Stable and
Reliable Solution

Server/Workstation

Motherboard

EPYCD8-2T
EPYCD8
EPYCD8-2T/R32
EPYCD8/R32

User Manual

English

Contact Information

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

ASRock Rack Incorporation

6F., No.37, Sec. 2, Jhongyang S. Rd., Beitou District,

Taipei City 112, Taiwan (R.O.C.)

Contents

Chapter 1 Introduction

Thank you for purchasing ASRock Rack *EPYCD8-2T / EPYCD8 / EPYCD8-2T/R32 / EPYCD8/R32* 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 EPYCD8-2T / EPYCD8 / EPYCD8-2T/R32 / EPYCD8/R32 Motherboard (ATX Form Factor: 12.0-in x 9.6-in, 30.5 cm x 24.4 cm)
- Quick Installation Guide
- 1 x I/O Shield
- 1 x SATA3 Cable (60cm)
- 1 x Mini SAS HD to 4 SAS/SATA Cable (12G)
- 2 x Screws for M.2 Sockets

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

English

1.2 Specifications

EPYCD8-2T / EPYCD8 / EPYCD8-2T/R32 / EPYCD8/R32	
MB Physical Status	
Form Factor	ATX
Dimension	12'' x 9.6'' (30.5 cm x 24.4 cm)
Processor System	
CPU	**EPYCD8-2T / EPYCD8:**
	AMD EPYC™ 7000 series processor family (Naples)
	EPYCD8-2T/R32 / EPYCD8/R32:
	AMD EPYC™ 7000 series processor family (Naples & Rome)
Socket	Single Socket SP3 (LGA4094)
Chipset	N/A
System Memory	
Type	- Eight Channel DDR4 memory technology
	- Supports DDR4 RDIMM and LRDIMM
DIMM Size Per DIMM	**EPYCD8-2T / EPYCD8 :**
	- RDIMM: 32GB, 16GB, 8GB
	- LRDIMM: 128GB, 64GB
	EPYCD8-2T/R32 / EPYCD8/R32:
	- RDIMM: 64GB*, 32GB, 16GB, 8GB
	- LRDIMM: 256GB*, 128GB, 64GB
	*Supported only for Rome CPU.
DIMM Frequency	**EPYCD8-2T / EPYCD8 :**
	- RDIMM: 2666/2400MHz
	- LRDIMM: 2666/2400MHz
	EPYCD8-2T/R32 / EPYCD8/R32:
	- RDIMM: 3200*/2666/2400MHz
	- LRDIMM: 3200*/2666/2400MHz
	*Supported only for Rome CPU.
Voltage	1.2V
Expansion Slot	
PCIe 3.0 x 16	PCIE1: Gen3 x16 link
	PCIE3: Gen3 x16 link
	PCIE5: Gen3 x16 link
	PCIE7: Gen3 x16 link
PCIe 3.0 x 8	PCIE2: Gen3 x8 link
	PCIE4: Gen3 x8 link
	PCIE6: Gen3 x8 link

Storage	
SATA Controller	9 x SATA3 6.0 Gb/s (from 2x mini SAS HD and 1x SATA DOM port)
M.2 Slot	2(2230/2242/2260/2280/22110, SATA/PCIE(X4))
Ethernet	
Interface	**EPYCD8-2T / EPYCD8-2T/R32**: 10000/1000 /100 Mbps by Intel X550 **EPYCD8 / EPYCD8/R32**: 1000 /100 /10 Mbps by Intel i350
LAN Controller	**EPYCD8-2T / EPYCD8-2T/R32**: - 2 x RJ45 10G base-T by Intel® X550 - 1 x RJ45 Dedicated IPMI LAN port by RTL8211E **EPYCD8 / EPYCD8/R32**: - 2 x RJ45 GLAN by Intel® i350 - 1 x RJ45 Dedicated IPMI LAN port by RTL8211E - Supports Wake-On-LAN - Supports Energy E_cient Ethernet 802.3az - Supports Dual LAN with Teaming function - Supports PXE - LAN1 supports NCSI
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 256MB
Rear Panel I/O	
VGA Port	1 x D-Sub
Serial port	1 x COM port
USB 3.0 Port	2
LAN Port	- 2+1 RJ45 Gigabit Ethernet LAN port - LAN Ports with LED (ACT/LINK LED and SPEED LED)
UID	1
Internal Connector	
Auxiliary Panel Header	1 (includes chassis intrusion, location button & LED, and front LAN LED)
TPM Header	1

IPMB Header	1
Fan Header	7 Fans x 6-pin (1CPU/4Front/2Rear)
ATX Power	1 x (24-pin) + 1 x (8-pin) + 1 x (4-pin) + 1 x (6-pin)(6 pin for GPU for PCIE Slot)
USB 3.0 Header	1 (supports 2 USB 3.0 ports)
M.2	2(M2_1: 2230/2242/2260/2280, SATA/PCIE(X4); M2_2:2230/2242/2260/2280/22110, SATA/PCIE(X4))
SATA DOM	1
OCulink	2
BMC SMB	1
SATA SGPIO	1
PSU SMB	1
TR	1
80 debug port LED	1
Speaker(4pin)	1
ClearCMOS	1
OH/FanFail LED	1 (only Fan Fail LED)
Front LED	1
System BIOS	
BIOS Type	**EPYCD8-2T / EPYCD8 :** 16MB AMI UEFI Legal BIOS **EPYCD8-2T/R32 / EPYCD8/R32 :** 32MB 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 - MB/TR1/Card side Temperature Sensing
Fan	- CPU/Rear/Front Fan Tachometer - CPU Quiet Fan (Allow CPU Fan Speed Auto-Adjust by CPU Temperature) - CPU/Rear/Front Fan Multi-Speed Control
Voltage	Voltage Monitoring: Vsoc,Vcpu, VCCM, VPPM, 3V/5V/12V, +BAT, 3VSB, 5VSB

English

4

Support OS	
OS	Microsoft® Windows®
	- Server 2012 R2 (64 bit)
	- Server 2016 (64 bit)
	Linux®
	- RedHat Enterprise Linux Server 6.9 (64 bit) / 7.3 (64 bit)
	- CentOS 6.9 (64 bit) / 7. 3 (64 bit)
	- SUSE Enterprise Linux Server 11 SP4 (64 bit) / 12 SP2 (64 bit)
	- Ubuntu 16.04 (64 bit) / 17.04 (64 bit)
	- CITRIX XenServer 7.5
	Virtual:
	- VMWare ESXi 6.5 u1
	- vSphere 6.5 u1
	Please refer to our website for the latest OS support list.
Environment	
Temperature	Operation temperature: 10°C ~ 35°C / Non operation temperature: -40°C ~ 70°C

NOTE: Please refer to our website for the latest specifications.

⚠️ *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.*

English

5

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

24.4cm (9.6 in)

30.5cm (12.0 in)

UID1

DDR4_H1 (64 bit, 288-pin module)
DDR4_G1 (64 bit, 288-pin module)
DDR4_F1 (64 bit, 288-pin module)
DDR4_E1 (64 bit, 288-pin module)

VGA1
COM1

IPMI_LAN

USB 3.0
T: USB2
B: USB1

LAN1
(NC5I)

LAN2

SATA_0   SATAPWR1

PCIE7

Intel
i350/X550

PCIE6

PCIE5

EPYCD8 / EPYCD8-2T / EPYCD8-2T/R32 / EPYCD8/R32

AST
2500

PCIE4

PCIE3

PCIE2

PCIE1

BMC
F/W

CHASSIS_ID1   CHASSIS_ID2   CHASSIS_ID3   SMB_BT91

DDR4_A1 (64 bit, 288-pin module)
DDR4_B1 (64 bit, 288-pin module)
DDR4_C1 (64 bit, 288-pin module)
DDR4_D1 (64 bit, 288-pin module)

LGA4094
Socket SP3

PSU_SMB1

ATX12V1   ATX12V2

ATXPWR1

USB3_3_4

REAR_FAN1
REAR_FAN2
DCU1
CPU1_FAN1
DCU2
FRNT_FAN1

M2_2   M2_1

ASRock
Rack

NUT30_2   NUT30
NUT42_2   NUT42
NUT60_2   NUT60

RoHS

NUT80_2   NUT80

BAT1

NUT110_2

SATA_0_3
SATA_SGPIO1
SATA_4_7
FRNT_FAN2
FRNT_FAN3
FRNT_FAN4

GFX_12V1
CLRMOS1
SPEAKER1
PANEL1

IPMB_1   BMC_SMB_1   Dr.
Debug

TPMS1   TR1   AUX_PANEL1

1 2 3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23

32 31 30 29   28   27   26 25   24

38
37
36
35
34
33

No.	Description
1	PSU SMBus Header (PSU_SMB1)
2	ATX 12V Power Connector (ATX12V1)
3	ATX 12V Power Connector (ATX12V2)
4	ATX Power Connector (ATXPWR1)
5	USB 3.0 Header (USB3_3_4)
6	Rear Fan Connector (REAR_FAN1)
7	Rear Fan Connector (REAR_FAN2)
8	OCuLink x4 Connector (OCU1)
9	CPU Fan Connector (CPU1_FAN1)
10	Front Fan Connector (FRNT_FAN1)
11	OCuLink x4 Connector (OCU2)
12	M.2 Socket (M2_2) (Type 2230 / 2242 / 2260 / 2280 / 22110)
13	M.2 Socket (M2_1) (Type 2230 / 2242 / 2260 / 2280)
14	Mini-SAS HD Connector (SATA_0_3)
15	SATA SGPIO Header (SATA_SGPIO1)
16	Mini-SAS HD Connector (SATA_4_7)
17	Front Fan Connector (FRNT_FAN2)
18	Front Fan Connector (FRNT_FAN3)
19	Front Fan Connector (FRNT_FAN4)
20	Graphics 12V Power Connector (GFX_12V1)
21	Clear CMOS Pad (CLRMOS1)
22	Speaker Header (SPEAKER1)
23	System Panel Header (PANEL1)
24	Auxiliary Panel Header (AUX_PANEL1)
25	Thermal Sensor Header (TR1)
26	TPM Header (TPMS1)
27	BMC SMBus Header (BMC_SMB_1)
28	Intelligent Platform Management Bus header (IPMB1)
29	Non Maskable Interrupt Button (NMI_BTN1)
30	Chassis ID3 Jumper (CHASSIS_ID3)
31	Chassis ID2 Jumper (CHASSIS_ID2)
32	Chassis ID1 Jumper (CHASSIS_ID1)
33	SATA DOM Power Jumper (SATAPWR1)

No.	Description
34	SATA DOM Connector, White (SATA_8)
35	2 x 288-pin DDR4 DIMM Slots (DDR4_B1, DDR4_D1)*
36	2 x 288-pin DDR4 DIMM Slots (DDR4_A1, DDR4_C1)*
37	2 x 288-pin DDR4 DIMM Slots (DDR4_E1, DDR4_G1)*
38	2 x 288-pin DDR4 DIMM Slots (DDR4_F1, DDR4_H1)*

*For DIMM installation and configuration instructions, please see p.22 (Installation of Memory Modules (DIMM)) for more details.

English

1.5 Onboard LED Indicators

DDR4_H1 (64 bit, 288-pin module)

DDR4_G1 (64 bit, 288-pin module)

DDR4_F1 (64 bit, 288-pin module)

DDR4_E1 (64 bit, 288-pin module)

**LGA4094
Socket SP3**

DDR4_A1 (64 bit, 288-pin module)

DDR4_B1 (64 bit, 288-pin module)

DDR4_C1 (64 bit, 288-pin module)

DDR4_D1 (64 bit, 288-pin module)

EPYCD8 / EPYCD8-2T / EPYCD8-2T/R32 / EPYCD8/R32

ASRock Rack

NUT5   NUT1

NUT6   NUT2

NUT7   NUT3

RoHS

NUT8   NUT4

NUT110_2

1
2
3
4

5
6
7

8

9
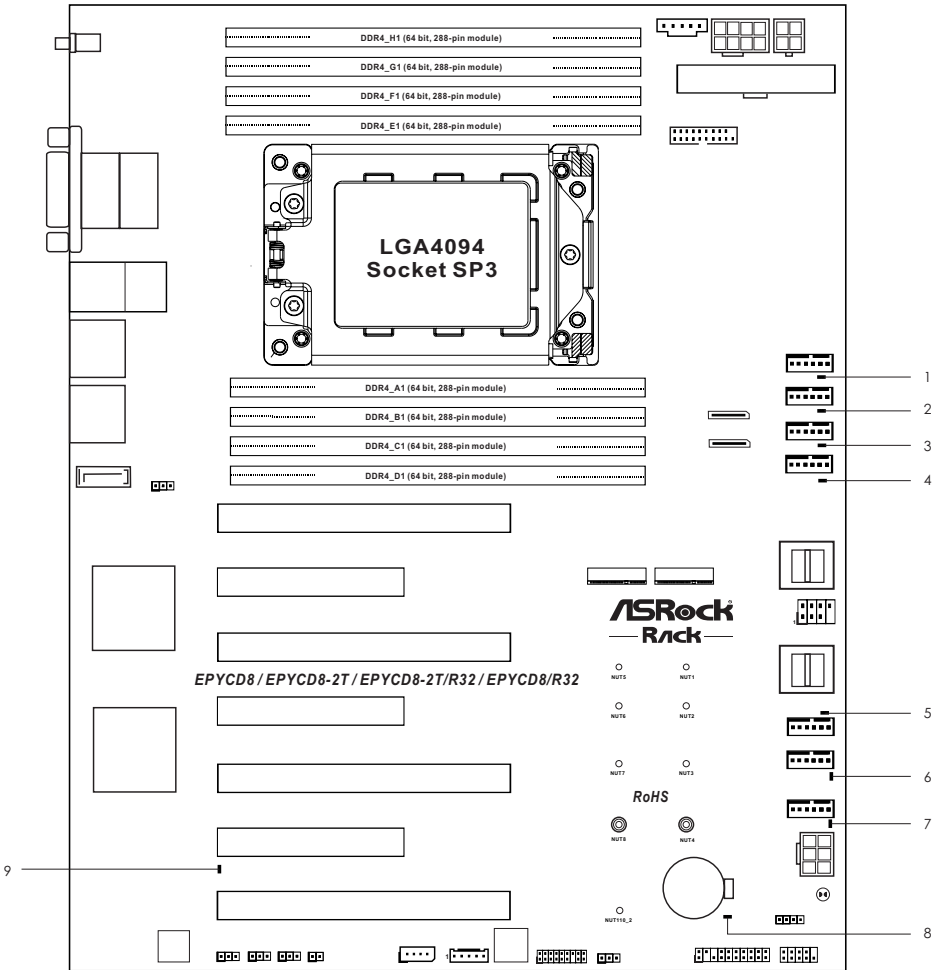
No.	Item	Status	Description
1	FAN_LED3	Amber	RAER_FAN1 failed
2	FAN_LED4	Amber	RAER_FAN2 failed
3	FAN_LED1	Amber	CPU1_FAN1 failed
4	FAN_LED2	Amber	FRNT_FAN1 failed
5	FAN_LED7	Amber	FRNT_FAN2 failed
6	FAN_LED8	Amber	FRNT_FAN3 failed
7	FAN_LED9	Amber	FRNT_FAN4 failed
8	SB_PWR1	Green	STB PWR ready
9	BMC_LED1	Green	BMC heartbeat LED

English

1.6 I/O Panel
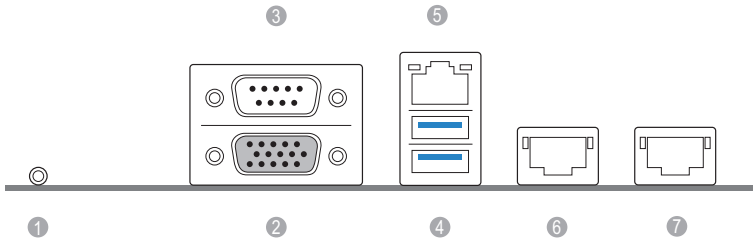
No.	Description	No.	Description
1	UID Switch (UID1)	5	LAN RJ-45 Port (IPMI_LAN1)*
2	VGA Port (VGA1)	6	**EPYCD8 / EPYCD8/R32:** GLAN RJ-45 Port (LAN1)** **EPYCD8-2T / EPYCD8-2T/R32:** 10G LAN RJ-45 Port (LAN1)**
3	Serial Port (COM1)	7	**EPYCD8 / EPYCD8/R32:** GLAN RJ-45 Port (LAN2)** **EPYCD8-2T / EPYCD8-2T/R32:** 10G LAN RJ-45 Port (LAN2)**
4	USB 3.0 Ports (USB3_1_2)		

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

ACT/LINK LED
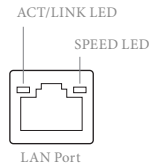
SPEED LED

LAN Port

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

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

ACT/LINK LED
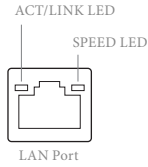
SPEED LED

LAN Port

LAN Port (LAN1, LAN2) LED Indications
1G For EPYCD8 / EPYCD8/R32

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

10G For EPYCD8-2T / EPYCD8-2T/R32

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

English

13

1.7 Block Diagram

AMD EPYC SP3 7000 Series CPU

8 x 288-DDR4 Slots One DIMM/channel

Mini SAS HD
SATA_0_3
SATA_4_7

PCIe X8 Slot 2

PCIe X16 Slot 7

OCU Link 1
OCU Link 1

SATA (3)[0:7]
PCIe G0[8:15]
PCIe P[8:15]
PCIe G4[0:7]
PCIe G4[8:15]
PCIe P[15:0]E

Intel Ethernet controller
I350/X550-BT2

MDIO
MDIO

10G/1G RJ45

10G/1G RJ45
NC-SI

BIOS ROM

NC-SI

BMC DDR4
BMC ROM

DDR4
SPI

TPM Header

SIO
NCT6779

Power sequence

LPC

UART 2
LPC
SPI
X1 PCIE
X1 USB2.0
LPC

Rear USB3.0
(2 port)

USB3 (3:0)
USB3 (3:0)

USB3 [2:3]

BMC
AST2500

PHY
RTL 8211E

TX/RX

Serial Header

SMBus
SMBus

D-SUB
VGA

IPMB Header

COM port

IPMI
RJ45

PCIe X8 Slot 4
PCIe X8 Slot 6
PCIe X16 Slot 5
PCIe X16 Slot 1
PCIe X16 Slot 3

PCIe P[0:7]
PCIe P[8:15]
PCIe P[0:15]
PCIe G0[0:15]
PCIe G0[8:15]
PCIe G0[8:15] + SATA P0[0]
PCIe G1[2:15] + SATA P0[0]

USB2 [2]
USB2.0

USB 2.0
Hub IC
GL850G

USB 3.0
Front Header
(2 port)

Switch
CBTL04083B
M.2_2
(22110)

Switch
CBTL04083B
M.2_1
(2280)

English

14

Chapter 2 Installation

This is an ATX form factor (12" x 9.6", 30.5 cm x 24.4 cm) motherboard. Before you install the motherboard, study the configuration of your chassis to ensure that the motherboard fits into it.

> ⚠ *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.

> ⚠ *Attention! Before installing this motherboard, be sure to unscrew and remove the standoffs at the marked location, under the motherboard, from the chassis, in order to avoid electrical short circuit and damage to your motherboard.*

Rear I/O

Remove the standoff from the chassis

English
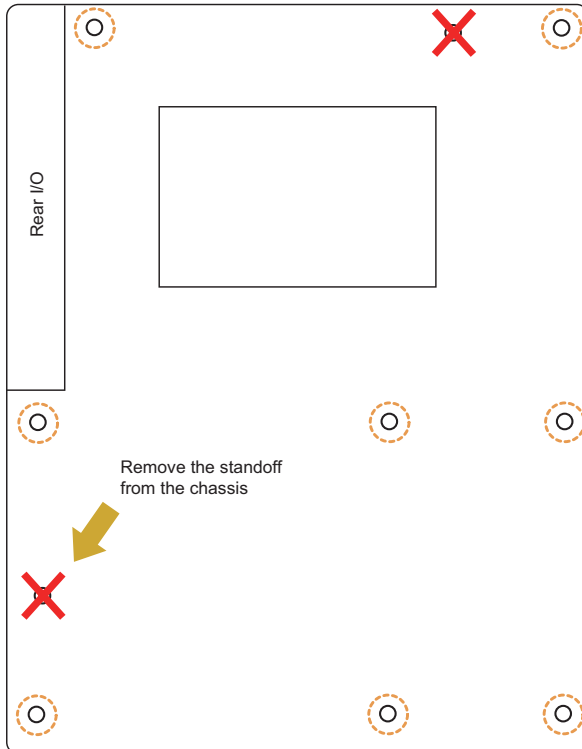
> ⚠️ *Do not over-tighten the screws! Doing so may damage the motherboard.*

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

5

Carrier Frame with CPU
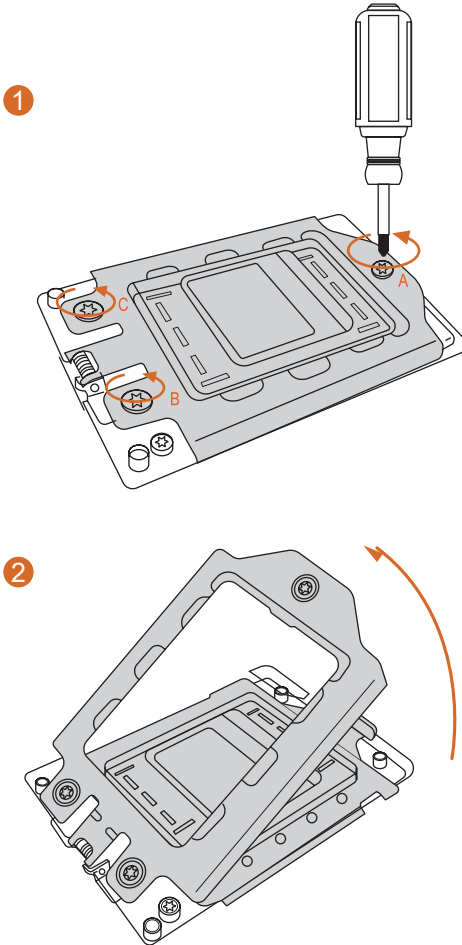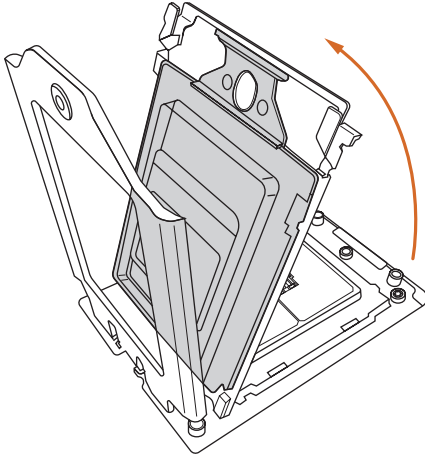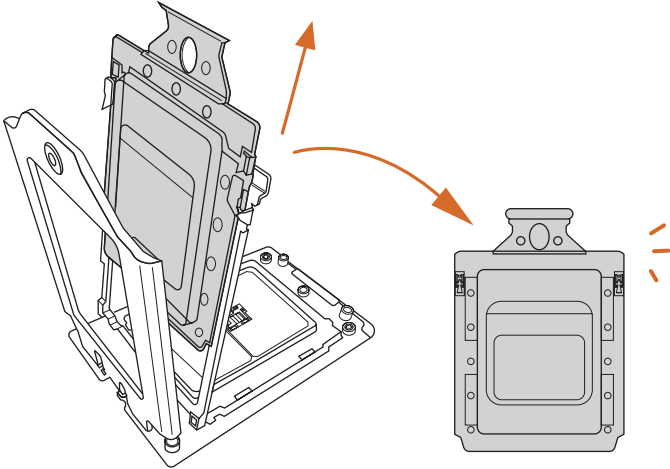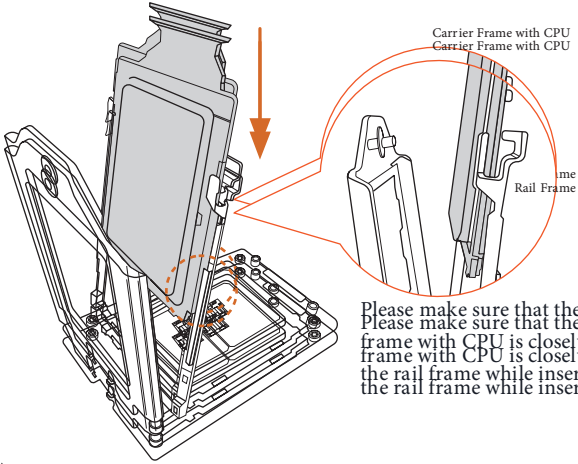
Rail Frame

Please make sure that the carrier frame with CPU is closely attached to the rail frame while inserting it.

⚠ Install the carrier frame with CPU. Don't separate them.

6
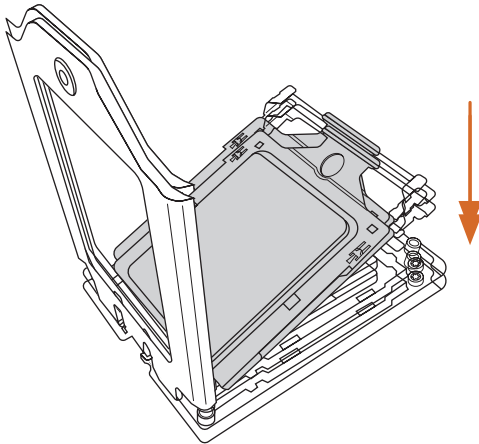
7
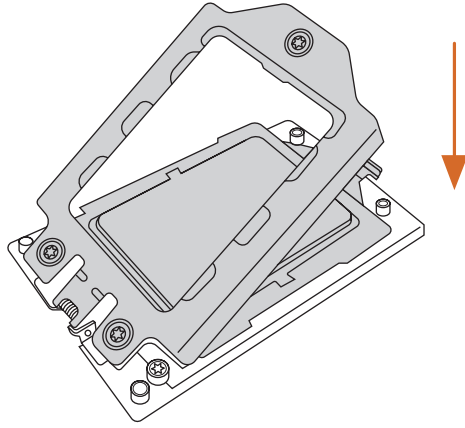
8
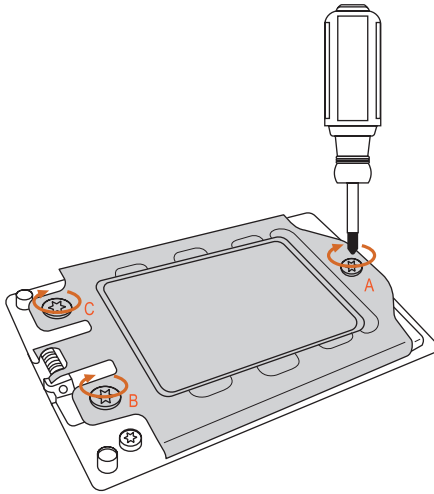
2.4 Installation of Memory Modules (DIMM)

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

	CPU1							
	A1	B1	C1	D1	E1	F1	G1	H1
1 DIMM	#							
2 DIMMS	#				#			
4 DIMMS	#	#			#	#		
8 DIMMS	#	#	#	#	#	#	#	#

⚠️
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.

English

21
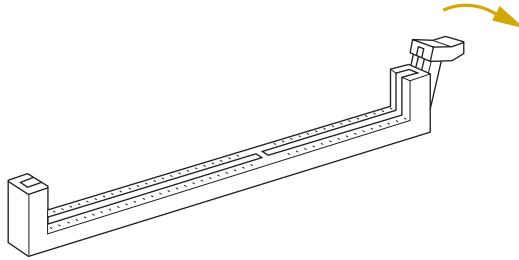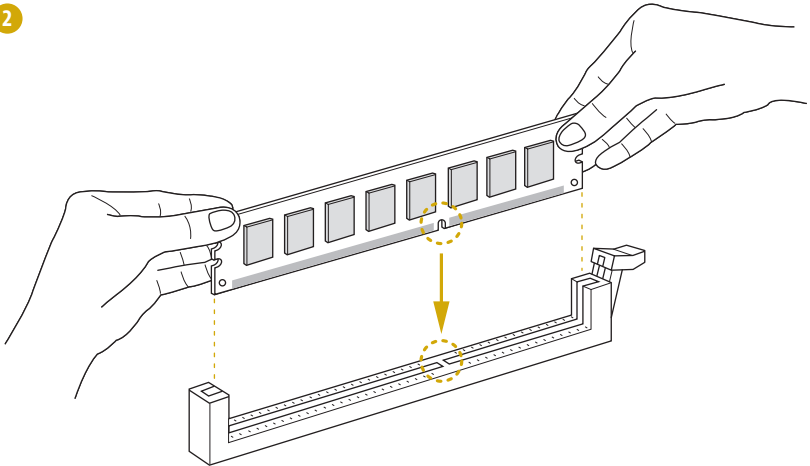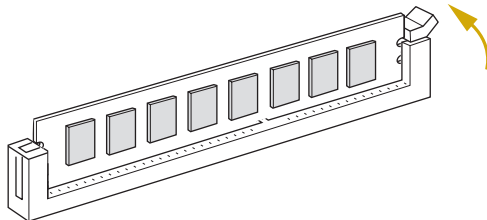
The DIMM only fits in one correct orientation. It will cause permanent damage to the motherboard and the DIMM if you force the DIMM into the slot at incorrect orientation.

2.5 Expansion Slots (PCI Express Slots)

There are 7 PCI Express slots on this motherboard.

PCIE slot:

PCIE1 (PCIE 3.0 x16 slot, from CPU) is used for PCI Express x16 lane width cards.
PCIE2 (PCIE 3.0 x8 slot, from CPU) is used for PCI Express x8 lane width cards.
PCIE3 (PCIE 3.0 x16 slot, from CPU) is used for PCI Express x16 lane width cards.
PCIE4 (PCIE 3.0 x8 slot, from CPU) is used for PCI Express x8 lane width cards.
PCIE5 (PCIE 3.0 x16 slot, from CPU) is used for PCI Express x16 lane width cards.
PCIE6 (PCIE 3.0 x8 slot, from CPU) is used for PCI Express x8 lane width cards.
PCIE7 (PCIE 3.0 x16 slot, from CPU) is used for PCI Express x16 lane width cards.

Slot	Generation	Mechanical	Electrical	Source
PCIE7	3.0	x16	x16	CPU
PCIE6	3.0	x8	x8	CPU
PCIE5	3.0	x16	x16	CPU
PCIE4	3.0	x8	x8	CPU
PCIE3	3.0	x16	x16	CPU
PCIE2	3.0	x8	x8	CPU
PCIE1	3.0	x16	x16	CPU

Installing an expansion card

Step 1. Before installing an expansion card, please make sure that the power supply is switched off or the power cord is unplugged. Please read the documentation of the expansion card and make necessary hardware settings for the card before you start the installation.

Step 2. Remove the system unit cover (if your motherboard is already installed in a chassis).

Step 3. Remove the bracket facing the slot that you intend to use. Keep the screws for later use.

Step 4. Align the card connector with the slot and press firmly until the card is completely seated on the slot.

Step 5. Fasten the card to the chassis with screws.

Step 6. Replace the system cover.

English

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.
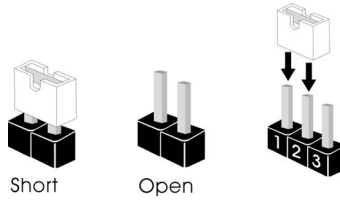
Short   Open

Chassis ID1 Jumper (3-pin CHASSIS_ID1) (see p.6, No. 32) Chassis ID2 Jumper (3-pin CHASSIS_ID2) (see p.6, No. 31) Chassis ID3 Jumper (3-pin CHASSIS_ID3) (see p.6, No. 30)	Board Level SKU (Default)	Reserved for system level use
Chassis ID1 Jumper (3-pin CHASSIS_ID1) (see p.6, No. 32) Chassis ID2 Jumper (3-pin CHASSIS_ID2) (see p.6, No. 31) Chassis ID3 Jumper (3-pin CHASSIS_ID3) (see p.6, No. 30)	Reserved for system level use	Reserved for system level use

	2_3	**2_3**
Chassis ID1 Jumper (3-pin CHASSIS_ID1) (see p.6, No. 32)		
Chassis ID2 Jumper (3-pin CHASSIS_ID2) (see p.6, No. 31)	**1_2**	**1_2**
Chassis ID3 Jumper (3-pin CHASSIS_ID3) (see p.6, No. 30)	**1_2**	**2_3**
	Reserved for system level use	Reserved for system level use

	2_3	**2_3**
Chassis ID1 Jumper (3-pin CHASSIS_ID1) (see p.6, No. 32)		
Chassis ID2 Jumper (3-pin CHASSIS_ID2) (see p.6, No. 31)	**2_3**	**2_3**
Chassis ID3 Jumper (3-pin CHASSIS_ID3) (see p.6, No. 30)	**1_2**	**2_3**
	Reserved for system level use	Reserved for system level use

	1_2	**2_3**
SATA DOM Power Jumper (3-pin SATAPWR1) (see p.6, No. 33)		
	SATA DOM (SATA_8) requires 5V power supply	SATA DOM (SATA_8) does NOT require 5V power supply (Default)

☆ *Consult the documentation that comes with your SATA DOM and check whether or not Pin 7 requires 5V power supply.*

If the connected SATA DOM requires 5V power supply, move the jumper caps placed on the SATA DOM Power Jumper (SATAPWR1) from pins 2-3 (default) to pins 1-2.

If the connected SATA DOM does NOT require 5V power supply, connect the SATA DOM power cable to the SATA DOM power header (SATAPWR1) and there is no need to change the default jumper setting of the SATA DOM Power Jumper (pins 2-3).

Warning! Incorrect setting of the SATA DOM Power Jumper (SATAPWR1) may cause damage to the motherboard or your SATA DOM.

English

25

2.7 Onboard Headers and Connectors

System Panel Header
(9-pin PANEL1)
(see p.6, No. 23)

PLED+
PLED-
PWRBTN#
GND

1

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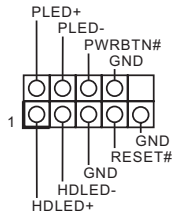
Connect the power switch, reset switch and system status indicator on the chassis to this header according to the pin assignments. Particularly note the positive and negative pins before connecting the cables.

⊕ **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
(18-pin AUX PANEL_1)
(see p.6, No. 24)
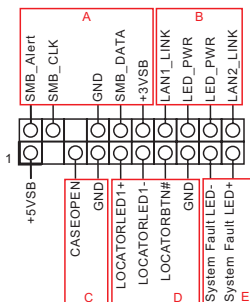
This header supports multiple functions on the front panel, including the front panel SMB, internet status indicator and chassis intrusion pin.

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. Internet status indicator (2-pin LAN1_LED, LAN2_LED)
These two 2-pin headers allow you to use the Gigabit internet indicator cable to connect to the LAN status indicator. When this indicator flickers, it means that the internet is properly connected.

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.

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

Serial ATA3 DOM
Connector
(SATA_8)
(see p.6, No. 34)

The SATA3 DOM connector supports both a SATA DOM (Disk-On-Module) and a SATA data cable for internal storage device.

English

27

Mini-SAS HD Connectors
(SATA_0_3)
(see p.6, No. 14)
(SSATA_4_7)
(see p.6, No. 16)

SATA_0_3

SATA_4_7

These connectors
support MiniSAS-to-
SATA data cables for
internal storage devices
with up to 6.0 Gb/s data
transfer rate.

USB 3.0 Header
(19-pin USB3_3_4)
(see p.6, No. 5)

IntA_PA_D+
IntA_PA_D-
GND
IntA_PA_SSTX+
IntA_PA_SSTX-
GND
IntA_PA_SSRX+
IntA_PA_SSRX-
Vbus

1

Vbus
IntA_PB_SSRX-
IntA_PB_SSRX+
GND
IntA_PB_SSTX-
IntA_PBA_SSTX+
GND
IntA_PB_D-
IntA_PB_D+
Dummy
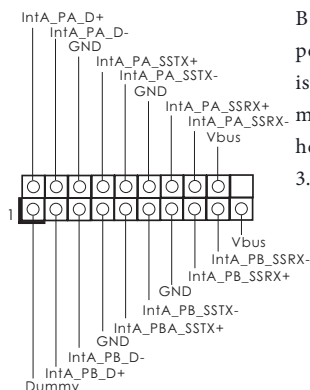
Besides two default USB 3.0
ports on the I/O panel, there
is one USB 3.0 header on this
motherboard. This USB 3.0
header can support two USB
3.0 ports.

Chassis Speaker Header
(4-pin SPEAKER1)
(see p.6, No. 22)

DUMMY SPEAKER

1

+5V   DUMMY
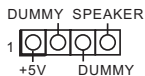
Please connect the chassis
speaker to this header.

Front and Rear Fan Con-
nectors
(6-pin FRNT_FAN1)
(see p.6, No. 10)
(6-pin FRNT_FAN2)
(see p.6, No. 17)
(6-pin FRNT_FAN3)
(see p.6, No. 18)
(6-pin FRNT_FAN4)
(see p.6, No. 19)

6 5 4 3 2 1

GND
FAN_VOLTAGE
FAN_SPEED
FAN_SPEED_CONTROL
SENSOR
NC
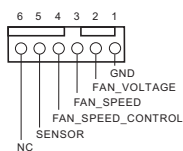
Please connect fan cables to the
fan connectors and match the
black wire to the ground pin.
All fans support Fan Control.

(6-pin REAR_FAN1)
(see p.6, No. 6)
(6-pin REAR_FAN2)
(see p.6, No. 7)

6 5 4 3 2 1

GND
FAN_VOLTAGE
FAN_SPEED
FAN_SPEED_CONTROL
SENSOR
NC

28
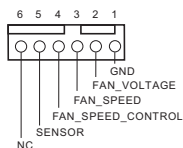
CPU Fan Connector
(6-pin CPU1_FAN1)
(see p.6, No. 9)

6 5 4 3 2 1

GND
FAN_VOLTAGE
FAN_SPEED
FAN_SPEED_CONTROL
SENSOR
NC
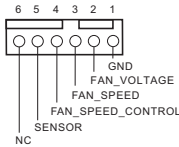
This motherboard provides two 6-Pin CPU fan (Quiet Fan) connectors. If you plan to connect a 3-Pin CPU fan, please connect it to Pin 1-3.

For more details, please refer to the Cooler QVL list on the ASRock Rack website.

ATX Power Connector
(24-pin ATXPWR1)
(see p.6, No. 4)

3V
3V
GND
5V
GND
5V
GND
PWROK_PS
5VSB
12V
12V
3V

1   12

13   24

3V
-12V
GND
PSON#
GND
GND
GND
N/A
5V
5V
5V
GND
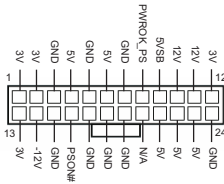
This motherboard provides a 24-pin ATX power connector. To use a 20-pin ATX power supply, please plug it along Pin 1 and Pin 13.

ATX 12V Power
Connectors
(8-pin ATX12V1)
(see p.6, No. 2)
(4-pin ATX12V2)
(see p.6, No. 3)

GND
1   4
5   8
12V

GND
1   2
3   4
12V
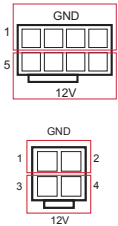
This motherboard provides one 8-pin and one 4-pin ATX 12V power connectors.

Graphics 12V Power
Connector
(6-pin GFX_12V1)
(see p.6, No. 20)

4   1

6   3

This motherboard provides a 6-pin Graphics 12V power connector.
* Install the PSU's power cable to this connector when 4 graphics cards are installed.

TPM Header
(17-pin TPMS1)
(see p.6, No. 26)

SMB_DATA_MAIN
SMB_CLK_MAIN
GND

S_PWRDWN#
SERIRQ#
GND
LAD1_L
LAD2_L

F_CLKRUN#
GND
+3VSB
LAD0_L

CK_33M_TPM
LFRAME#_L
TPM_RST#
LAD3_L
+3V

1
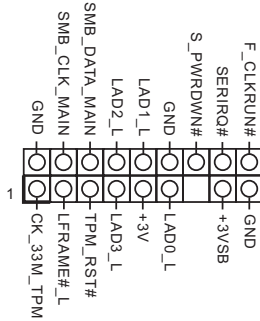
This connector supports Trusted Platform Module (TPM) system, which can securely store keys, digital certificates, passwords, and data. A TPM system also helps enhance network security, protects digital identities, and ensures platform integrity.

PSU SMBus Header
(5-pin PSU_SMB1)
(see p.6, No. 1)

ALERT
SMBCLK   +3V
1
SMBDATA
GND
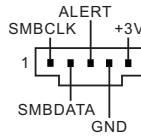
PSU SMBus monitors the status of the power supply, fan and system temperature.

Intelligent Platform Management Bus Header
(4-pin IPMB_1)
(see p.6, No. 28)

IPMB_SDA
IPMB_SCL
GND
No Connect
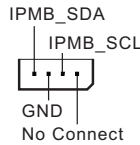
This 4-pin connector is used to provide a cabled base-board or front panel connection for value added features and 3rd-party add-in cards, such as Emergency Management cards, that provide management features using the IPMB.

Baseboard Management Controller SMBus Header
(5-pin BMC_SMB_1)
(see p.6, No. 27)

BMC_SMB_PRESENT_1_N
Power
BMC_SMBCLK
GND
BMC_SMBDATA
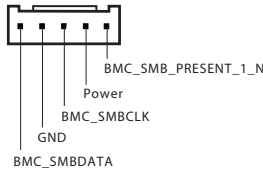
The header is used for the SM BUS devices.

Thermal Sensor Header
(3-pin TR1)
(see p.6, No. 25)

TR1   TR1
1
GND
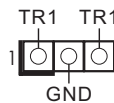
Please connect the thermal sensor cable to either pin 1-2 or pin 2-3 and the other end to the device which you wish to monitor its temperature.

Non Maskable Interrupt
Button Header
(NMI_BTN1)
(see p.6, No. 29)

GND

1

CONTROL
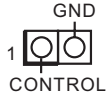
Please connect a NMI device
to this header.

OCuLink Connectors
(OCU1)
(see p.6, No. 8)
(OCU2)
(see p.6, No. 11)

OCU1

OCU2
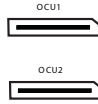
Please connect PCIE SSDs to
these connectors.

Clear CMOS Pad
(CLRMOS1)
(see p.6, No. 21)

This allows you to clear the
data in CMOS. To clear CMOS,
take out the CMOS battery and
short the Clear CMOS Pad.

Serial General Purpose
Input/Output Header
(7-pin SATA_SGPIO1)
(see p.6, No. 15)

H_SCLOCK1
H_SLOAD1
GND

1

H_SDATAIN1
H_SDATAOUT1
GND
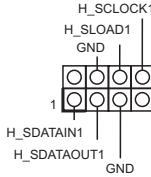
This header supports Serial
Link interface for onboard
SATA connections.

31

2.8 Dr. Debug

Dr. Debug is used to provide code information, which makes troubleshooting even easier. Please see the diagrams below for reading the Dr. Debug codes.

Code	Description
00	Please check if the CPU is installed correctly and then clear CMOS.
0d	Problem related to memory, VGA card or other devices. Please clear CMOS, re-install the memory and VGA card, and remove other USB, PCI devices.
01 - 54 (except 0d), 5A- 60	Problem related to memory. Please re-install the CPU and memory then clear CMOS. If the problem still exists, please install only one memory module or try using other memory modules.
55	The Memory could not be detected. Please re-install the memory and CPU. If the problem still exists, please install only one memory module or try using other memory modules.
61 - 91	Chipset initialization error. Please press reset or clear CMOS.
92 - 99	Problem related to PCI-E devices. Please re-install PCI-E devices or try installing them in other slots. If the problem still exists, please remove all PCI-E devices or try using another VGA card.
A0 - A7	Problem related to IDE or SATA devices. Please re-install IDE and SATA devices. If the problem still exists, please clear CMOS and try removing all SATA devices.
b0	Problem related to memory. Please re-install the CPU and memory. If the problem still exists, please install only one memory module or try using other memory modules.
b4	Problem related to USB devices. Please try removing all USB devices.
b7	Problem related to memory. Please re-install the CPU and memory then clear CMOS. If the problem still exists, please install only one memory module or try using other memory modules.
d6	The VGA could not be recognized. Please clear CMOS and try re-installing the VGA card. If the problem still exists, please try installing the VGA card in other slots or use other VGA cards.
d7	The Keyboard and mouse could not be recognized. Please try re-installing the keyboard and mouse.
d8	Invalid Password.
FF	Please check if the CPU is installed correctly and then clear CMOS.

2.9 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 (UID1)

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.

2.10 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.

English

2.11 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 M.2_SSD (NGFF) Socket 3 can accommodate either a M.2 SATA3 6.0 Gb/s module or a M.2 PCI Express module up to Gen3 x4 (32 Gb/s).

Installing the M.2_SSD (NGFF) Module
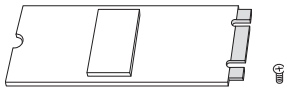
Step 1

Prepare a M.2_SSD (NGFF) module and the screw.
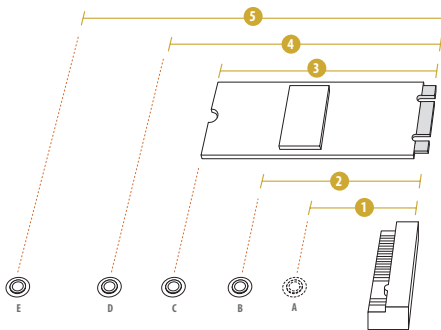
Step 2

Depending on the PCB type and length of your M.2_SSD (NGFF) module, find the corresponding nut location to be used.

M2_1 :

No.	1	2	3	4
Nut Location	A	B	C	D
PCB Length	3cm	4.2cm	6cm	8cm
Module Type	Type2230	Type 2242	Type2260	Type 2280

M2_2 :

No.	1	2	3	4	5
Nut Location	A	B	C	D	E
PCB Length	3cm	4.2cm	6cm	8cm	11cm
Module Type	Type2230	Type 2242	Type2260	Type 2280	Type 22110
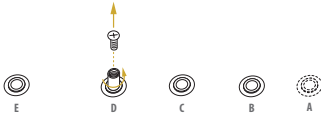
Step 3

Move the standoff based on the module type and length.
The standoff is placed at the nut location D by default. Skip Step 3 and 4 and go straight to Step 5 if you are going to use the default nut. Otherwise, release the standoff by hand.

E   D   C   B   A

Step 4

Peel off the yellow protective film on the nut to be used. Hand tighten the standoff into the desired nut location on the motherboard.

E   D   C   B   A
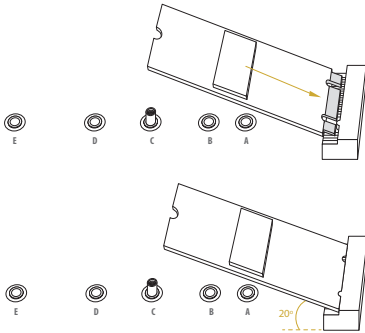
Step 5

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.

E   D   C   B   A

E   D   C   B   A   20°
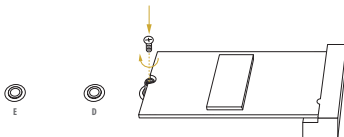
Step 6

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

E   D

For the latest updates of M.2_SSD (NFGG) module support list, please visit our website for details: http://www.asrockrack.com

English

35

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
Server Mgmt	To manage the server
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
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.

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.

```
                Aptio Setup Utility - Copyright (C) 2018 American Megatrends, Inc.
   Main  Advanced  Server Mgmt  Security  Boot  Event Logs  Exit

  UEFI Version      : EPYCD8-2T L0.18              Set the Date. Use Tab to
  BMC Version       : 0.07.00                      switch between Date elements.
  Processor Type    : AMD EPYC 7251 8-Core Processor    Default Ranges:
                                                   Year: 2005-2099
  Processor Speed   : 2125MHz                      Months: 1-12
  Microcode Update  : 800F12/8001227               Days: dependent on month
  L1 Instruction Cache : 64KB
  L1 Data Cache Size   : 32KB
  L2 Cache Size        : 512KB
  L3 Cache per Socket  : 32MB

  DDR4_A1         : None
  DDR4_B1         : None
  DDR4_C1         : Samsung 8GB RDIMM (DDR4-2400)   ←→: Select Screen
  DDR4_D1         : None                           ↑↓: Select Item
  DDR4_E1         : None                           Enter: Select
  DDR4_F1         : None                           +/-: Change Option
  DDR4_G1         : None                           F1: General Help
  DDR4_H1         : None                           F7: Discard Changes
                                                   F9: Load UEFI Defaults
  Total Memory    : 8GB                            F10: Save and Exit
                                                   ESC: Exit
  System Date                    [Thu 08/23/2018]
  System Time                    [00:47:33]



                Version 2.18.1264. Copyright (C) 2018 American Megatrends, Inc.       B4
```

3.3 Advanced Screen

In this section, you may set the configurations for the following items: CPU Configuration, Chipset Configuration, Storage Configuration, NVMe Configuration, ACPI Configuration, USB Configuration, Super IO Configuration, Serial Port Console Redirection, H/W Monitor, PSP Firmware Versions, Trusted Computing, iSCSI Configuration and Instant Flash.

```
            Aptio Setup Utility - Copyright (C) 2018 American Megatrends, Inc.
      Main   Advanced   Server Mgmt   Security   Boot   Event Logs   Exit

  ▶ CPU Configuration                                   CPU Configuration Parameters
  ▶ Chipset Configuration
  ▶ Storage Configuration
  ▶ NVMe Configuration
  ▶ ACPI Configuration
  ▶ USB Configuration
  ▶ Super IO Configuration
  ▶ Serial Port Console Redirection
  ▶ H/W Monitor
  ▶ PSP Firmware Versions
  ▶ Trusted Computing
  ▶ iSCSI Configuration

    UEFI Update Utility                                 ←→: Select Screen
  ▶ Instant Flash                                       ↑↓: Select Item
                                                        Enter: Select
                                                        +/-: Change Option
                                                        F1: General Help
                                                        F7: Discard Changes
                                                        F9: Load UEFI Defaults
                                                        F10: Save and Exit
                                                        ESC: Exit

            Version 2.18.1264. Copyright (C) 2018 American Megatrends, Inc.
```

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

3.3.1 CPU Configuration

```
            Aptio Setup Utility - Copyright (C) 2018 American Megatrends, Inc.
    Advanced

 Core Performance Boost           [Auto]          Disable CPB
 Global C-state Control           [Auto]
 Downcore control                 [Auto]
 L1 Stream HW Prefetcher          [Auto]
 L2 Stream HW Prefetcher          [Auto]
 SVM Mode                         [Enabled]
 SMEE                             [Enabled]
▶ Node 0 Information
 Determinism Slider               [Auto]
 cTDP Control                     [Auto]
 IOMMU                            [Disabled]
 ACS Enable                       [Auto]

                                                 →←: Select Screen
                                                 ↑↓: Select Item
                                                 Enter: Select
                                                 +/-: Change Option
                                                 F1: General Help
                                                 F7: Discard Changes
                                                 F9: Load UEFI Defaults
                                                 F10: Save and Exit
                                                 ESC: Exit

            Version 2.18.1264. Copyright (C) 2018 American Megatrends, Inc.
```

Core Performance Boost

Use this item to disable CPB.

Global C-state Control

Use this item to control IO based C-state generation and DF C-states.

Downcore Control

Sets the number of cores to be used. Once this option has been used to remove any cores, a POWER CYCLE is required in order for future selections to take effect.

L1 Stream HW Prefetcher

Option to Enable or Disable L1 Stream HW Prefetcher.

L2 Stream HW Prefetcher

Option to Enable or Disable L2 Stream HW Prefetcher.

SVM Mode

Enable or disable CPU Virtualization.

SMEE

Use this item to control secure emmory encryption enable.

Node 0 Information

View Memory Information related to Node 0.

Determinism Slider

Auto = Use default performance determinism settings Power Performance

cTDP Control

Auto = Use the fused cTDP
Manual = User can set customized cTDP

IOMMU

Use this item to enable or disable IOMMU.

ACS Enable

Use thie item to configure ACS Enable settings.

3.3.2 Chipset Configuration

```
                Aptio Setup Utility - Copyright (C) 2018 American Megatrends, Inc.
         Advanced

    SMT Mode                          [Auto]            Simultaneous multithreading.
    OnBrd/Ext VGA Select              [Auto]            OFF=1T single-thread Auto=2T
    Onboard LAN1                      [Enabled]         two-thread if capable.
    Onboard LAN2                      [Enabled]
    PCIE Slot 1 Link Width            [x16]
    PCIE Slot 3 Link Width            [x16]
    PCIE Slot 5 Link Width            [x16]
    PCIE Slot 7 Link Width            [x16]

    PCIE1 Link Speed                  [Auto]
    PCIE2 Link Speed                  [Auto]
    PCIE3 Link Speed                  [Auto]
    PCIE4 Link Speed                  [Auto]            ↔: Select Screen
    PCIE5 Link Speed                  [Auto]            ↑↓: Select Item
    PCIE6 Link Speed                  [Auto]            Enter: Select
    PCIE7 Link Speed                  [Auto]            +/-: Change Option
    Above 4G Decoding                 [Enabled]         F1: General Help
    SR-IOV Support                    [Disabled]        F7: Discard Changes
    Restore AC Power Loss             [No change]       F9: Load UEFI Defaults
    Restore AC Power Current State    Power Off         F10: Save and Exit
                                                        ESC: Exit




                Version 2.18.1264. Copyright (C) 2018 American Megatrends, Inc.
```

SMT Mode

Simultaneous multithreading.

OFF = 1T single-thread

AUTO = 2T two-thread if capable.

OnBrd/Ext VGA Select

Select between onboard or external VGA support.

Onboard LAN1

This allows you to enable or disable the Onboard LAN1 feature.

Onboard LAN2

This allows you to enable or disable the Onboard LAN2 feature.

PCIE Slot 1 Link Width

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

PCIE Slot 3 Link Width

This allows you to select PCIE3 Link Width. The default value is [x16].

PCIE Slot 5 Link Width

This allows you to select PCIE5 Link Width. The default value is [x16].

PCIE Slot 7 Link Width

This allows you to select PCIE7 Link Width. The default value is [x16].

PCIE1 Link Speed

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

PCIE2 Link Speed

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

PCIE3 Link Speed

This allows you to select PCIE3 Link Speed. The default value is [Auto].

PCIE4 Link Speed

This allows you to select PCIE4 Link Speed. The default value is [Auto].

PCIE5 Link Speed

This allows you to select PCIE5 Link Speed. The default value is [Auto].

PCIE6 Link Speed

This allows you to select PCIE6 Link Speed. The default value is [Auto].

PCIE7 Link Speed

This allows you to select PCIE7 Link Speed. The default value is [Auto].

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)

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.

English

3.3.3 Storage Configuration

```
                    Aptio Setup Utility - Copyright (C) 2018 American Megatrends, Inc.
            Advanced

    SATA Hot Plug                        [Enabled]            S.M.A.R.T stands for
                                                              Self-Monitoring, Analysis, and
 ▶  SATA_0 : Not Detected                                     Reporting Technology. It is a
 ▶  SATA_1 : Not Detected                                     monitoring system for computer
 ▶  SATA_2 : Not Detected                                     hard disk drives to detect and
 ▶  SATA_3 : Not Detected                                     report on various indicators
 ▶  SATA_4 : Not Detected                                     of reliability.
 ▶  SATA_5 : Not Detected
 ▶  SATA_6 : Not Detected
 ▶  SATA_7 : Not Detected
 ▶  SATA_8 : Not Detected
 ▶  M2_1(PCIE) : Not Detected
 ▶  M2_2(PCIE) : Not Detected
                                                              ↔: Select Screen
                                                              ↑↓: Select Item
                                                              Enter: Select
                                                              +/-: Change Option
                                                              F1: General Help
                                                              F7: Discard Changes
                                                              F9: Load UEFI Defaults
                                                              F10: Save and Exit
                                                              ESC: Exit


                    Version 2.18.1264. Copyright (C) 2018 American Megatrends, Inc.
```

SATA Hot Plug

Enable/disable the SATA Hot Plug Function.

3.3.4 NVMe Configuration
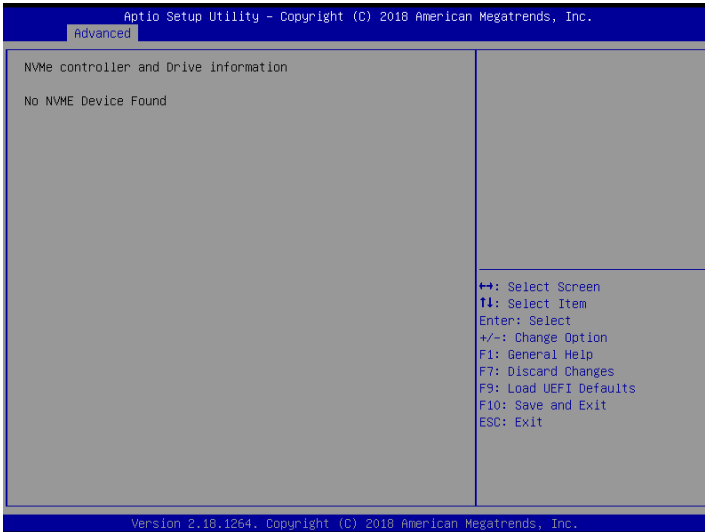
The NVMe Configuration displays the NVMe controller and Drive information.

3.3.5 ACPI Configuration

```
            Aptio Setup Utility - Copyright (C) 2018 American Megatrends, Inc.
  Advanced

  PCIE Devices Power On              [Disabled]           Allow the system to be waked
  RTC Alarm Power On                 [By OS]              up by a PS/2 Keyboard.








                                                          ↔: Select Screen
                                                          ↑↓: Select Item
                                                          Enter: Select
                                                          +/-: Change Option
                                                          F1: General Help
                                                          F7: Discard Changes
                                                          F9: Load UEFI Defaults
                                                          F10: Save and Exit
                                                          ESC: Exit



            Version 2.18.1264. Copyright (C) 2018 American Megatrends, Inc.
```

Ring-In Power On

Use this item to enable or disable Ring-In signals to turn on the system from the power-soft-off mode.

RTC Alarm Power On

Use this item to enable or disable RTC (Real Time Clock) to power on the system.

3.3.6 USB Configuration
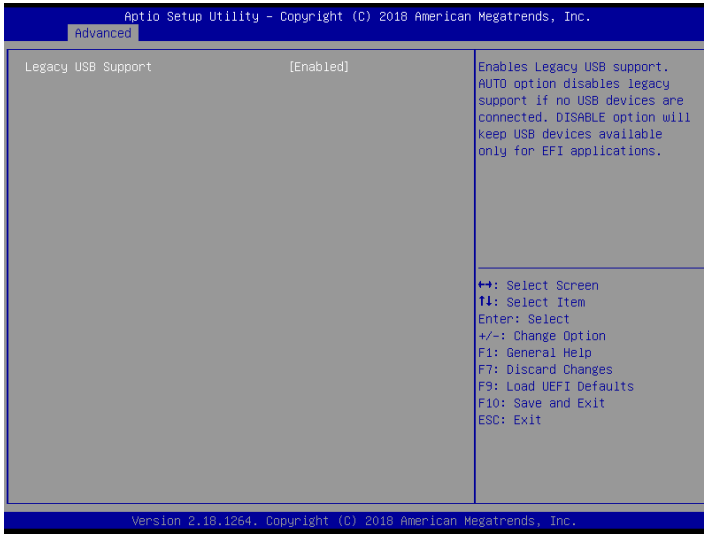
Legacy USB Support

Use this option to enable or disable legacy support for USB devices. The default value is [Enabled].

3.3.7 Super IO Configuration


```
                  Aptio Setup Utility - Copyright (C) 2018 American Megatrends, Inc.
         Advanced

    AST2500 Super IO Configuration                          Set Parameters of Serial Port
                                                            1 (COMA)
    Super IO Chip                      AST2500
  ▶ Serial Port 1 Configuration
  ▶ SOL Configuration




                                                            ↔: Select Screen
                                                            ↑↓: Select Item
                                                            Enter: Select
                                                            +/-: Change Option
                                                            F1: General Help
                                                            F7: Discard Changes
                                                            F9: Load UEFI Defaults
                                                            F10: Save and Exit
                                                            ESC: Exit

                  Version 2.18.1264. Copyright (C) 2018 American Megatrends, Inc.
```

Serial Port 1 Configuration

Use this item to set parameters of Serial Port 1 (COM1).

Serial Port

Use this item to enable or disable the serial port.

Change Settings

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

SOL Configuration

Use this item to set parameters of SOL.

SOL Port

Use this item to set parameters of SOL.

Change Settings

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

3.3.8 Serial Port Console Redirection

```
                Aptio Setup Utility - Copyright (C) 2018 American Megatrends, Inc.
        Advanced

                                                            Console Redirection Enable or
    COM1                                                    Disable.
    Console Redirection                [Disabled]
  ▶ Console Redirection Settings

    SOL
    Console Redirection                [Disabled]
  ▶ Console Redirection Settings

    Legacy Console Redirection
  ▶ Legacy Console Redirection Settings

    Serial Port for Out-of-Band Management/
    Windows Emergency Management Services (EMS)             ↔: Select Screen
    Console Redirection                [Disabled]           ↑↓: Select Item
  ▶ Console Redirection Settings                            Enter: Select
                                                            +/-: Change Option
                                                            F1: General Help
                                                            F7: Discard Changes
                                                            F9: Load UEFI Defaults
                                                            F10: Save and Exit
                                                            ESC: Exit


                Version 2.18.1264. Copyright (C) 2018 American Megatrends, Inc.
```

COM1 / 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

English

49

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].

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.

Legacy OS Redirection Resolution

Use this item to select the number of rows and columns used in legacy OS redirection.

Putty Keypad

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

Redirection After BIOS POST

If the [LoadBooster] is selected, legacy console redirection is disabled before booting to legacy OS. If [Always Enabled] is selected, legacy console redirection is enabled for legacy OS. The default value is [Always Enabled].

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.

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

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.

Out-of-Band Mgmt Port
Microsof t Windows Emergency Management Services (EMS) allows for remote management of a Windows Server OS through a serial port.

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.

```
                Aptio Setup Utility - Copyright (C) 2018 American Megatrends, Inc.
        Advanced

    3VSB                          : 3.40 V           ▲  If [Auto] is selected, the fan
    5VSB                          : 4.92 V              speed will be controlled by
    VCPU                          : 1.03 V              BMC.
    VSOC                          : 0.98 V
    VCCM ABCD                     : 1.21 V
    VCCM EFGH                     : 1.21 V
    BAT                           : 3.08 V
    3V                            : 3.24 V
    5V                            : 4.95 V
    12V                           : 12.1 V
    MB_A Temp                     : 30.0 °C
    MB_B Temp                     : 29.0 °C
    Card side Temp                : 35.0 °C
    TR1 Temp                      : N/A              ↔: Select Screen
    CPU Temp                      : 65.0 °C          ↑↓: Select Item
    X550 Temp                     : 35.0 °C          Enter: Select
    DDR4_A_Temp                   : N/A              +/-: Change Option
    DDR4_B_Temp                   : N/A              F1: General Help
    DDR4_C_Temp                   : 30.0 °C          F7: Discard Changes
    DDR4_D_Temp                   : N/A              F9: Load UEFI Defaults
    DDR4_E_Temp                   : N/A              F10: Save and Exit
    DDR4_F_Temp                   : N/A              ESC: Exit
    DDR4_G_Temp                   : N/A
    DDR4_H_Temp                   : N/A
    CPU_FAN1                      : N/A           ▼

                Version 2.18.1264. Copyright (C) 2018 American Megatrends, Inc.
```

Fan Control

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

Watch Dog Timer

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

CPU_FAN1

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

FRNT_FAN 1

This allows you to set the front fan 1's speed. The default value is [Smart Fan].

FRNT_FAN 2

This allows you to set the front fan 2's speed. The default value is [Smart Fan].

FRNT_FAN 3

This allows you to set the front fan 3's speed. The default value is [Smart Fan].

FRNT_FAN 4

This allows you to set the front fan 4's speed. The default value is [Smart Fan].

REAR_FAN 1

This allows you to set the rear fan 1's speed. The default value is [Smart Fan].

REAR_FAN 2

This allows you to set the rear fan 2'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.

English

3.3.10 PSP Firmware Versions

```
              Aptio Setup Utility - Copyright (C) 2018 American Megatrends, Inc.
       Advanced

   PSP Firmware Versions

   PSP Directory Level 1 (Fixed)
   PSP Recovery BL Ver              FF.7.0.6D
   SMU FW Version                   4.25.123.0
   ABL Version                      18071111
   APCB Version                     0029
   APOB Version                     0012
   APPB Version                     0001

   PSP Directory Level 2 (Updateable)
   PSP BootLoader Version           0.7.0.6E
   SMU FW Version                   4.25.123.0
   ABL Version                      18071111                →←: Select Screen
   APCB Version                     0029                    ↑↓: Select Item
   APOB Version                     0012                    Enter: Select
   APPB Version                     0001                    +/-: Change Option
                                                            F1: General Help
                                                            F7: Discard Changes
                                                            F9: Load UEFI Defaults
                                                            F10: Save and Exit
                                                            ESC: Exit




              Version 2.18.1264. Copyright (C) 2018 American Megatrends, Inc.
```

The PSP Firmware Verions displays the version information of PSP Recovery BL, PSP BootLoader, SMU FW, ABL, APCB, APDB, and APPB.

3.3.11 Trusted Computing

```
                Aptio Setup Utility - Copyright (C) 2018 American Megatrends, Inc.
      Advanced

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


                                                          ↔: Select Screen
                                                          ↑↓: Select Item
                                                          Enter: Select
                                                          +/-: Change Option
                                                          F1: General Help
                                                          F7: Discard Changes
                                                          F9: Load UEFI Defaults
                                                          F10: Save and Exit
                                                          ESC: Exit


                Version 2.18.1264. Copyright (C) 2018 American Megatrends, Inc.
```

NOTE: Options vary depending on the version of your connected TPM module.

TPM State

Use this item to enable or disable Security Device.
NOTE: Your computer will reboot during restart in order to change State of the Device.

Pending Operation

Schedule an Operation for the Security Device.
NOTE: Your computer will reboot during restart in order to change State of the Device.

Platform Hierarchy

Use this item to enable or disable Platform Hierarchy.

Storage Hierarchy

Use this item to enable or disable Storage Hierarchy.

Endorsement Hierarchy

Use this item to enable or disable Endorsement Hierarchy.

Hash Policy

Select the Hash policy to use. SHA-2 is most secure but might not be supported by all Operating Systems.

English

Device Select

TPM 1.2 will restrict support to TPM 1.2 devices; TPM 2.0 will restrict support to TPM 2.0 devices; Auto will support both with the default set to TPM 2.0 devices. If TPM 2.0 devices are not found, TPM 1.2 devices will be enumerated.

3.3.12 iSCSI Configuration

```
                    Aptio Setup Utility - Copyright (C) 2018 American Megatrends, Inc.
          Advanced

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

    ▶ Change Attempt Order




                                                         ↔: Select Screen
                                                         ↑↓: Select Item
                                                         Enter: Select
                                                         +/-: Change Option
                                                         F1: General Help
                                                         F7: Discard Changes
                                                         F9: Load UEFI Defaults
                                                         F10: Save and Exit
                                                         ESC: Exit


                    Version 2.18.1264. Copyright (C) 2018 American Megatrends, Inc.
```

iSCSI Initiator Name

The worldwide unique name of iSCSI Initiator. Only IQN format is accepted. Range is fron 4 to 223.

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 Server Mgmt

```
           Aptio Setup Utility - Copyright (C) 2018 American Megatrends, Inc.
    Main  Advanced  Server Mgmt  Security  Boot  Event Logs  Exit

    BMC Self Test Status              PASSED            Wait For BMC response for
    Wait For BMC                      [Enabled]         specified time out. BMC starts
  ▶ System Event Log                                    at the same time when BIOS
  ▶ BMC Network Configuration                           starts during AC power ON. It
                                                        takes around 30 seconds to
                                                        initialize Host to BMC
                                                        interfaces.




                                                        ↔: Select Screen
                                                        ↑↓: Select Item
                                                        Enter: Select
                                                        +/-: Change Option
                                                        F1: General Help
                                                        F7: Discard Changes
                                                        F9: Load UEFI Defaults
                                                        F10: Save and Exit
                                                        ESC: Exit


          Version 2.18.1264. Copyright (C) 2018 American Megatrends, Inc.
```

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.

3.4.1 System Event Log

```
          Aptio Setup Utility - Copyright (C) 2018 American Megatrends, Inc.
                                   Server Mgmt
  Enabling/Disabling Options                          Change this to enable or
  SEL Components                        [Enabled]     disable event logging for
                                                      error/progress codes during
  Erasing Settings                                    boot.
  Erase SEL                             [No]
  When SEL is Full                      [Do Nothing]

  Custom EFI Logging Options
  Log EFI Status Codes                  [Error code]

  NOTE: All values changed here do not take
        effect until computer is restarted.
                                                      ↔: Select Screen
                                                      ↑↓: Select Item
                                                      Enter: Select
                                                      +/-: Change Option
                                                      F1: General Help
                                                      F7: Discard Changes
                                                      F9: Load UEFI Defaults
                                                      F10: Save and Exit
                                                      ESC: Exit

            Version 2.20.1271. Copyright (C) 2018 American Megatrends, Inc.
```

SEL Components

Change this to enable ro disable event logging for error/progress codes 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.

3.4.2 BMC Network Configuration

```
            Aptio Setup Utility – Copyright (C) 2018 American Megatrends, Inc.
                                    Server Mgmt

    BMC Network Configuration                                    Enabled/Disabled BMC Out of
                                                                 band Access
    BMC Out of band Access                [No Change]
    Out of band Access                    Enabled

    Lan channel (Failover)
    Manual setting IPMI LAN               [No]
    Configuration address source          DHCP
    Station IP address                    0.0.0.0
    Current subnet mask                   0.0.0.0
    Current MAC address                   d0-50-99-e2-39-58
    Current router IP address             0.0.0.0

                                                                 ↔: Select Screen
                                                                 ↑↓: Select Item
                                                                 Enter: Select
                                                                 +/-: Change Option
                                                                 F1: General Help
                                                                 F7: Discard Changes
                                                                 F9: Load UEFI Defaults
                                                                 F10: Save and Exit
                                                                 ESC: Exit

            Version 2.20.1271. Copyright (C) 2018 American Megatrends, Inc.
```
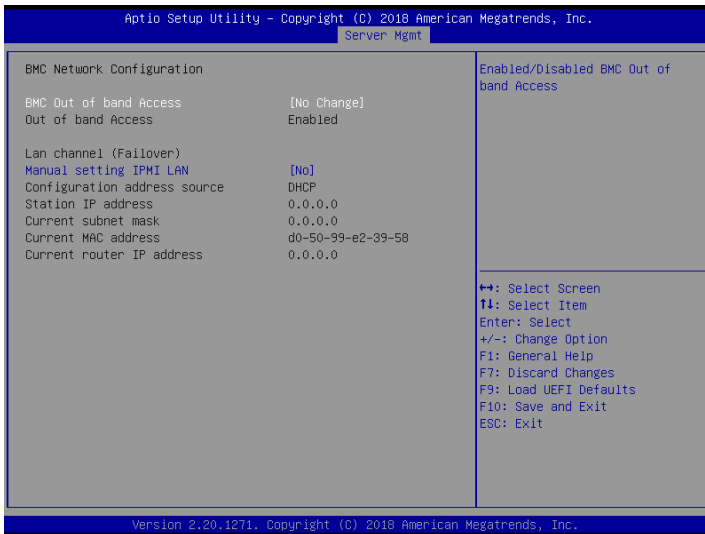
Lan Channel (Failover)

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.*

English

*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

3.5 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.
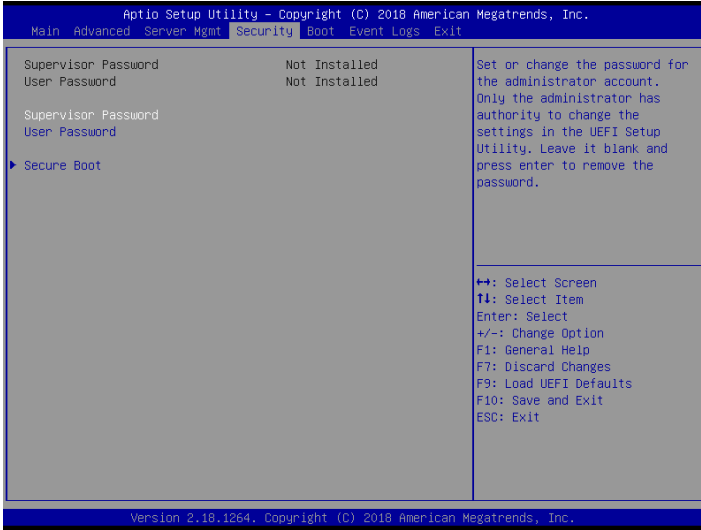
Supervisor Password

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.
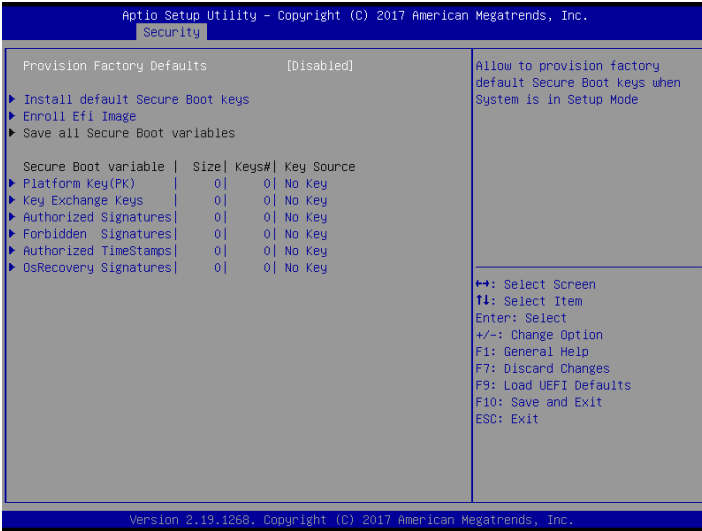
Secure Boot

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.

English

3.5.1 Key Management

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

```
                 Aptio Setup Utility - Copyright (C) 2017 American Megatrends, Inc.
                    Security

    Provision Factory Defaults           [Disabled]            Allow to provision factory
                                                               default Secure Boot keys when
  ▶ Install default Secure Boot keys                           System is in Setup Mode
  ▶ Enroll Efi Image
  ▶ Save all Secure Boot variables

    Secure Boot variable |  Size| Keys#| Key Source
  ▶ Platform Key(PK)     |    0|    0| No Key
  ▶ Key Exchange Keys    |    0|    0| No Key
  ▶ Authorized Signatures|    0|    0| No Key
  ▶ Forbidden  Signatures|    0|    0| No Key
  ▶ Authorized TimeStamps|    0|    0| No Key
  ▶ OsRecovery Signatures|    0|    0| No Key
                                                               ↔: Select Screen
                                                               ↑↓: Select Item
                                                               Enter: Select
                                                               +/-: Change Option
                                                               F1: General Help
                                                               F7: Discard Changes
                                                               F9: Load UEFI Defaults
                                                               F10: Save and Exit
                                                               ESC: Exit



                 Version 2.19.1268. Copyright (C) 2017 American Megatrends, Inc.
```

Provision Factory Defaults

Allow to provision factory default Secure Boot keys when 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.

Enroll Efi Image

Allow the image to run in Secure Boot mode. Enroll SHA256 hash of the binary into Authorized Signature Database (db).

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

3.6 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.
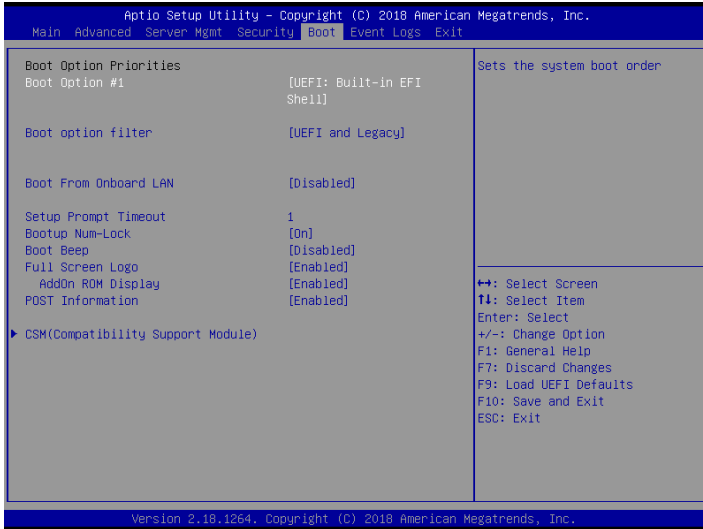
Boot Option #1

Use this item to set the system boot order.

Boot Option Filter

This option controls Legacy/UEFI ROMs priority.

Boot From Onboard LAN

Use this item to enable or disable the Boot From Onboard LAN feature.

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.

Boot Beep

Select whether the Boot Beep should be turned on or off when the system boots up. Please note that a buzzer is needed.

Full Screen Logo

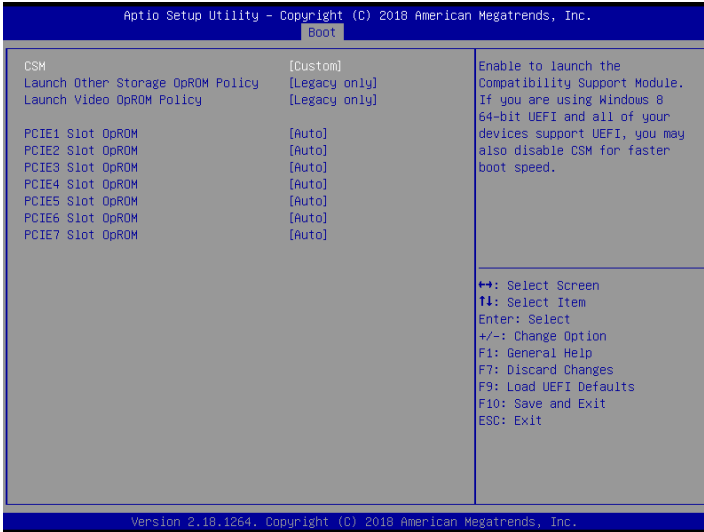Use this item to enable or disable OEM Logo. The default value is [Enabled].

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].

POST Information

Enable or disable the function which displays the information during POST.

3.6.1 CSM Parameters

```
        Aptio Setup Utility - Copyright (C) 2018 American Megatrends, Inc.
                                  Boot

  CSM                             [Custom]          Enable to launch the
  Launch Other Storage OpROM Policy [Legacy only]   Compatibility Support Module.
  Launch Video OpROM Policy       [Legacy only]     If you are using Windows 8
                                                    64-bit UEFI and all of your
  PCIE1 Slot OpROM                [Auto]            devices support UEFI, you may
  PCIE2 Slot OpROM                [Auto]            also disable CSM for faster
  PCIE3 Slot OpROM                [Auto]            boot speed.
  PCIE4 Slot OpROM                [Auto]
  PCIE5 Slot OpROM                [Auto]
  PCIE6 Slot OpROM                [Auto]
  PCIE7 Slot OpROM                [Auto]

                                                    →←: Select Screen
                                                    ↑↓: Select Item
                                                    Enter: Select
                                                    +/-: Change Option
                                                    F1: General Help
                                                    F7: Discard Changes
                                                    F9: Load UEFI Defaults
                                                    F10: Save and Exit
                                                    ESC: Exit

        Version 2.18.1264. Copyright (C) 2018 American Megatrends, Inc.
```

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.)

English

69

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.)

PCIE3 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.)

PCIE4 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.)

PCIE5 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.)

PCIE6 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.)

PCIE7 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.)

3.7 Event Logs
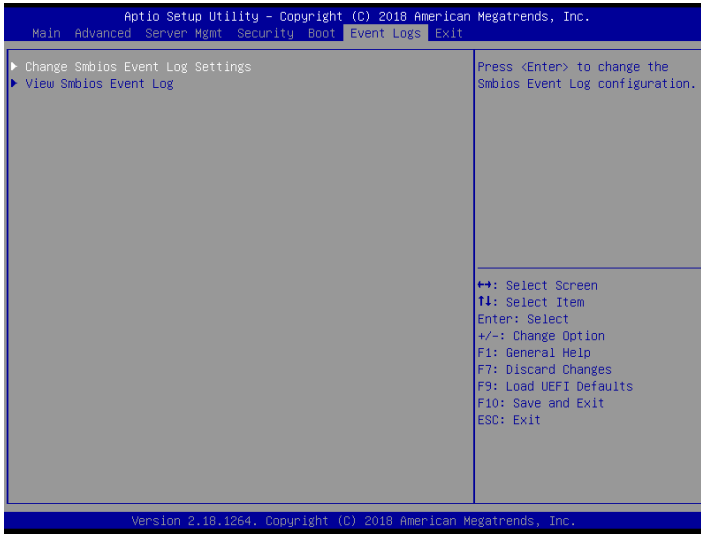
Change Smbios Event Log Settings

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.

MECI (Multiple Event Count Increment)
Use this item to enter the increment value for the multiple event counter. The valid range is from 1 to 255.

METW (Multiple Event Time Window)
Use this item to specify the number of minutes which must pass between duplicate log

English

71

entries which utilize a multiple-event counter. The value ranges from 0 to 99 minutes.
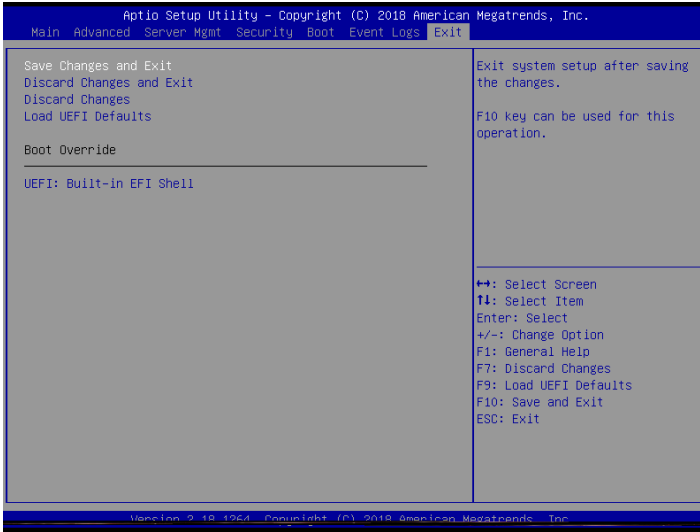
View Smbios Event Log

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

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

3.8 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.

English

73

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.

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.

English

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 RDIMMs/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.

English

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.

English