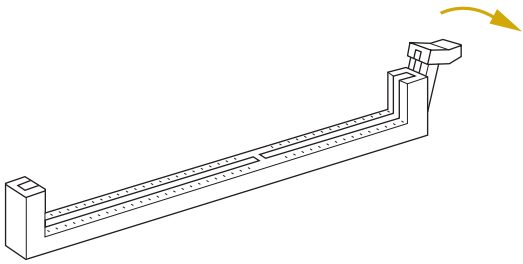
2.4 Installation of Memory Modules (DIMM)

This motherboard provides sixteen 288-pin DDR4 (Double Data Rate 4) DIMM slots in two groups, and supports Six and Dual Channel Memory Technology.

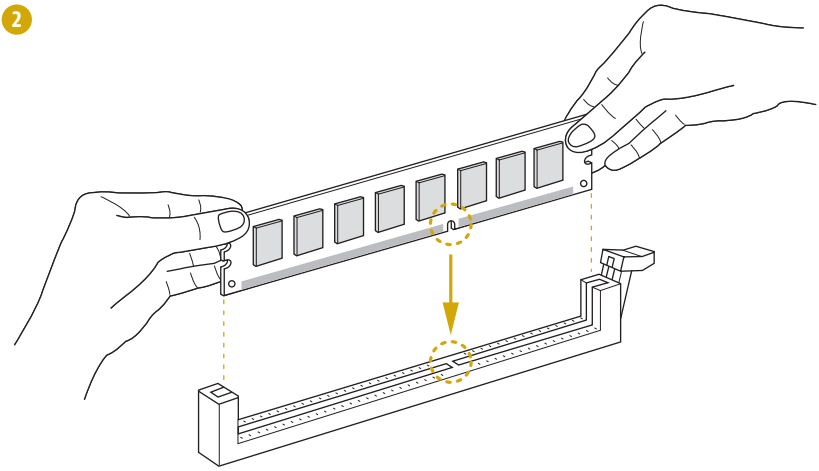
Capacity	CPU1	CPU2
256GB / 512GB	DDR4_A1, B1, C1, D1, E1, F1	DDR4_G1,H1, I1, J1, K1, L1
	DDR4_A2, D2	DDR4_G2, J2

1. *It is not allowed to install a DDR, DDR2 or DDR3 memory module into a DDR4 slot; otherwise, this motherboard and DIMM may be damaged.*
2. *For dual channel configuration, you always need to install identical (the same brand, speed, size and chip-type) DDR4 DIMM pairs.*
3. *It is unable to activate Dual Channel Memory Technology with only one or three memory module installed.*
4. *Some DDR4 1GB double-sided DIMMs with 16 chips may not work on this motherboard. It is not recommended to install them on this motherboard.*

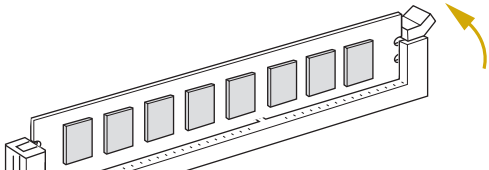
1



2



3



The DIMM only fits in one correct orientation. It will cause permanent damage to the motherboard and the DIMM if you force the DIMM into the slot at incorrect orientation.

Recommended Memory Configurations

A single memory module should be installed in the BLUE socket which is nearest to the CPU.

1 CPU Configuration

	CPU1							
	A1	A2	B1	C1	D1	D2	E1	F1
1 DIMM	#							
2 DIMMS	#				#			
4 DIMMS	#		#		#		#	
6 DIMMS	#		#	#	#		#	#
8 DIMMS	#	#	#	#	#	#	#	#

2 CPU Configuration

	CPU1							
	A1	A2	B1	C1	D1	D2	E1	F1
1 DIMM	#							
2 DIMMS	#							
4 DIMMS	#				#			
8 DIMMS	#		#		#		#	
16 DIMMS	#	#	#	#	#	#	#	#

	CPU2							
	G1	G2	H1	I1	J1	J2	K1	L1
1 DIMM								
2 DIMMS	#							
4 DIMMS	#				#			
8 DIMMS	#		#		#		#	
16 DIMMS	#	#	#	#	#	#	#	#

Note: "#" indicates the socket is populated with a memory module.

2.5 Expansion Slot (PCI Express Slot)

There are 2 PCI Express slots on this motherboard.

PCIE slot:

PCIE1 (PCIE 3.0 x16 slot, from CPU1) is used for PCI Express x16 lane width cards.
PCIE2 (PCIE 3.0 x16 slot, from CPU1) is used for PCI Express x16 lane width cards.

Slot	Generation	Mechanical	Electrical	Source
PCIE 1	3.0	x16	x16	CPU1
PCIE 2	3.0	x16	x16	CPU1

Installing an expansion card

Step 1. Remove the bracket facing the slot that you intend to use on the chassis. Keep the screw for later use.

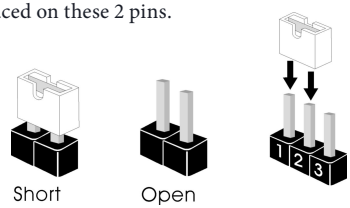
Step 2. Install the PCIE card to the riser card.
If you have any queries related to the riser card, please contact our local sales representative or technical support team.

Step 3. Align the riser-card assembly connector with the slot on the system board. Press firmly until the riser-card assembly is completely seated on the slot.

Step 4. Fasten the card to the chassis with the screw.

2.6 Jumper Setup

The illustration shows how jumpers are setup. When the jumper cap is placed on the pins, the jumper is "Short". If no jumper cap is placed on the pins, the jumper is "Open". The illustration shows a 3-pin jumper whose pin1 and pin2 are "Short" when a jumper cap is placed on these 2 pins.

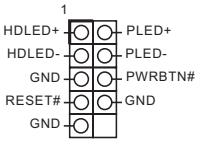


ME Recovery Jumper (3-pin ME_RECOVERY1) (see p.6, No. 7)	1_2 Normal Mode (Default)	2_3 ME Recovery Mode
Chassis ID0 Jumper (3-pin CHASSIS_ID0) (see p.6, No. 33)	1_2 Board Level SKU (Default)	2_3 2U4N-F/C621 SKU (Default)
CPU1 Bypass Jumper (3-pin XDP_CPU1) (see p.6, No. 32)	1_2 Force Bypass of CPU1	2_3 Normal Operation (Default)
CPU2 Bypass Jumper (3-pin XDP_CPU2) (see p.6, No. 31)	1_2 Force Bypass of CPU2	2_3 Normal Operation (Default)

2.7 Onboard Headers and Connectors

Onboard headers and connectors are NOT jumpers. Do NOT place jumper caps over these headers and connectors. Placing jumper caps over the headers and connectors will cause permanent damage to the motherboard.

System Panel Header
(9-pin PANEL1)
(see p.6, No. 38)



Connect the power switch, reset switch and system status indicator on the chassis to this header according to the pin assignments. Particularly note the positive and negative pins before connecting the cables.

PWRBTN (Power Switch):
Connect to the power switch on the chassis front panel. You may configure the way to turn off your system using the power switch.

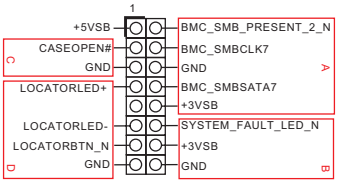
RESET (Reset Switch):
Connect to the reset switch on the chassis front panel. Press the reset switch to restart the computer if the computer freezes and fails to perform a normal restart.

PLED (System Power LED):
Connect to the power status indicator on the chassis front panel. The LED is on when the system is operating. The LED is off when the system is in S4 sleep state or powered off (S5).

HDLED (Hard Drive Activity LED):
Connect to the hard drive activity LED on the chassis front panel. The LED is on when the hard drive is reading or writing data.

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.

Auxiliary Panel Header
(16-pin AUX PANEL1)
(see p.6, No. 3)



This header supports multiple functions on the front panel, including the front panel SMB, system fault indicator and chassis intrusion pin.

A. Front panel SMBus connecting pin (6-1 pin FPSMB)
This header allows you to connect SMBus (System Management Bus) equipment. It can be used for communication between peripheral equipment in the system, which has slower transmission rates, and power management equipment.

B. System Fault LED (2-pin LOCATOR)
This header is for the Fault LED on the system.

C. Chassis intrusion pin (2-pin CHASSIS)
This header is provided for host computer chassis with chassis intrusion detection designs. In addition, it must also work with external detection equipment, such as a chassis intrusion detection sensor or a microswitch. When this function is activated, if any chassis component movement occurs, the sensor will immediately detect it and send a signal to this header, and the system will then record this chassis intrusion event. The default setting is set to the CASEOPEN and GND pin; this function is off.

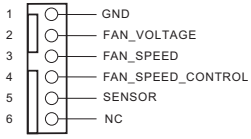
D. Locator LED (4-pin LOCATOR)
This header is for the locator switch and LED on the front panel.

Mini SAS HD Connector
(SATA_0_3)
(see p.6, No.29)

This Mini SAS HD connector supports SAS/SATA data cables for internal storage devices. The current SAS3/SATA3 interface allows up to 12.0 Gb/s data transfer rate. For connecting SAS HDDs, please contact SAS data cable dealers.

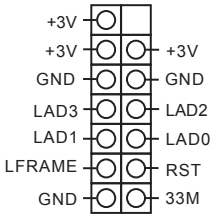
English

System Fan Connectors
(6-pin SYSTEM_FAN1)
(see p.6, No. 15)
(6-pin SYSTEM_FAN2)
(see p.6, No. 16)
(6-pin SYSTEM_FAN3)
(see p.6, No. 21)
(6-pin SYSTEM_FAN4)
(see p.6, No. 19)



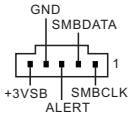
Please connect fan cables to the fan connectors and match the black wire to the ground pin. All fans support Fan Control.

TPM Header
(13-pin TPM2)
(see p.6, No. 37)



This connector supports Trusted Platform Module (TPM) system, which can securely store keys, digital certificates, passwords, and data. A TPM system also helps enhance network security, protects digital identities, and ensures platform integrity.

PSU SMBus
(PSU_SMB1)
(see p.6, No. 1)

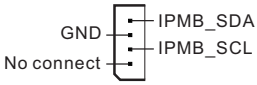


PSU SMBus monitors the status of the power supply, fan and system temperature.

Non Maskable Interrupt
Button Header
(NMI_BTN1)
(see p.6, No. 35)

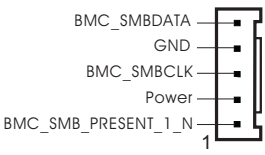
Please connect a NMI device to this header.

Intelligent Platform
Management Bus header
(4-pin IPMB1)
(see p.6, No. 4)



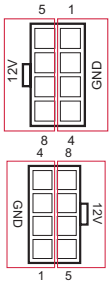
This 4-pin connector is used to provide a cabled base-board or front panel connection for value added features and 3rd-party add-in cards, such as Emergency Management cards, that provide management features using the IPMB.

Baseboard Management Controller SMBus Header (5-pin BMC_SMB2) (see p.6, No. 34)



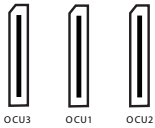
This header is used for the SM BUS devices.

ATX 12V Power Connectors (8-pin Con27) (see p.6, No. 17) (8-pin Con28) (see p.6, No. 18)



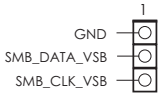
This motherboard provides two 8-pin ATX 12V power connectors.

OCuLink Connectors (OCU1) (see p.6, No. 26) (OCU2) (see p.6, No. 23) (OCU3) (see p.6, No. 25)



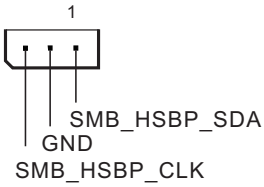
Please connect PCIE SSDs to these connectors.

PWM Configuration Header (3-pin PWM_CFG1) (see p.6, No. 8)



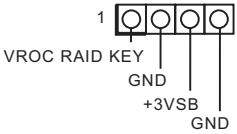
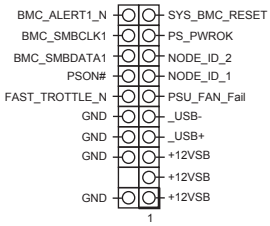
This header is used for PWM configurations.

Backplane PCI Express Hot-Plug Connector (3-pin HSBP_1) (see p.6, No. 30)



This header is used for the hot plug feature of HDDs on the backplane.

English

Virtual RAID On CPU Header (4-pin RAID_1) (see p.6, No. 2)		This connector supports Intel® Virtual RAID on CPU and NVME/AHCI RAID on CPU PCIE.
PSU Header (19-pin J4) (see p.6, No. 20)		Connect this 19-pin header to the PSU for +12VSB and PSON PWROK.

2.8 Unit Identification purpose LED/Switch

With the UID button, You are able to locate the server you're working on from behind a rack of servers.

Unit Identification purpose LED/Switch (UID)		When the UID button on the front or rear panel is pressed, the front/rear UID blue LED indicator will be truned on. Press the UID button again to turn off the indicator.

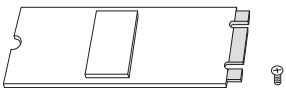
2.9 Driver Installation Guide

To install the drivers to your system, please insert the support CD to your optical drive first. Then, the drivers compatible to your system can be auto-detected and listed on the support CD driver page. Please follow the order from top to bottom to install those required drivers. Therefore, the drivers you install can work properly.

2.10 M.2_SSD (NGFF) Module Installation Guide

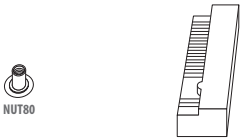
The M.2, also known as the Next Generation Form Factor (NGFF), is a small size and versatile card edge connector that aims to replace mPCIe and mSATA. The Ultra M.2 Socket (M2_1) supports a M.2 SATA3 6.0 Gb/s module or a M.2 PCI Express module up to Gen3 x4(32Gb/s).

Installing the M.2_SSD (NGFF) Module



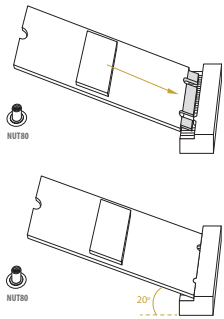
Step 1

Prepare a M.2_SSD (NGFF) module and the screw. (Module Type: 2280)



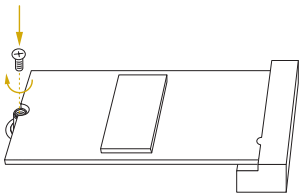
Step 2

Peel off the yellow protective film on the nut.



Step 3

Align and gently insert the M.2 (NGFF) SSD module into the M.2 slot. Please be aware that the M.2 (NGFF) SSD module only fits in one orientation.



Step 4

Tighten the screw with a screwdriver to secure the module into place. Please do not overtighten the screw as this might damage the module.

Chapter 3 UEFI Setup Utility

3.1 Introduction

This section explains how to use the UEFI SETUP UTILITY to configure your system. The UEFI chip on the motherboard stores the UEFI SETUP UTILITY. You may run the UEFI SETUP UTILITY when you start up the computer. Please press <F2> or <Del> during the Power-On-Self-Test (POST) to enter the UEFI SETUP UTILITY; otherwise, POST will continue with its test routines.

If you wish to enter the UEFI SETUP UTILITY after POST, restart the system by pressing <Ctrl> + <Alt> + <Delete>, or by pressing the reset button on the system chassis. You may also restart by turning the system off and then back on.

Because the UEFI software is constantly being updated, the following UEFI setup screens and descriptions are for reference purpose only, and they may not exactly match what you see on your screen.

3.1.1 UEFI Menu Bar

The top of the screen has a menu bar with the following selections:

Item	Description
Main	To set up the system time/date information
Advanced	To set up the advanced UEFI features
Security	To set up the security features
Boot	To set up the default system device to locate and load the Operating System
Event Logs	For event log configuration
Server Mgmt	To manage the server
Exit	To exit the current screen or the UEFI SETUP UTILITY

Use < ←→ key or < →← key to choose among the selections on the menu bar, and then press <Enter> to get into the sub screen.

English

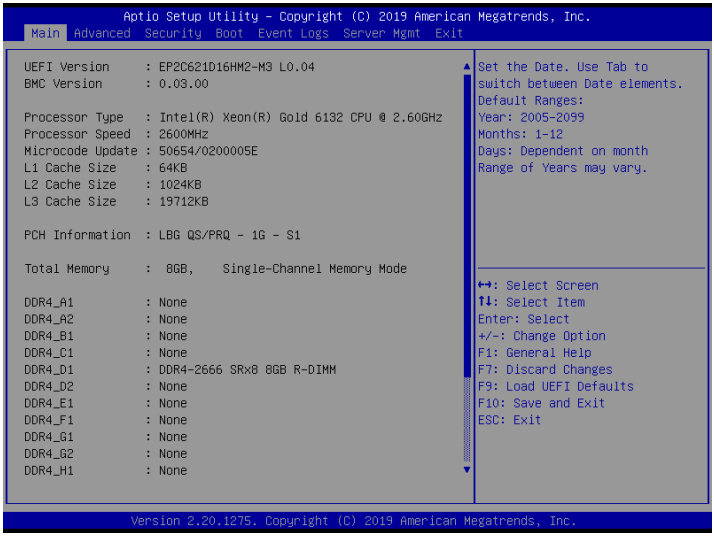
3.1.2 Navigation Keys

Please check the following table for the function description of each navigation key.

Navigation Key(s)	Function Description
← / →	Moves cursor left or right to select Screens
↑ / ↓	Moves cursor up or down to select items
+ / -	To change option for the selected items
<Tab>	Switch to next function
<Enter>	To bring up the selected screen
<PGUP>	Go to the previous page
<PGDN>	Go to the next page
<HOME>	Go to the top of the screen
<END>	Go to the bottom of the screen
<F1>	To display the General Help Screen
<F7>	Discard changes and exit the UEFI SETUP UTILITY
<F9>	Load optimal default values for all the settings
<F10>	Save changes and exit the UEFI SETUP UTILITY
<F12>	Print screen
<ESC>	Jump to the Exit Screen or exit the current screen

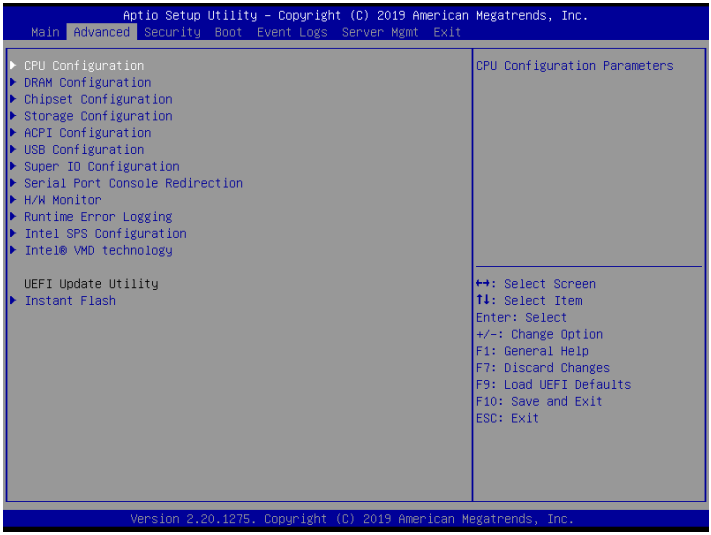
3.2 Main Screen

Once you enter the UEFI SETUP UTILITY, the Main screen will appear and display the system overview. The Main screen provides system overview information and allows you to set the system time and date.



3.3 Advanced Screen

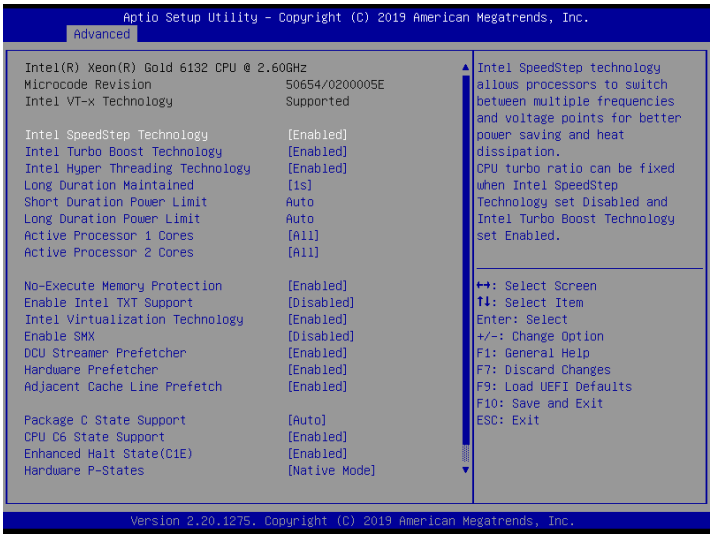
In this section, you may set the configurations for the following items: CPU Configuration, DRAM Configuration, Chipset Configuration, Storage Configuration, ACPI Configuration, USB Configuration, Super IO Configuration, Serial Port Console Redirection, H/W Monitor, Runtime Error Logging, Intel SPS Configuration, Intel(R) VMD Technology and Instant Flash.



Setting wrong values in this section may cause the system to malfunction.

English

3.3.1 CPU Configuration



Intel SpeedStep Technology

Intel SpeedStep technology allows processors to switch between multiple frequencies and voltage points for better power saving and heat dissipation. CPU turbo ratio can be fixed when Intel SpeedStep Technology set Disabled and Intel Turbo Boost Technology set Enabled.

Please note that enabling this function may reduce CPU voltage and lead to system stability or compatibility issues with some power supplies. Please set this item to [Disabled] if above issues occur.

Intel Turbo Boost Technology

Intel Turbo Boost Technology enables the processor to run above its base operating frequency when the operating system requests the highest performance state.

Intel Hyper Threading Technology

Intel Hyper Threading Technology allows multiple threads to run on each core, so that the overall performance on threaded software is improved.

Long Duration Maintained

Configure the period of time until the CPU ratio is lowered when the Long Duration Power Limit is exceeded.

Short Duration Power Limit

Configure Package Power Limit 2 in watts. When the limit is exceeded, the CPU ratio will be lowered immediately. A lower limit can protect the CPU and save power, while a higher limit may improve performance.

Long Duration Power Limit

Configure Package Power Limit 1 in watts. When the limit is exceeded, the CPU ratio will be lowered after a period of time. A lower limit can protect the CPU and save power, while a higher limit may improve performance.

Active Processor 1 Cores

Select the number of cores to enable in each processor package.

Active Processor 2 Cores

Select the number of cores to enable in each processor package.

No-Execute Memory Protection

Processors with No-Execution Memory Protection Technology may prevent certain classes of malicious buffer overflow attacks.

Enable Intel TXT Support

Enables Intel Trusted Execution Technology Configuration.

Intel Virtualization Technology

Intel Virtualization Technology allows a platform to run multiple operating systems and applications in independent partitions, so that one computer system can function as multiple virtual systems.

Enable SMX

Use this item to enable Safer Mode Extensions.

DCU Streamer Prefetcher

DCU streamer prefetcher is an L1 data cache prefetcher (MSR 1A4h [2]).

Hardware Prefetcher

Automatically prefetch data and code for the processor. Enable for better performance.

Adjacent Cache Line Prefetch

Automatically prefetch the subsequent cache line while retrieving the currently requested cache line. Enable for better performance.

Package C State Support

Enable CPU, PCIe, Memory, Graphics C State Support for power saving.

CPU C6 State Support

Enable C6 deep sleep state for lower power consumption.

Enhanced Halt State(C1E)

Enable Enhanced Halt State (C1E) for lower power consumption.

Hardware P-States

Disable: Hardware chooses a P-state based on OS Request (Legacy P-States)
Native Mode: Hardware chooses a P-state based on OS guidance
Out of Band Mode: Hardware autonomously chooses a P-state (no OS guidance)

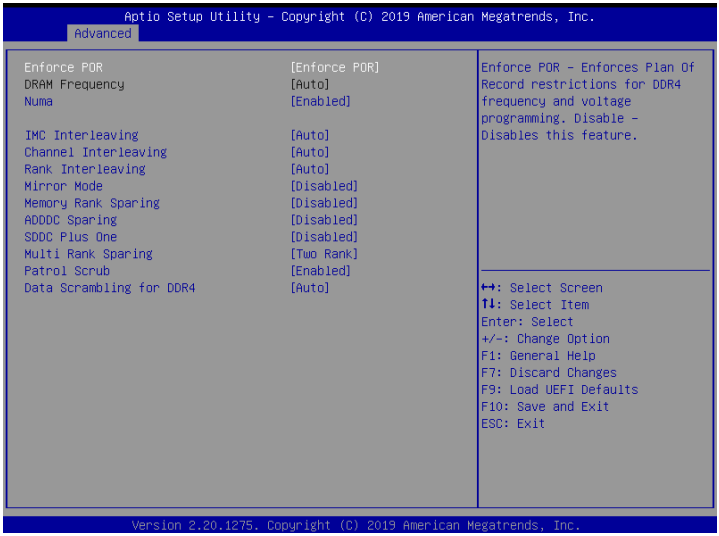
AES-NI

Use this item to enable or disable AES-NI support.

CPU Thermal Throttling

Enable CPU internal thermal control mechanisms to keep the CPU from overheating.

3.3.2 DRAM Configuration



Enforce POR

Enforce POR - Enforces Plan Of Record restrictions for DDR4 frequency and voltage programming.
Disable - Disables this feature.

DRAM Frequency

If [Auto] is selected, the motherboard will detect the memory module(s) inserted and assign the appropriate frequency automatically.

Numa

Use this item to enable or disable Non Uniform Memory Access (NUMA).

IMC Interleaving

Select to configure IMC Interleaving settings.

Channel Interleaving

Select to configure Channel Interleaving settings.

Rank Interleaving

Select to configure Rank Interleaving settings.

Mirror Mode

Mirror Mode will set entire 1LM/2LM memory in system to be mirrored, consequently reducing the memory capacity by half. Mirror Enable will disable XPT Prefetch.

Memory Rank Sparing

Enable or disable Memory Rank Sparing.

ADDDC Sparing

Enable or disable ADDDC Sparing.

SDDC Plus One

Enable or disable Plus One. Not supported when AEP dimm present!

Multi Rank Sparing

Set Multi Rank Sparing number. Default and the maximum is 2 ranks per channel.

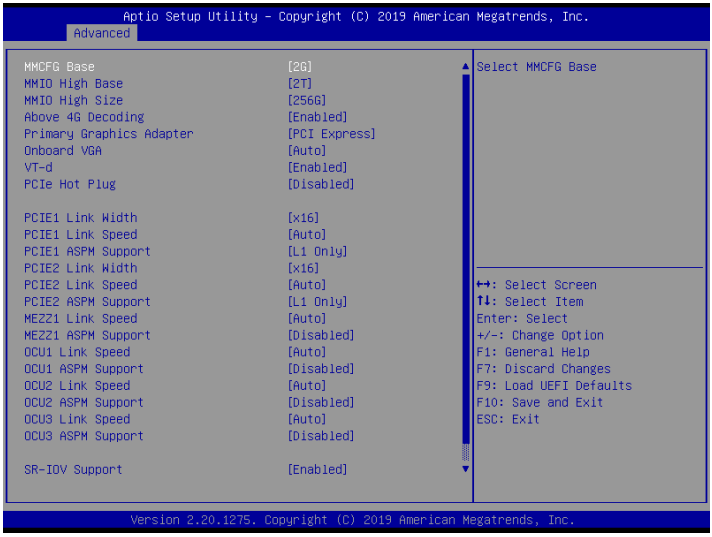
Patrol Scrub

Patrol Scrub is a background activity initiated by the processor to seek out and fix memory errors. The default value is [Enabled].

Data Scrambling for DDR4

Enable - Enables data scrambling for DDR4.
Disable - Disables this feature.
Auto - Sets it to the MRC default setting; current default is Enable.

3.3.3 Chipset Configuration



MMCFG Base

Use this item to select MMCFG Base.

MMIO High Base

Use this item to select MMIO High Base.

MMIO High Size

Use this item to select MMIO High Size.

Above 4G Decoding

Enable or disable 64bit capable Devices to be decoded in Above 4G Address Space (only if the system supports 64 bit PCI decoding).

Primary Graphics Adapter

If PCI Express graphics card is installed on the motherboard, you may use this option to select PCI Express or Onboard VGA as the primary graphics adapter.

**If no PCI Express graphics card is installed, [Onboard VGA] is the default graphics adapter. There is no screen on monitor even if a HDMI display is connected. Select [Onboard Hdmi] instead to use HDMI as output source.*

Onboard VGA

Use this to enable or disable the Onboard VGA function. The default value is [Auto].

**This item is not available when the Primary Graphic Adapter is set to [Onboard VGA].*

VT-d

Intel(R) Virtualization Technology for Directed I/O helps your virtual machine monitor better utilize hardware by improving application compatibility and reliability, and providing additional levels of manageability, security, isolation, and I/O performance.

PCIe Hot Plug

Use this item to enable or disable PCIe Hot Plug globally.

PCIE1 Link Width

This allows you to select PCIE1 Link Width. The default value is [x16].

PCIE1 Link Speed

This allows you to select PCIE1 Link Speed. The default value is [Auto].

PCIE1 ASPM Support

This option enables or disables the ASPM support for all CPU downstream devices.

PCIE2 Link Width

This allows you to select PCIE2 Link Width. The default value is [x16].

PCIE2 Link Speed

This allows you to select PCIE2 Link Speed. The default value is [Auto].

PCIE2 ASPM Support

This option enables or disables the ASPM support for all CPU downstream devices.

MEZZ1 Link Speed

This allows you to select MEZZ1 Link Speed. The default value is [Auto].

MEZZ1 ASPM Support

This option enables or disables the ASPM support for all CPU downstream devices.

OCU1 Link Speed

This allows you to select OCU1 Link Speed. The default value is [Auto].

OCU1 ASPM Support

This option enables or disables the ASPM support for all CPU downstream devices.

OCU2 Link Speed

Configure PCIE Link Speed.

OCU2 ASPM Support

This option enables / disables the ASPM support for CPU downstream devices.

OCU3 Link Speed

Configure PCIE Link Speed.

OCU3 ASPM Support

This option enables / disables the ASPM support for CPU downstream devices.

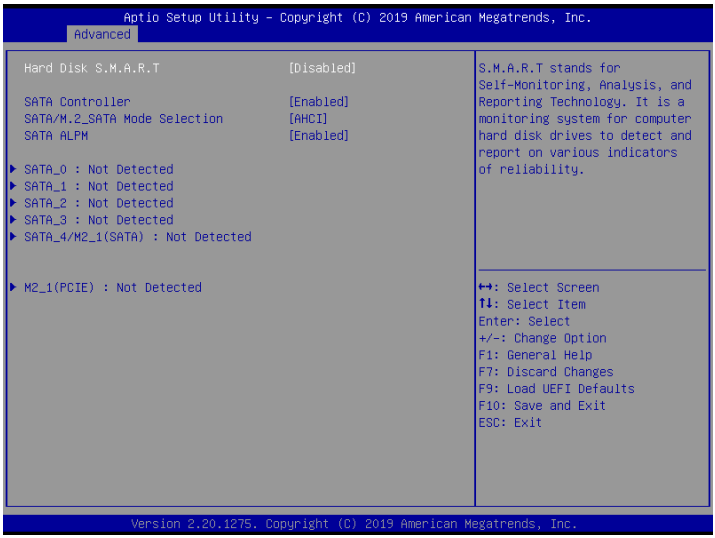
SR-IOV Support

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

Restore AC Power Loss

This allows you to set the power state after a power failure. If [Power Off] is selected, the power will remain off when the power recovers. If [Power On] is selected, the system will start to boot up when the power recovers.

3.3.4 Storage Configuration



Hard Disk S.M.A.R.T.

S.M.A.R.T stands for Self-Monitoring, Analysis, and Reporting Technology. It is a monitoring system for computer hard disk drives to detect and report on various indicators of reliability.

SATA Controller

Use this item to enable or disable SATA Controllers.

SATA/M.2_SATA Mode Selection

Identify the SATA port is connected to Solid State Drive or Hard Disk Drive. Press <Ctrl+I> to enter RAID ROM during UEFI POST process.

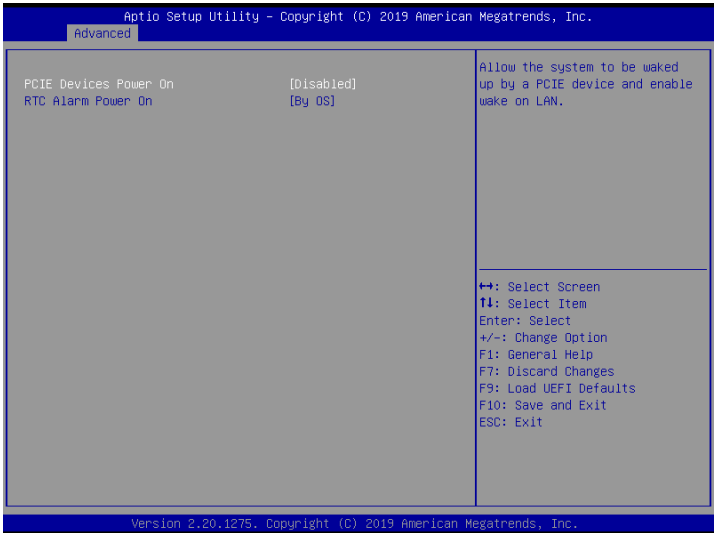
SATA ALPM

Use this item to enable or disable Support Aggressive Link Power Management.

SATA Port 0 / 1 / 2 / 3 / 4/M2_1(SATA) / M2_1(PCIE)

Depending on how many SATA ports you have, you will see SATA_x (x means number) listed on the screen, with its status indicated as SATA device [(Model Name)] or [Not Detected].

3.3.5 ACPI Configuration



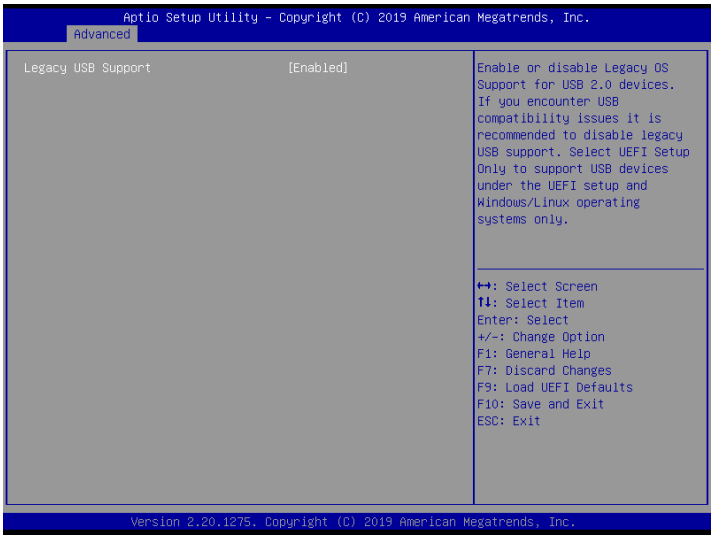
PCIE Devices Power On

Allow the system to be waked up by a PCIE device and enable wake on LAN.

RTC Alarm Power On

Allow the system to be waked up by the real time clock alarm. Set it to By OS to let it be handled by your operating system.

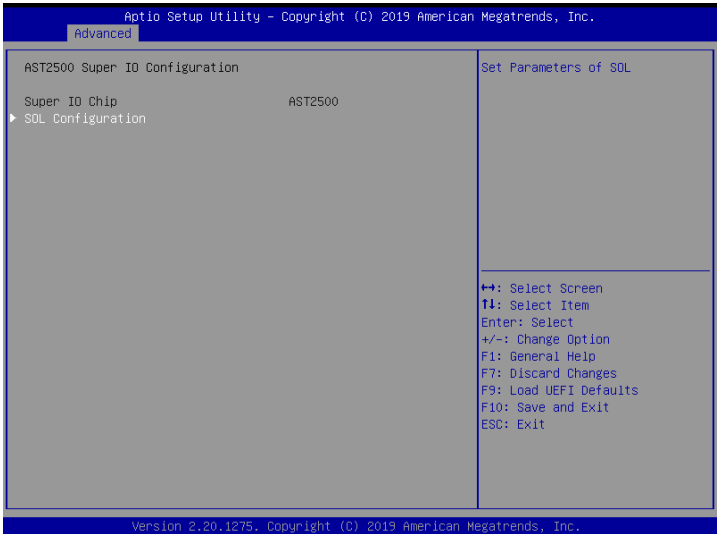
3.3.6 USB Configuration



Legacy USB Support

Enable or disable Legacy OS Support for USB 2.0 devices. If you encounter USB compatibility issues it is recommended to disable legacy USB support.
Select UEFI Setup Only to support USB devices under the UEFI setup and Windows/Linux operating systems only.

3.3.7 Super IO Configuration



SOL Configuration

Use this item to set parameters of SOL.

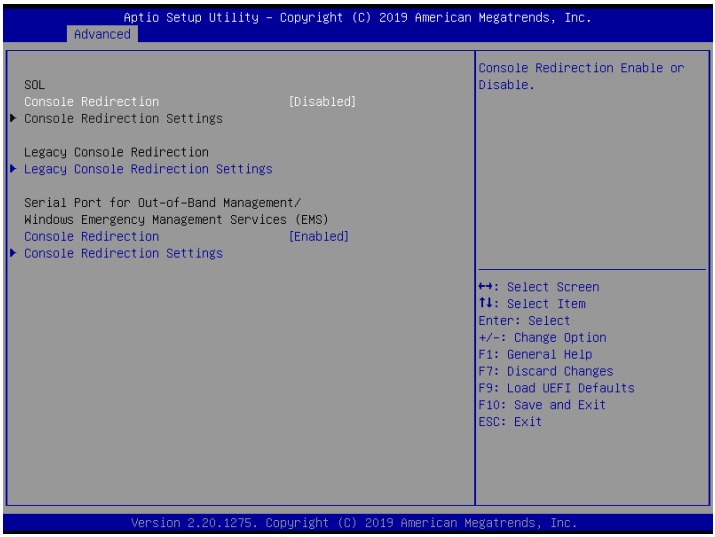
SOL Port

Use this item to enable or disable SOL port.

Change Settings

Use this item to select an optimal setting for Super IO device.

3.3.8 Serial Port Console Redirection



SOL

Console Redirection

Use this option to enable or disable Console Redirection. If this item is set to Enabled, you can select a COM Port to be used for Console Redirection.

Console Redirection Settings

Use this option to configure Console Redirection Settings, and specify how your computer and the host computer to which you are connected exchange information. Both computers should have the same or compatible settings.

Terminal Type

Use this item to select the preferred terminal emulation type for out-of-band management. It is recommended to select [VT-UTF8].

Option	Description
VT100	ASCII character set
VT100+	Extended VT100 that supports color and function keys
VT-UTF8	UTF8 encoding is used to map Unicode chars onto 1 or more bytes
ANSI	Extended ASCII character set

Bits Per Second
Use this item to select the serial port transmission speed. The speed used in the host computer and the client computer must be the same. Long or noisy lines may require lower transmission speed. The options include [9600], [19200], [38400], [57600] and [115200].

Data Bits
Use this item to set the data transmission size. The options include [7] and [8] (Bits).

Parity
Use this item to select the parity bit. The options include [None], [Even], [Odd], [Mark] and [Space]. A parity bit can be sent with the data bits to detect some transmission errors.Mark and Space Parity do not allow for error detection. They can be used as an additional data bit.
Even: parity bit is 0 if the num of 1's in the data bits is even.
Odd: parity bit is 0 if num of 1's in the data bits is odd.
Mark: parity bit is always 1.
Space: Parity bit is always 0.

Stop Bits
The item indicates the end of a serial data packet. The standard setting is [1] Stop Bit. Select [2] Stop Bits for slower devices.

Flow Control
Use this item to set the flow control to 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 restart the flow. Hardware flow uses two wires to send start/stop signals. The options include [None] and [Hardware RTS/CTS].

VT-UTF8 Combo Key Support
Use this item to enable or disable the VT-UTF8 Combo Key Support for ANSI/VT100 terminals.

Recorder Mode
Use this item to enable or disable Recorder Mode to capture terminal data and send it as text messages.

Resolution 100x31
Use this item to enable or disable extended terminal resolution support.

Putty Keypad
Use this item to select Function Key and Keypad on Putty.

Legacy Console Redirection

Legacy Console Redirection Settings

Use this option to configure Legacy Console Redirection Settings, and specify how your computer and the host computer to which you are connected exchange information.

Redirection COM Port
Use this item to select a COM port to display redirection of Legacy OS and Legacy OPROM Messages.

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

Redirection After POST
If the [Bootloader] is selected, legacy console redirection is disabled before booting to legacy OS. If [Always Enable] is selected, legacy console redirection is enabled for legacy OS. The default value is [Always Enable].

Serial Port for Out-of-Band Management/Windows Emergency Management Services (EMS)

Console Redirection

Use this option to enable or disable Console Redirection. If this item is set to Enabled, you can select a COM Port to be used for Console Redirection.

Console Redirection Settings

Use this option to configure Console Redirection Settings, and specify how your computer and the host computer to which you are connected exchange information.

Terminal Type
Use this item to select the preferred terminal emulation type for out-of-band management. It is recommended to select [VT-UTF8].

Option	Description
VT100	ASCII character set
VT100+	Extended VT100 that supports color and function keys
VT-UTF8	UTF8 encoding is used to map Unicode chars onto 1 or more bytes
ANSI	Extended ASCII character set

Bits Per Second
Use this item to select the serial port transmission speed. The speed used in the host computer and the client computer must be the same. Long or noisy lines may require lower transmission speed. The options include [9600], [19200], [57600] and [115200].

Flow Control
Use this item to set the flow control to 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 restart the flow. Hardware flow uses two wires to send start/stop signals. The options include [None], [Hardware RTS/CTS], and [Software Xon/Xoff].

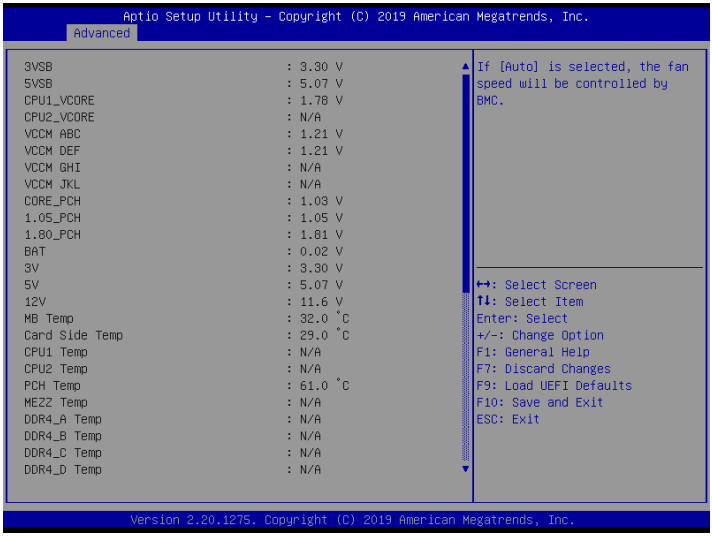
Data Bits

Parity

Stop Bits

3.3.9 H/W Monitor

In this section, it allows you to monitor the status of the hardware on your system, including the parameters of the CPU temperature, motherboard temperature, CPU fan speed, chassis fan speed, and the critical voltage.



Fan Control

If [Auto] is selected, the fan speed will controlled by BMC.
If [Manual] is selected, configure the items below.

FAN1

This allows you to set the System fan1's speed. The default value is [Smart Fan].

FAN2

This allows you to set the System fan2's speed. The default value is [Smart Fan].

FAN3

This allows you to set the System fan3's speed. The default value is [Smart Fan].

FAN4

This allows you to set the System fan4's speed. The default value is [Smart Fan].

Smart Fan Control

This allows you to set the Smart fan's level speed.

Smart Fan Duty Control

Smart Fan Duty x (x means 1 to 11 stage)

This allows you to set duty cycle for each stage.

Smart Fan Temp Control

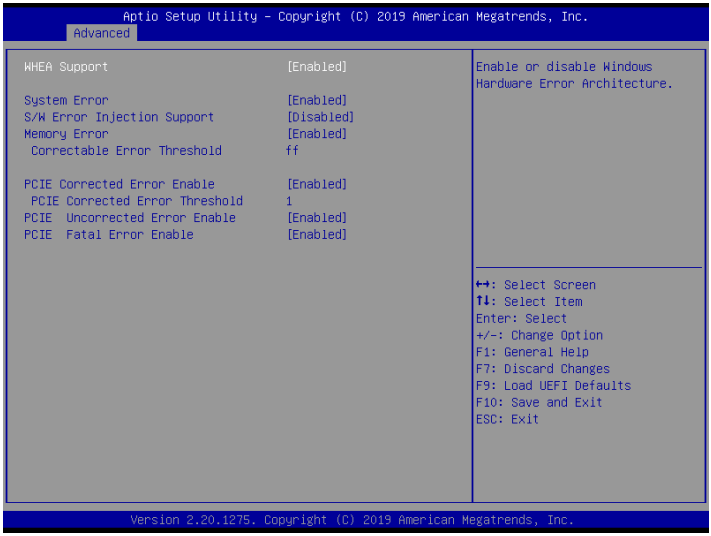
Smart Fan Temp x (x means 1 to 11 stage)

This allows you to set temperature for each stage.

Watch Dog Timer

This allows you to enable or disable the Watch Dog Timer. The default value is [Disabled].

3.3.10 Runtime Error Logging



WHEA Support

Use this item to enable or disable Windows Hardware Error Architecture.

System Error

Use this item to enable or disable System Error feature. When it is set to [Enabled], you can configure Memory Error and PCIE Error log features.

S/W Error Injection Support

When it is set to [Enabled], S/W Error Injection is supported by unlocking MSR Ox790.

Memory Error

Memory enabling and logging setup option.

Correctable Error Threshold

Correctable Error Threshold (0 - 0x7FFF) used for sparing, tagging, and leaky bucket.

PCIE Corrected Error Enable

Use this item to enable or disable PCIe Correctable errors.

PCIE Corrected Error Threshold

PCIE Correctable Error Threshold (0x01-0xFF) used for sparing, tagging, and leaky bucket.

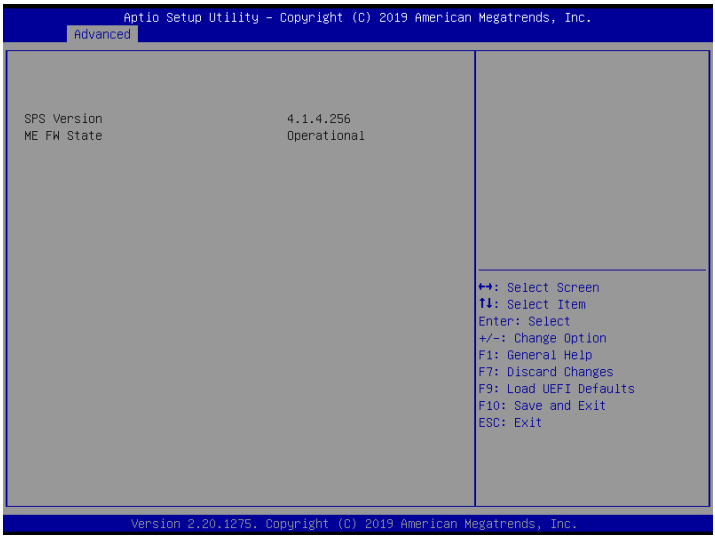
PCIE Uncorrected Error Enable

Use this item to enable or disable PCIe Uncorrectable errors.

PCIE Fatal Error Enable

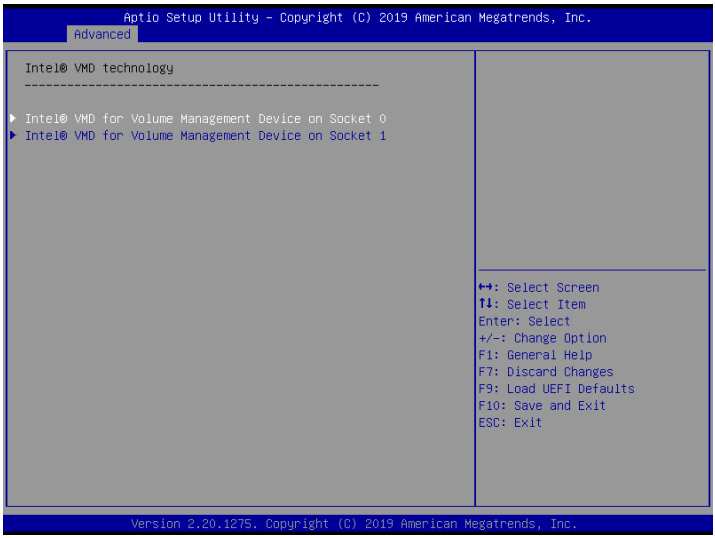
Use this item to enable or disable PCIe Ftal errors.

3.3.11 Intel SPS Configuration



SPS screen displays the Intel SPS Configuration information, such as Operational Firmware Version and Firmware State.

3.3.12 Intel(R) VMD Technology



Intel(R) VMD for Volume Management Device on Socket 0

Intel(R) VMD for Volume Management Device Technology

Use this item to enable or disable Intel(R) Volume Management Device Technology in this Stack.
When [Enabled], users are allowed to configure the options below.

VMD port 1A

Use this item to enable or disable Intel(R) Volume Management Device Technology on specific root port.

VMD port 1B

Use this item to enable or disable Intel(R) Volume Management Device Technology on specific root port.

VMD port 1C

Use this item to enable or disable Intel(R) Volume Management Device Technology on specific root port.

VMD port 1D

Use this item to enable or disable Intel(R) Volume Management Device Technology on

specific root port.

Hot Plug Capable

Use this item to enable or disable Hot Plug for PCIe Root Ports 1A-1D.

Intel(R) VMD for Volume Management Device Technology

Use this item to enable or disable Intel(R) Volume Management Device Technology in this Stack.
When [Enabled], users are allowed to configure the options below.

VMD port 3A

Use this item to enable or disable Intel(R) Volume Management Device Technology on specific root port.

VMD port 3B

Use this item to enable or disable Intel(R) Volume Management Device Technology on specific root port.

VMD port 3C

Use this item to enable or disable Intel(R) Volume Management Device Technology on specific root port.

VMD port 3D

Use this item to enable or disable Intel(R) Volume Management Device Technology on specific root port.

Hot Plug Capable

Use this item to enable or disable Hot Plug for PCIe Root Ports 3A-3D.

Intel(R) VMD for Volume Management Device on Socket 1

Intel(R) VMD for Volume Management Device Technology

Use this item to enable or disable Intel(R) Volume Management Device Technology in this Stack.
When [Enabled], users are allowed to configure the options below.

VMD port 2A

Use this item to enable or disable Intel(R) Volume Management Device Technology on specific root port.

VMD port 2B

Use this item to enable or disable Intel(R) Volume Management Device Technology on

specific root port.

Hot Plug Capable

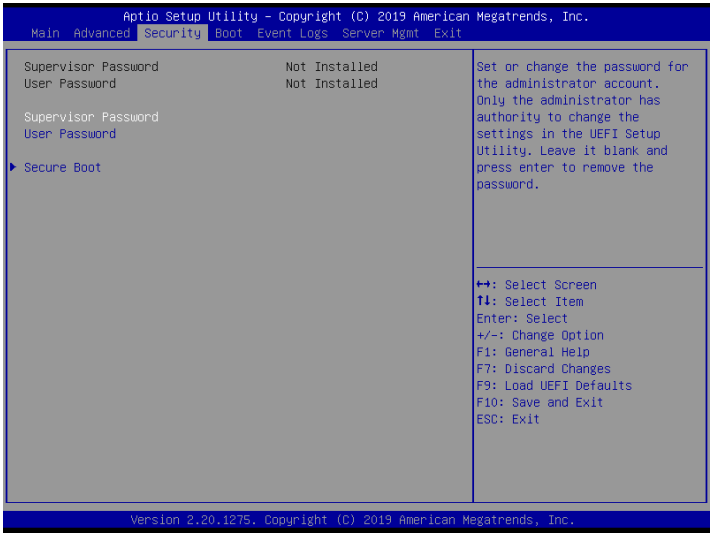
Use this item to enable or disable Hot Plug for PCIe Root Ports 2A-2B.

3.3.13 Instant Flash

Instant Flash is a UEFI flash utility embedded in Flash ROM. This convenient UEFI update tool allows you to update system UEFI without entering operating systems first like MS-DOS or Windows®. Just save the new UEFI file to your USB flash drive, floppy disk or hard drive and launch this tool, then you can update your UEFI only in a few clicks without preparing an additional floppy diskette or other complicated flash utility. Please be noted that the USB flash drive or hard drive must use FAT32/16/12 file system. If you execute Instant Flash utility, the utility will show the UEFI files and their respective information. Select the proper UEFI file to update your UEFI, and reboot your system after the UEFI update process is completed.

3.4 Security

In this section, you may set or change the supervisor/user password for the system. For the user password, you may also clear it.



Supervisor Password

Set or change the password for the administrator account. Only the administrator has authority to change the settings in the UEFI Setup Utility. Leave it blank and press enter to remove the password.

User Password

Set or change the password for the user account. Users are unable to change the settings in the UEFI Setup Utility. Leave it blank and press enter to remove the password.

Secure Boot

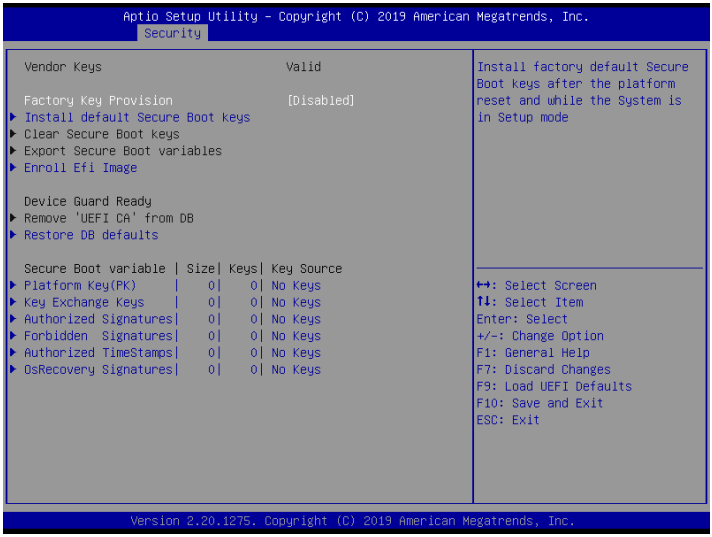
Use this to enable or disable Secure Boot Control. The default value is [Disabled]. Enable to support Windows Server 2012 R2 or later versions Secure Boot.

Secure Boot Mode

Secure Boot mode selector: Standard/Custom. In Custom mode Secure Boot Variables can be configured without authentication.

3.4.1 Key Management

In this section, expert users can modify Secure Boot Policy variables without full authentication.



Factory Key Provision

Install factory default Secure Boot keys after the platform reset and while the System is in Setup mode.

Install Default Secure Boot Keys

Please install default secure boot keys if it's the first time you use secure boot.

Clear Secure Boot keys

Force System to Setup Mode - clear all Secure Boot Variables. Change takes effect after reboot.

Export Secure Boot variables

Copy NVRAM content of Secure Boot variables to files in a root folder on a file system device.

Enroll Efi Image

Allow the image to run in Secure Boot mode. Enroll SHA256 Hash certificate of a PE image into Authorized Signature Database (db).

Remove 'UEFI CA' from DB

Device Guard ready system must not list 'Microsoft UEFI CA' Certificate in Authorized Signature database (db).

Restore DB Defaults

Restore DB variable to factory defaults.

Platform Key(PK)

Enroll Factory Defaults or load certificates from a file:

1. Public Key Certificate in:

a) EFI_SIGNATURE_LIST

b) EFI_CERT_X509 (DER encoded)

c) EFI_CERT_RSA2048 (bin)

d) EFI_CERT_SHA256, 384, 512

2. Authenticated UEFI Variable

3. EFI PE/COFF Image(SHA256)

Key Source: Default, External, Mixed, Test

Key Exchange Keys

Enroll Factory Defaults or load certificates from a file:

1. Public Key Certificate in:

a) EFI_SIGNATURE_LIST

b) EFI_CERT_X509 (DER encoded)

c) EFI_CERT_RSA2048 (bin)

d) EFI_CERT_SHA256, 384, 512

2. Authenticated UEFI Variable

3. EFI PE/COFF Image(SHA256)

Key Source: Default, External, Mixed, Test

Authorized Signatures

Enroll Factory Defaults or load certificates from a file:

1. Public Key Certificate in:

a) EFI_SIGNATURE_LIST

b) EFI_CERT_X509 (DER encoded)

c) EFI_CERT_RSA2048 (bin)

d) EFI_CERT_SHA256, 384, 512

2. Authenticated UEFI Variable

3. EFI PE/COFF Image(SHA256)

Key Source: Default, External, Mixed, Test

Forbidden Signatures

Enroll Factory Defaults or load certificates from a file:

1. Public Key Certificate in:

a) EFI_SIGNATURE_LIST

b) EFI_CERT_X509 (DER encoded)

c) EFI_CERT_RSA2048 (bin)

d) EFI_CERT_SHA256, 384, 512

2. Authenticated UEFI Variable

3. EFI PE/COFF Image(SHA256)

Key Source: Default, External, Mixed, Test

Authorized TimeStamps

Enroll Factory Defaults or load certificates from a file:

1. Public Key Certificate in:

a) EFI_SIGNATURE_LIST

b) EFI_CERT_X509 (DER encoded)

c) EFI_CERT_RSA2048 (bin)

d) EFI_CERT_SHA256, 384, 512

2. Authenticated UEFI Variable

3. EFI PE/COFF Image(SHA256)

Key Source: Default, External, Mixed, Test

OsRecovery Signatures

Enroll Factory Defaults or load certificates from a file:

1. Public Key Certificate in:

a) EFI_SIGNATURE_LIST

b) EFI_CERT_X509 (DER encoded)

c) EFI_CERT_RSA2048 (bin)

d) EFI_CERT_SHA256, 384, 512

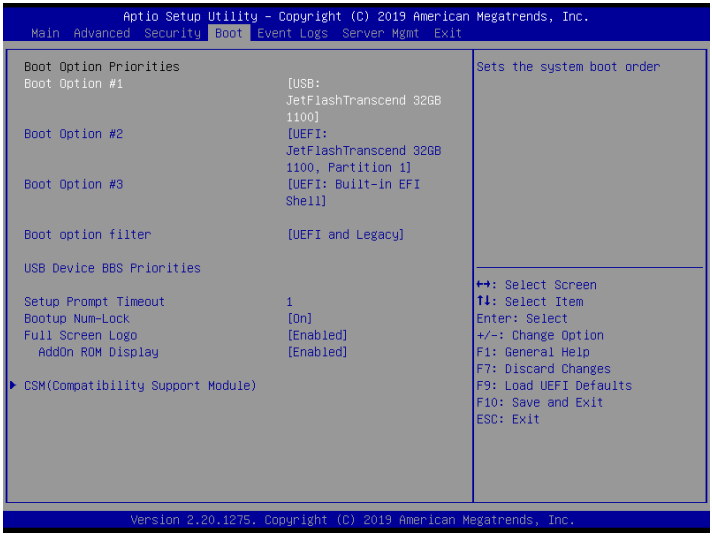
2. Authenticated UEFI Variable

3. EFI PE/COFF Image(SHA256)

Key Source: Default, External, Mixed, Test

3.5 Boot Screen

In this section, it will display the available devices on your system for you to configure the boot settings and the boot priority.



Boot Option #1

Use this item to set the system boot order.

Boot Option #2

Use this item to set the system boot order.

Boot Option #3

Use this item to set the system boot order.

Boot Option Filter

This option controls Legacy/UEFI ROMs priority.

USB Device BBS Priorities

This page will show only when system install USB Storage.

Setup Prompt Timeout

Configure the number of seconds to wait for the UEFI setup utility.

Bootup Num-Lock

If this item is set to [On], it will automatically activate the Numeric Lock function after boot-up.

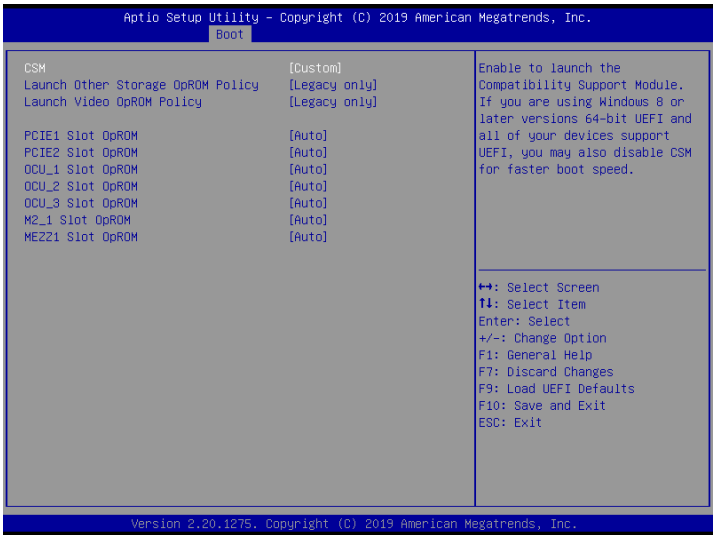
Full Screen Logo

Use this item to enable or disable OEM Logo. The default value is [Enabled].

AddOn ROM Display

Use this option to adjust AddOn ROM Display. If you enable the option “Full Screen Logo” but you want to see the AddOn ROM information when the system boots, please select [Enabled]. Configuration options: [Enabled] and [Disabled]. The default value is [Enabled].

3.5.1 CSM Parameters



CSM

Enable to launch the Compatibility Support Module. Please do not disable unless you're running a WHCK test. If you are using Windows Server 2012 R2 or later versions 64-bit UEFI and all of your devices support UEFI, you may also disable CSM for faster boot speed.

Launch Other Storage OpROM Policy

Select UEFI only to run those that support UEFI option ROM only. Select Legacy only to run those that support legacy option ROM only. Select Do not launch to not execute both legacy and UEFI option ROM.

Launch Video OpROM Policy

Select UEFI only to run those that support UEFI option ROM only. Select Legacy only to run those that support legacy option ROM only. Select Do not launch to not execute both legacy and UEFI option ROM.

PCIE1 Slot OpROM

Use this item to select slot storage and Network Option ROM policy. In Auto option, the default is Disabled with NVMe device, but it is Legacy with other devices. (This item can't select Video Option ROM policy.)

PCIE2 Slot OpROM

Use this item to select slot storage and Network Option ROM policy. In Auto option, the default is Disabled with NVMe device, but it is Legacy with other devices. (This item can't select Video Option ROM policy.)

OCU_1 Slot OpROM

Use this item to select slot storage and Network Option ROM policy. In Auto option, the default is Disabled with NVMe device, but it is Legacy with other devices. (This item can't select Video Option ROM policy.)

OCU_2 Slot OpROM

Use this item to select slot storage and Network Option ROM policy. In Auto option, the default is Disabled with NVMe device, but it is Legacy with other devices. (This item can't select Video Option ROM policy.)

OCU_3 Slot OpROM

Use this item to select slot storage and Network Option ROM policy. In Auto option, the default is Disabled with NVMe device, but it is Legacy with other devices. (This item can't select Video Option ROM policy.)

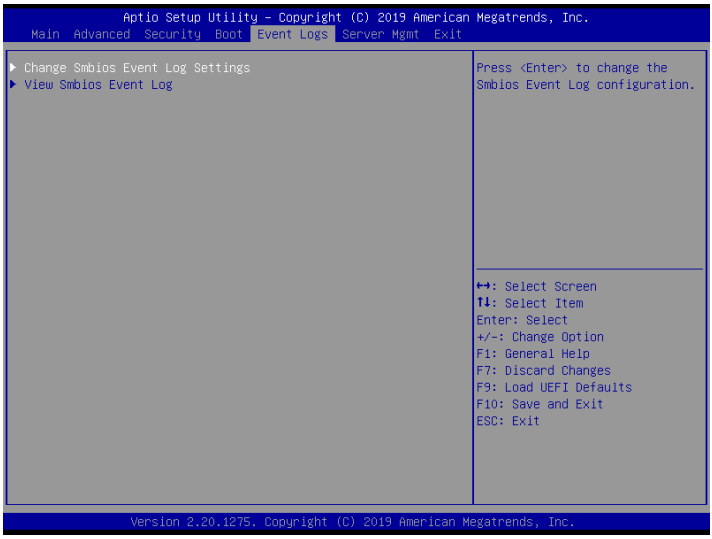
M2_1 Slot OpROM

Use this item to select slot storage and Network Option ROM policy. In Auto option, the default is Disabled with NVMe device, but it is Legacy with other devices. (This item can't select Video Option ROM policy.)

MEZZ1 Slot OpROM

Use this item to select slot storage and Network Option ROM policy. In Auto option, the default is Disabled with NVMe device, but it is Legacy with other devices. (This item can't select Video Option ROM policy.)

3.6 Event Logs



Change Smbios Event Log Settings

This allows you to configure the Smbios Event Log Settings.

When entering the item, you will see the followings:

Smbios Event Log
Use this item to enable or disable all features of the SMBIOS Event Logging during system boot.

Erase Event Log
The options include [No], [Yes, Next reset] and [Yes, Every reset]. If Yes is selected, all logged events will be erased.

When Log is Full
Use this item to choose options for reactions to a full Smbios Event Log. The options include [Do Nothing] and [Erase Immediately].

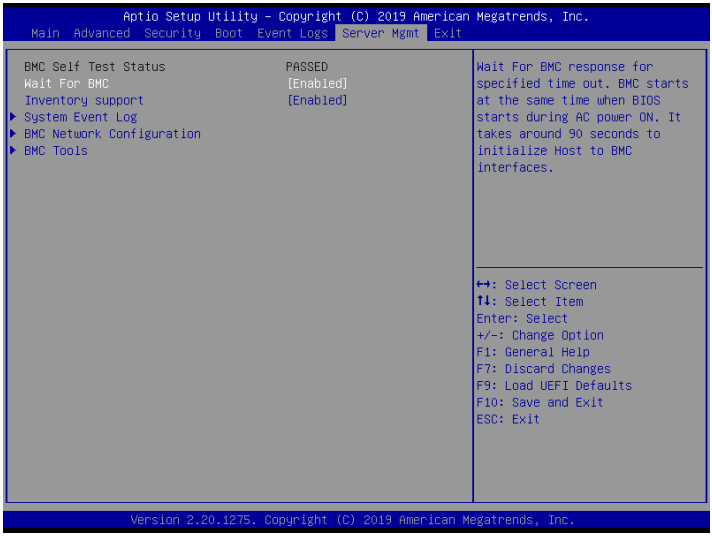
Log System Boot Event
Choose option to enable/disable logging of System boot event.

View Smbios Event Log

Press <Enter> to view the Smbios Event Log records.

All values changed here do not take effect until computer is restarted.

3.7 Server Mgmt



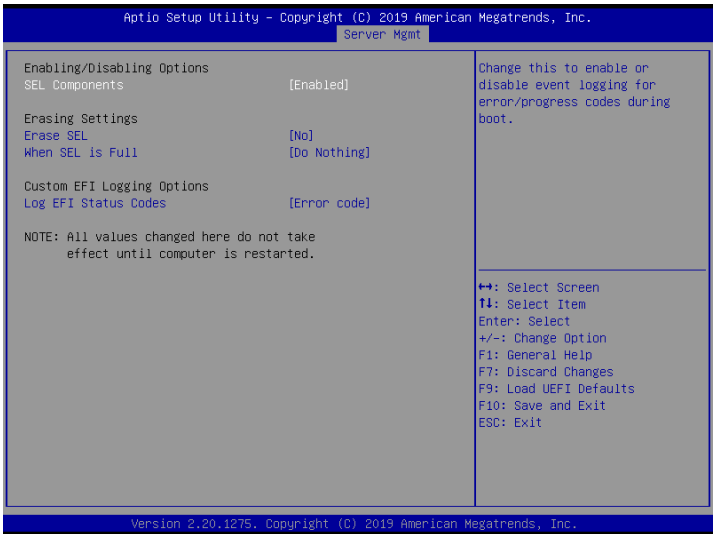
Wait For BMC

Wait For BMC response for specified time out. BMC starts at the same time when BIOS starts during AC power ON. It takes around 90 seconds to initialize Host to BMC interfaces.

Inventory Support

This will execute inventory function for system. Enabling this item will take some time at system boot.

3.7.1 System Event Log



SEL Components

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

Erase SEL

Use this to choose options for earsing SEL.

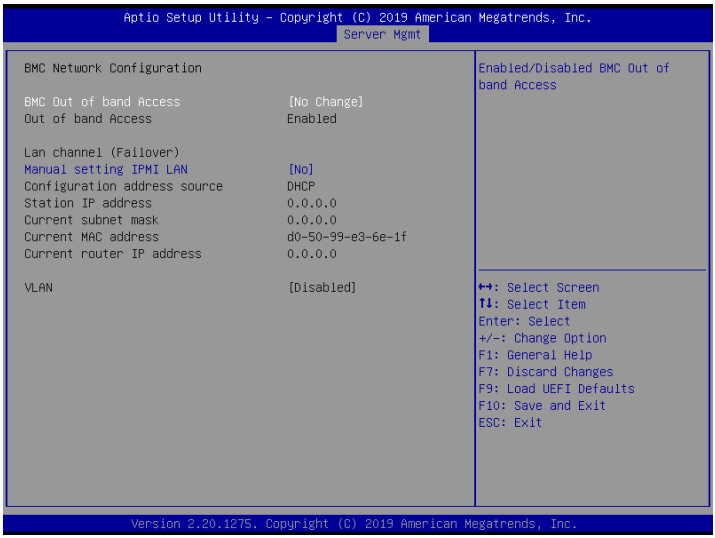
When SEL is Full

Use this to choose options for reactions to a full SEL.

Log EFI Status Codes

Use this item to disable the logging of EFI Status Codes or log only error code or only progress code or both.

3.7.2 BMC Network Configuration



BMC Out of Band Access

Enabled/Disabled BMC Out of band Access.

Lan Channel (Failover)

Manual Setting IPMI LAN

If [No] is selected, the IP address is assigned by DHCP. If you prefer using a static IP address, toggle to [Yes], and the changes take effect after the system reboots. The default value is [No].

Configuration Address Source

Select to configure BMC network parameters statically or dynamically(by BIOS or BMC). Configuration options: [Static] and [DHCP].

Static: Manually enter the IP Address, Subnet Mask and Gateway Address in the BIOS for BMC LAN channel configuration.
DHCP: IP address, Subnet Mask and Gateway Address are automatically assigned by the network's DHCP server.

When [DHCP] or [Static] is selected, do NOT modify the BMC network settings on the IPMI web page.

The default login information for the IPMI web interface is:
Username: admin
Password: admin

For more instructions on how to set up remote control environment and use the IPMI management platform, please refer to the IPMI Configuration User Guide or go to the Support website at: http://www.asrockrack.com/support/ipmi.asp

VLAN

Enabled/Disabled Virtual Local Area Network.

BMC Tools

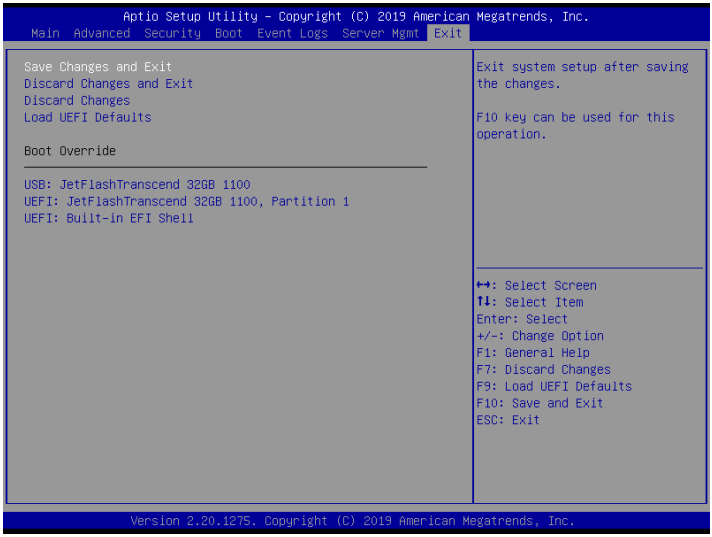
Load BMC Default Settings

Use this item to load BMC default settings.

KCS control

Select the KSC interface state after POST end. If [Enabled] is selected, the BMC will remain KCS interface after POST stage. If [Disabled] is selected, the BMC will disable KCS interface after POST stage.

3.8 Exit Screen



Save Changes and Exit

When you select this option, the following message “Save configuration changes and exit setup?” will pop-out. Press <F10> key or select [Yes] to save the changes and exit the UEFI SETUP UTILITY.

Discard Changes and Exit

When you select this option, the following message “Discard changes and exit setup?” will pop-out. Press <ESC> key or select [Yes] to exit the UEFI SETUP UTILITY without saving any changes.

Discard Changes

When you select this option, the following message “Discard changes?” will pop-out. Press <F7> key or select [Yes] to discard all changes.

Load UEFI Defaults

Load UEFI default values for all the setup questions. F9 key can be used for this operation.

Boot Override

These items displays the available devices. Select an item to start booting from the selected device.

Chapter 4 Software Support

4.1 Install Operating System

This motherboard supports various Microsoft® Windows® Server 2012 R2 / Linux compliant. Because motherboard settings and hardware options vary, use the setup procedures in this chapter for general reference only. Refer to your OS documentation for more information.

**Please download the Intel® SATA Floppy Image driver from the ASRock Rack's website (www.asrockrack.com) to your USB drive or simply install the SATA driver from the Support CD while installing OS in SATA RAID mode.*

4.2 Support CD Information

The Support CD that came with the motherboard contains necessary drivers and useful utilities that enhance the motherboard's features.

4.2.1 Running The Support CD

To begin using the support CD, insert the CD into your CD-ROM drive. The CD automatically displays the Main Menu if "AUTORUN" is enabled in your computer. If the Main Menu does not appear automatically, locate and double click on the file "ASRSetup.exe" from the root folder in the Support CD to display the menu.

4.2.2 Drivers Menu

The Drivers Menu shows the available device's drivers if the system detects installed devices. Please install the necessary drivers to activate the devices.

4.2.3 Utilities Menu

The Utilities Menu shows the application softwares that the motherboard supports. Click on a specific item then follow the installation wizard to install it.

4.2.4 Contact Information

If you need to contact ASRock Rack or want to know more about ASRock Rack, welcome to visit ASRock Rack's website at http://www.ASRockRack.com; or you may contact your dealer for further information.

Chapter 5 Troubleshooting

5.1 Troubleshooting Procedures

Follow the procedures below to troubleshoot your system.

Always unplug the power cord before adding, removing or changing any hardware components. Failure to do so may cause physical injuries to you and damages to motherboard components.

1. Disconnect the power cable and check whether the PWR LED is off.
2. Unplug all cables, connectors and remove all add-on cards from the motherboard. Make sure that the jumpers are set to default settings.
3. Confirm that there are no short circuits between the motherboard and the chassis.
4. Install a CPU and fan on the motherboard, then connect the chassis speaker and power LED.

If there is no power...

1. Confirm that there are no short circuits between the motherboard and the chassis.
2. Make sure that the jumpers are set to default settings.
3. Check the settings of the 115V/230V switch on the power supply.
4. Verify if the battery on the motherboard provides ~3VDC. Install a new battery if it does not.

If there is no video...

1. Try replugging the monitor cables and power cord.
2. Check for memory errors.

If there are memory errors...

1. Verify that the DIMM modules are properly seated in the slots.
2. Use recommended DDR4 R/LRDIMMs.
3. If you have installed more than one DIMM modules, they should be identical with the same brand, speed, size and chip-type.
4. Try inserting different DIMM modules into different slots to identify faulty ones.
5. Check the settings of the 115V/230V switch on the power supply.

Unable to save system setup configurations...

1. Verify if the battery on the motherboard provides ~3VDC. Install a new battery if it does not.
2. Confirm whether your power supply provides adaquate and stable power.

Other problems...

1. Try searching keywords related to your problem on ASRock Rack's FAQ page: http://www.asrockrack.com/support

5.2 Technical Support Procedures

If you have tried the troubleshooting procedures mentioned above and the problems are still unsolved, please contact ASRock Rack's technical support with the following information:

1. Your contact information
2. Model name, BIOS version and problem type.
3. System configuration.
4. Problem description.

You may contact ASRock Rack's technical support at:
http://www.asrockrack.com/support/tsd.asp

5.3 Returning Merchandise for Service

For warranty service, the receipt or a copy of your invoice marked with the date of purchase is required. By calling your vendor or going to our RMA website (http://event.asrockrack.com/tsd.asp) you may obtain a Returned Merchandise Authorization (RMA) number.
The RMA number should be displayed on the outside of the shipping carton which is mailed prepaid or hand-carried when you return the motherboard to the manufacturer. Shipping and handling charges will be applied for all orders that must be mailed when service is complete.

This warranty does not cover damages incurred in shipping or from failure due to alteration, misuse, abuse or improper maintenance of products.

Contact your distributor first for any product related problems during the warranty period.