Stable and
Reliable Solution

Server/Workstation

Motherboard

ROMED8U-2T

User Manual

English

FC

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:
(1) this device may not cause harmful interference, and
(2) this device must accept any interference received, including interference that may cause undesired operation.

CALIFORNIA, USA ONLY

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

ASRock Rack's Website: www.ASRockRack.com

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

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

Contents

Chapter 1 Introduction

Thank you for purchasing ASRock Rack **ROMED8U-2T** 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 ROMED8U-2T Motherboard
  (micro ATX Form Factor: 9.6-in x 9.6-in, 24.4 cm x 24.4 cm)
- Quick Installation Guide
- 1 x I/O Shield
- 1 x Mini SAS HD to 4*SATA Cable (60cm)
- 1 x ATX 4P to 24P Power Cable (8cm)
- 1 x SATA 6P to 15P Power Cable (80cm)
- 1 x SATA3 Cable (60cm)
- 1 x Screw for M.2 Socket

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

English

1.2 Specifications

ROMED8U-2T	
MB Physical Status	
Form Factor	micro ATX
Dimension	9.6" x 9.6" (24.4 cm x 24.4 cm)
Processor System	
CPU	AMD EPYC™ 7003 and 7002 Series Processors
Socket	Single Socket P+ (LGA4094)
Max. Thermal Design Power (TDP)	280W
Chipset	System on chip
System Memory	
Type	- Eight Channel DDR4 memory technology (1DPC) - Supports DDR4 RDIMM/ RDIMM-3DS/ LRDIMM/ LRDIMM-3DS/NVDIMM
DIMM Size Per DIMM	- RDIMM: 64GB, 32GB, 16GB, 8GB - RDIMM-3DS: 256GB, 128GB, 64GB, 32GB, 16GB, 8GB - LRDIMM: 256GB, 128GB, 64GB, 32GB - LRDIMM-3DS: 256GB, 128GB, 64GB, 32GB, 16GB, 8GB - NVDIMM: 32GB *Max. memory capacity and frequency are to be validated*
DIMM Frequency	- RDIMM: 3200MHz - LRDIMM: 3200MHz - NVDIMM: 2666MHz *Max. memory capacity and frequency are to be validated*
Voltage	1.2V
Expansion Slot	
PCIe 4.0 x 16	PCIE4: Gen4 x16 link PCIE5: Gen4 x16 link PCIE6: Gen4 x16 link
Storage	
SATA Controller	AMD EPYC 7003/7002 (27 SATA 6Gb/s) : 2 SlimSAS, 2 Mini-SAS HD, 2 SATA 7-pin, 1 M.2
M.2 Slot	1 (M2_1: 2280, PCIe4.0 x4 or SATA 6Gb/s)
SlimSAS	2 (PCIe4.0 x8)
Mini-SAS HD	2 (SATA Gen3 x8)
Ethernet	
Interface	10000/1000/100 Mbps by Intel®X710-AT2

LAN Controller	- 2 x RJ45 10GbE RJ45 by Intel® X710-AT2
	- 1 x RJ45 Dedicated IPMI LAN port by RTL8211E
	- Supports Wake-On-LAN
	- Supports Energy Effcient 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
Rear Panel I/O	
VGA Port	1 x D-Sub
USB 3.2 Gen1 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)
Panel Header	1
TPM Header	1
TPM-SPI Header	1
IPMB Header	1
Fan Header	3 Fans (6-pin) + 3 Fans (4-pin)
ATX Power	2 x (8-pin) + 1 x (4-pin)
SATA Power	1 (6-pin)
USB 3.2 Gen1 Header	1 (supports 2 USB 3.2 Gen1 ports)
SATA SGPIO	1
CPU_HSBP1	1
BMC SMB	1
PSU SMB	1
Thermal Sensor Header	1
Speaker	1 (4-pin)
COM Header	1
ClearCMOS	1 (short pad)
OH/FanFail LED	6 (only Fan Fail LED)

System BIOS	
BIOS Type	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	- Fan Tachometer
	- CPU Quiet Fan (Allow CPU Fan Speed Auto-Adjust by CPU
	Temperature)
	- Fan Multi-Speed Control
Voltage	Voltage Monitoring: Vsoc,Vcpu, VCCM, VPPM, 3V/5V/12V,
	+BAT, 3VSB, 5VSB

Support OS	
OS	Microsoft® Windows®:
	- Server 2016 (64 bit)
	- Server 2019 (64 bit)
	Linux®:
	- RedHat Enterprise Linux Server 8.3 (64 bit) / 8.4 (64 bit)
	- CentOs 8.3 (64 bit) / 8.4 (64 bit)
	- SUSE SLES 15.2 (64 bit) / 12.5 (64 bit)
	- UBuntu 20.04.1 (64 bit) /18.04.5 (64 bit)
	Hypervisor:
	- VMWare® ESXi 6.7.0 u3 / vSphere 6.7.0 u3
	- VMWare® ESXi 7.0 U1 / vSphere 7.0 U1
	- VMWare® ESXi 7.0U2a / vSphere 7.0U2b
	- CITRIX Hypervisor 8.2.0
	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.*

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)

24.4cm (9.6 in)

1. ATX12V1
2. ATX12V2
3. ATX4PIN1
4. BAT1
5. PSU_SMB1
6. FAN1
7. FAN2
8. FAN3

UID1

USB3.2Gen1
T: USB_2
B: USB_1

IPMI_LAN

LAN_1 (NCSI)   LAN_2

VGA1

Intel X710-AT2

CPU1

DDR4_H1
DDR4_G1
DDR4_F1
DDR4_E1

DDR4_A1
DDR4_B1
DDR4_C1
DDR4_D1

TPM_BIOS_PH1

BIOS ROM

ASRock Rack

ROMED8U-2T

ASPEED AST 2500

PCIE6

PCIE5

PCIE4

BMC ROM

IPMB_1
BMC_SMB1

COM1

USB3_3_4

Super I/O

CLRMOS1

SATA1

SATA0

SATA_SGPIO3

CPU_HSBP1

TPMS1

SPEAKER1   TR1   AUX_PANEL1

PANEL1

SATA_PWR1

FAN4
FAN5
FAN6

SLIM2

SLIM1

M2_1

MSAS_HD0

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No.	Description
1	ATX 12V Power Connector (ATX12V1)
2	ATX 12V Power Connector (ATX12V2)
3	ATX 4-PIN Power Connector (ATX4PIN1 *(ATX 24pin-to-4pin)*)
4	Battery (BAT1)
5	PSU SMBus Header (PSU_SMB1)
6	System Fan Connector (FAN1)
7	System Fan Connector (FAN2)
8	System Fan Connector (FAN3)
9	2 x 288-pin DDR4 DIMM Slots (DDR4_F1, DDR4_H1)*
10	2 x 288-pin DDR4 DIMM Slots (DDR4_E1, DDR4_G1)*
11	AMD Socket SP3 (LGA4094)
12	System Fan Connector (FAN4)
13	System Fan Connector (FAN5)
14	System Fan Connector (FAN6)
15	SATA Power Connector (SATA_PWR1)
16	Slimline SAS Connector (SLIM2)
17	Slimline SAS Connector (SLIM1)
18	M.2 Socket (M2_1) (Type 2280)
19	MiniSAS HD Connector (MSAS_HD0)
20	TPM Header (TPMS1)
21	System Panel Header (PANEL1)
22	Auxiliary Panel Header (AUX_PANEL1)
23	Thermal Sensor Header (TR1)
24	Speaker Header (SPEAKER1)
25	Backplane PCI Express Hot-Plug Connector (CPU1_HSBP1)
26	SATA SGPIO Connector (SATA_SGPIO3)
27	Clear CMOS Pad (CLRMOS1)
28	SATA3 Connector (SATA0)
29	SATA3 Connector (SATA1)
30	USB 3.2 Gen1 Header (USB3_3_4)
31	COM Header (COM1)
32	Intelligent Platform Management Bus Header (IPMB_1)
33	BMC SMBus Header (BMC_SMB1)

No.	Description
34	PCI Express 4.0 x16 Card Slot (PCIE4)
35	PCI Express 4.0 x16 Card Slot (PCIE5)
36	PCI Express 4.0 x16 Card Slot (PCIE6)
37	2 x 288-pin DDR4 DIMM Slots (DDR4_B1, DDR4_D1)*
38	TPM-SPI Header (TPM_BIOS_PH1)
39	2 x 288-pin DDR4 DIMM Slots (DDR4_A1, DDR4_C1)*

For DIMM installation and configuration instructions, please see p.21 (Installation of Memory Modules (DIMM)) for more details.

English

9

1.5 Onboard LED Indicators
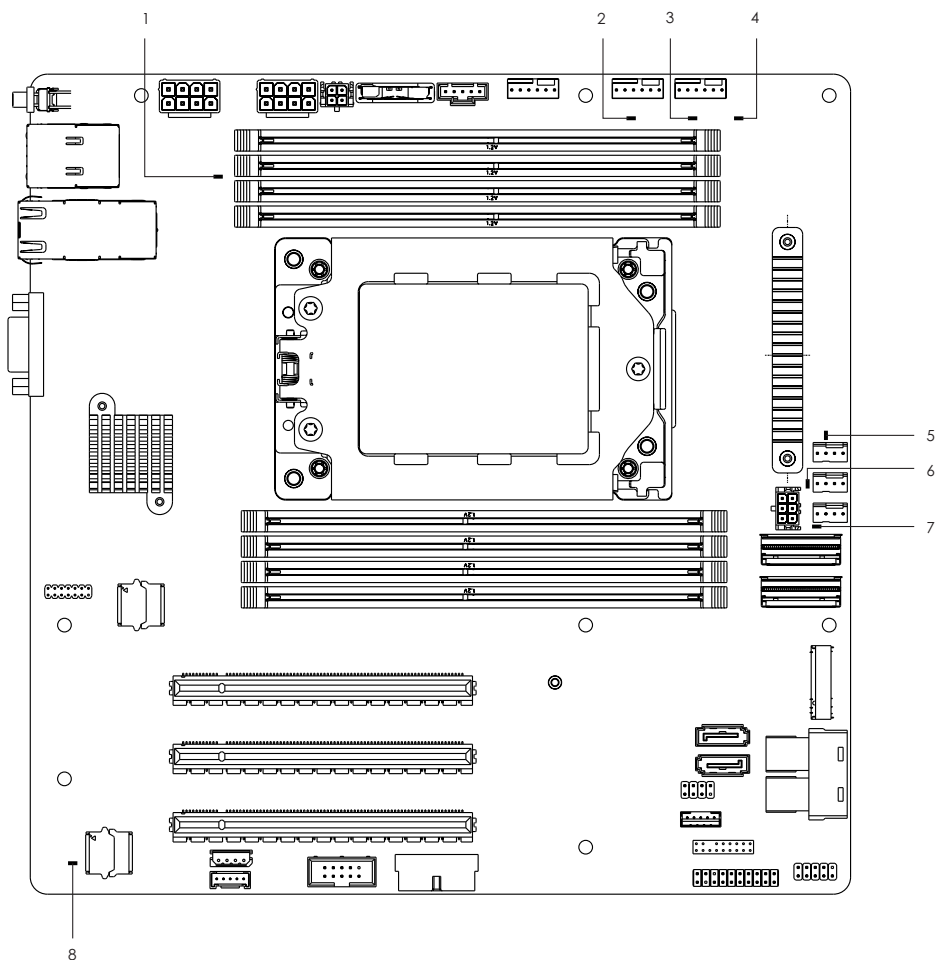
No.	Item	Status	Description
1	SB_PWR1	Green	STB PWR ready
2	FAN_LED1	Amber	FAN1 failed
3	FAN_LED2	Amber	FAN2 failed
4	FAN_LED3	Amber	FAN3 failed
5	FAN_LED4	Amber	FAN4 failed
6	FAN_LED5	Amber	FAN5 failed
7	FAN_LED6	Amber	FAN6 failed
8	BMC_LED1	Green	BMC heartbeat LED

English

1.6 I/O Panel
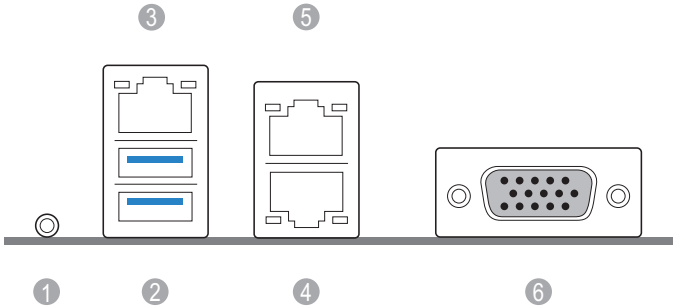
No.	Description	No.	Description
1	UID Switch (UID1)	4	10G LAN RJ-45 Port (LAN1)**
2	USB 3.2 Gen1 Ports (USB3_1_2)	5	10G LAN RJ-45 Port (LAN2)**
3	LAN RJ-45 Port (IPMI_LAN1)*	6	VGA Port (VGA1)

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

ACT/LINK LED
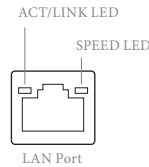
SPEED LED

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	1G bps 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

ACT/LINK LED — SPEED LED
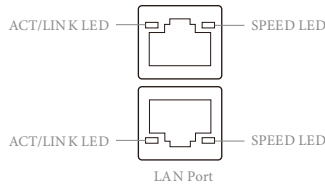
LAN Port

LAN Port (LAN1, LAN2) LED Indications

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

1.7 Block Diagram
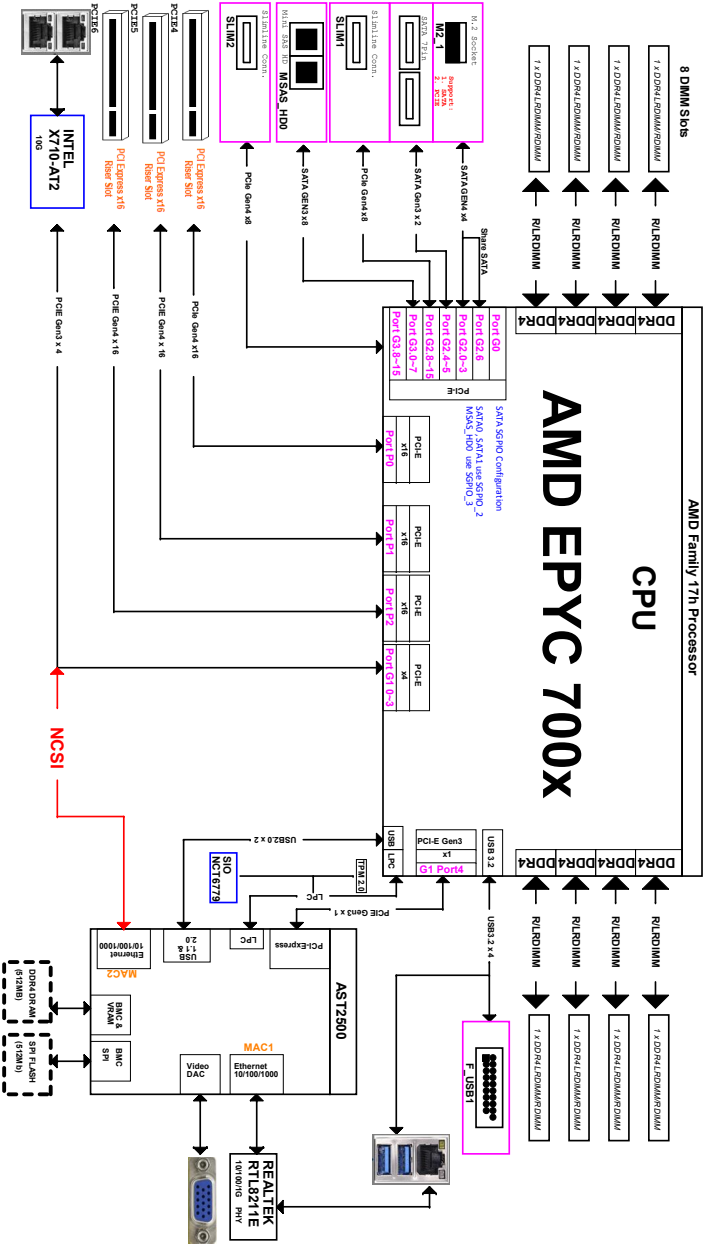
Chapter 2 Installation

This is a micro-ATX form factor (9.6" x 9.6", 24.4 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.

> ⚠ *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.*

English

2.3 Installing the CPU

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

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.

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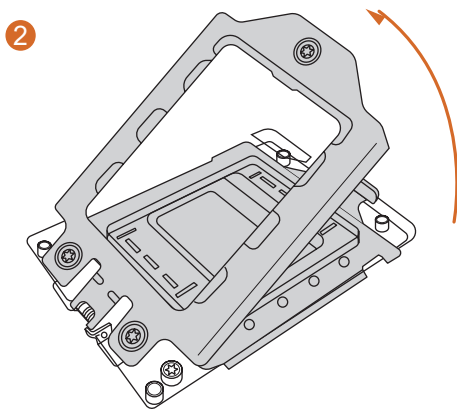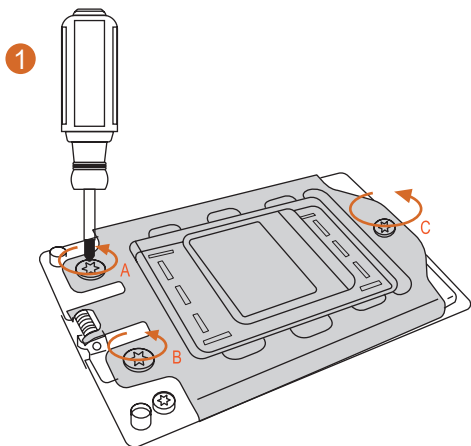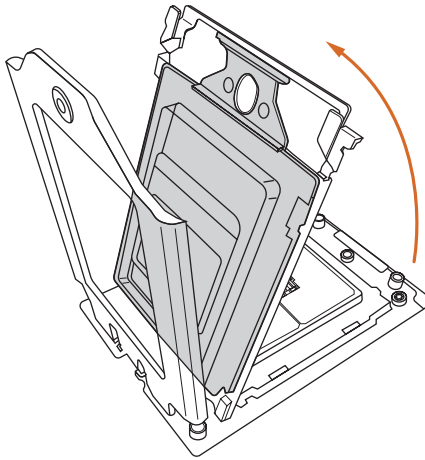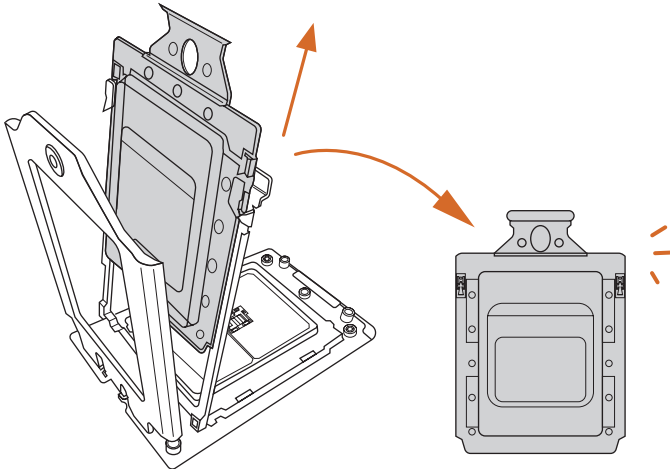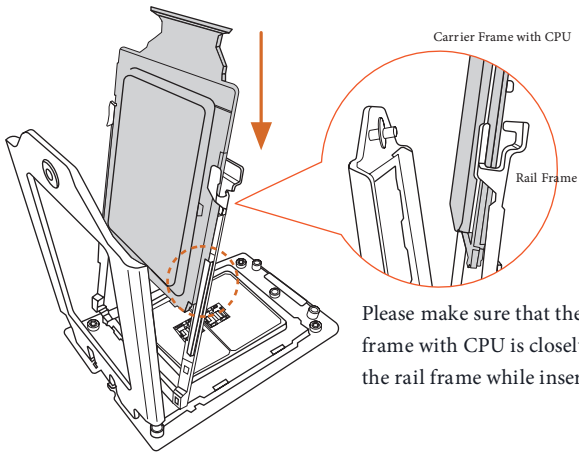
Install the carrier frame with CPU. Don't separate them.

⑥
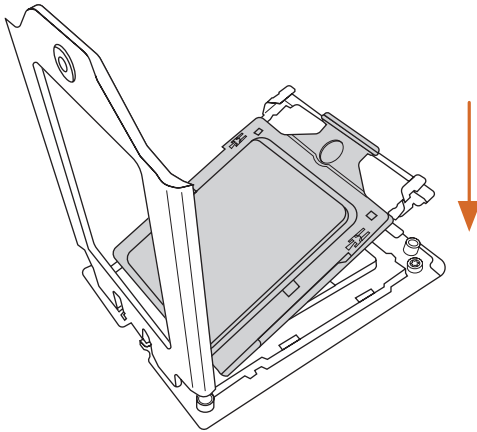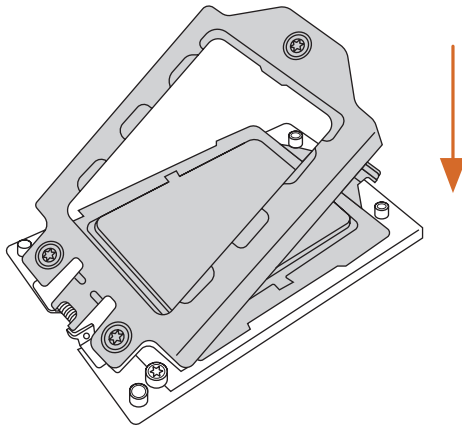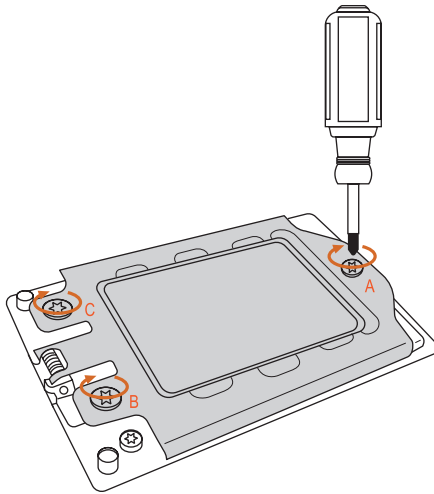
2.4 Installation of Memory Modules (DIMM)

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 eight channel configuration, you always need to install identical (the same brand, speed, size and chip-type) DDR4 DIMM pairs.
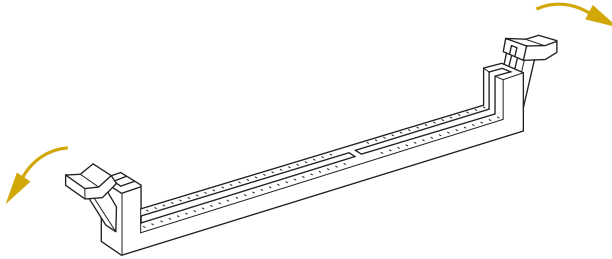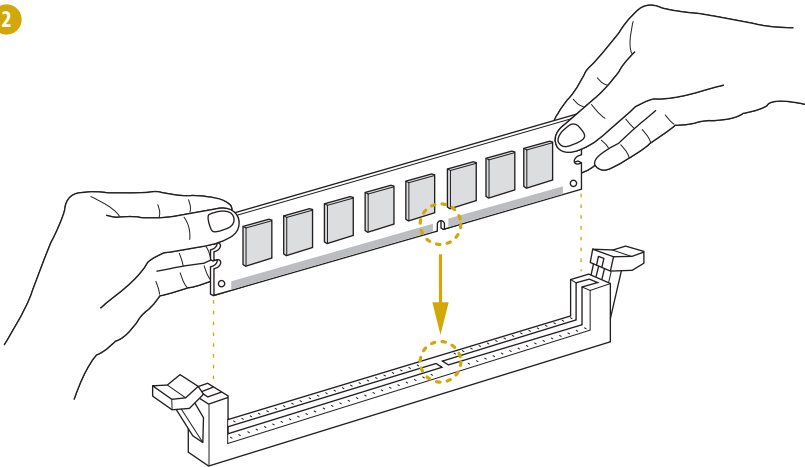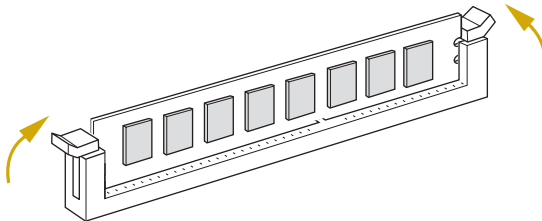
The DIMM only fits in one correct orientation. It will cause permanent damage to the motherboard and the DIMM if you force the DIMM into the slot at incorrect orientation.

English

21

2.5 Expansion Slots (PCI Express Slots)

There are 3 PCI Express slots on this motherboard.

PCIE slot:

PCIE4 (PCIE 4.0 x16 slot, from CPU) is used for PCI Express x16 lane width cards.
PCIE5 (PCIE 4.0 x16 slot, from CPU) is used for PCI Express x16 lane width cards.
PCIE6 (PCIE 4.0 x16 slot, from CPU) is used for PCI Express x16 lane width cards.

Slot	Generation	Mechanical	Electrical	Source
PCIE6	4.0	x16	x16	CPU
PCIE5	4.0	x16	x16	CPU
PCIE4	4.0	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.

2.6 Onboard Headers and Connectors

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

System Panel Header
(9-pin PANEL1)
(see p.7, No. 21)

PLED+
PLED-
PWRBTN#
GND

1

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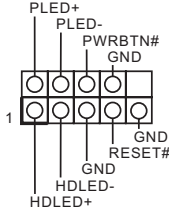
Connect the power switch, reset switch and system status indicator on the chassis to this header according to the pin assignments. Particularly note the positive and negative pins before connecting the cables.

🔍 **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 PANEL1)
(see p.7, No. 22)
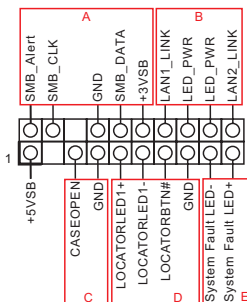
This header supports multiple functions on the front panel, including the front panel SMB, internet status indicator and chassis intrusion pin.

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.

Mini-SAS HD Connectors
Right-Angle:
(MSAS_HD 0)
(see p.7, No. 19)

MSAS_HD0

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

USB 3.2 Gen1 Header
Right-Angle:
(19-pin USB3_3_4)
(see p.7, No. 30)

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

Vbus
IntA_PB_SSRX-
IntA_PB_SSRX+
GND
IntA_PB_SSTX-
IntA_PBA_SSTX+
GND
IntA_PB_D-
IntA_PB_D+
Dummy
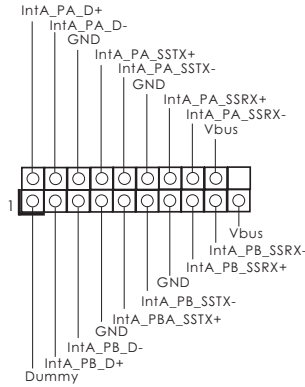
Besides two default USB 3.2
Gen1 ports on the I/O panel,
there is one USB 3.2 Gen1
header on this motherboard.
This USB 3.2 Gen1 header can
support two USB 3.2 Gen1
ports.

Chassis Speaker Header
(4-pin SPEAKER1)
(see p.7, No. 24)

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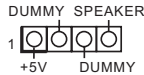
Please connect the chassis
speaker to this header.

System Fan Connectors
(6-pin FAN1)
(see p.7, No. 6)
(6-pin FAN2)
(see p.7, No. 7)
(6-pin FAN3)
(see p.7, No. 8)

6 5 4 3 2 1
GND
FAN_VOLTAGE
FAN_SPEED_SENSOR1
FAN_SPEED_CONTROL
FAN_SPEED_SENSOR2
NC
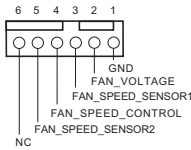
Please connect fan cables to the
fan connectors and match the
black wire to the ground pin.
All fans support Fan Control.

(4-pin FAN4)
(see p.7, No. 12)
(4-pin FAN5)
(see p.7, No. 13)
(4-pin FAN6)
(see p.7, No. 14

4   3   2   1
GND
FAN_VOLTAGE
FAN_SPEED
FAN_SPEED_CONTROL
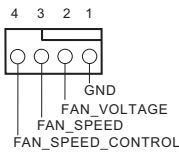
ATX 12V Power
Connectors
(8-pin ATX12V1)
(see p.7, No. 1)
(4-pin ATX12V2)
(see p.7, No. 2)

GND
1   4
5   8
12V
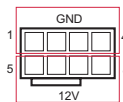
This motherboard provides
one 8-pin and one 4-pin ATX
12V power connectors.

English

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ATX 4-PIN Power
Connector
(4-pin ATX4PIN1
(ATX 24pin-to-4pin))
(see p.7, No. 3)

```
      1        2
ATX_PWROK ┌──┬──┐ GND
ATX_+5VSB └──┴──┘ PSON#
      3        4
```
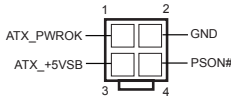
The motherboard provides one
4-pin power/signal connector
which is a required input for
ATX power source.

When using ATX power, it
is necessary to use a 24pin-
to-4pin power cable to
connect between the 24pin
power connector of PSU and
the ATX12V1 or ATX12V2
connector on the motherboard
for power supply and signal
communication.

For DC-IN 12V application,
it is not necessary to use this
ATX 4-PIN power connector.

SATA Power Connector
(6-pin SATA_PWR1)
(see p.7, No. 13)

```
           1
N/A  ──○
+12V ──○  ○── GND
+12V ──○  ○── GND
+5V  ──○  ○── GND
N/A  ──○
```
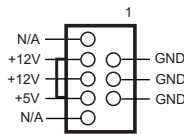
Please use a SATA power cable
to connect this SATA Power
Connector and your SATA
HDD for supplying power
from the motherboard, when
using DC-IN mode without
SATA power supply.

TPMS Header
(17-pin TPMS1)
(see p.7, No. 20)

```
     GND  +3VSB  LAD0  +3V  LAD3  PCIRST#  FRAME  PCICLK
     ○    ○      ○     ○    ○     ○        ○      ○      1
     ○    ○      ○     ○    ○     ○        ○      ○
     GND  SERIRQ#  S_PWRDWN#  GND  LAD1  LAD2  SMB_DATA_MAIN  SMB_CLK_MAIN  GND
```
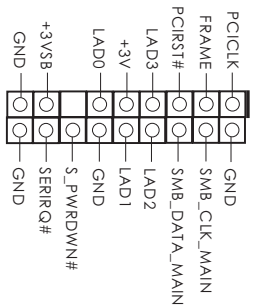
This connector supports
Trusted Platform Module
(TPM) system, which can
securely store keys, digital
certificates, passwords, and
data. A TPM system also helps
enhance network security,
protects digital identities, and
ensures platform integrity.

TPM-SPI Header
(13-pin TPM_BIOS_PH1)
(see p.7, No. 38)

TPM_CS#
GND
RSMRST#
MISO
SPI_CS
SPI_WP

SPI PIRQ
SPI_RST
MOSI
SPI_CLK
X
+3.3V
SPI_HOLD

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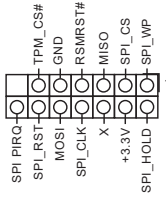
This connector supports Trusted Platform Module (TPM) system for SPI interface, which can securely store keys, digital certificates, passwords, and data. A TPM system also helps enhance network security, protects digital identities, and ensures platform integrity.

PSU SMBus Header
(5-pin PSU_SMB1)
(see p.7, No. 5)

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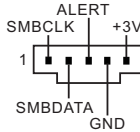
PSU SMBus monitors the status of the power supply, fan and system temperature.

Intelligent Platform Management Bus Header
(4-pin IPMB_1)
(see p.7, No. 32)

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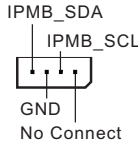
This 4-pin connector is used to provide a cabled base-board or front panel connection for value added features and 3rd-party add-in cards, such as Emergency Management cards, that provide management features using the IPMB.

Baseboard Management Controller SMBus Header
(5-pin BMC_SMB1)
(see p.7, No. 33)

BMC_SMB_PRESENT_1_N
Power
BMC_SMBCLK7
GND
BMC_SMBDATA7
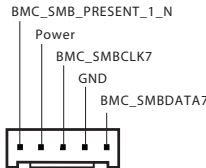
The header is used for the SM BUS devices.

Thermal Sensor Header
(3-pin TR1)
(see p.7, No. 23)

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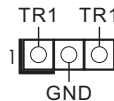
Please connect the thermal sensor cable to either pin 1-2 or pin 2-3 and the other end to the device which you wish to monitor its temperature.

Clear CMOS Pad (CLRMOS1) (see p.7, No. 27)		This allows you to clear the data in CMOS. To clear CMOS, take out the CMOS battery and short the Clear CMOS Pad.
CPU HP-SMBus Connector (5-pin CPU_HSBP1) (see p.7, No. 25)	1 GND P0_HP_ALERT_L CPU_HP_SDA CPU_HP_SCL +3V	This header is used for the hot plug feature of HDDs on the backplane.
Serial General Purpose Input/Output Header (7-pin SATA_SGPIO3) (see p.7, No. 26)	SP3_SCLOCK1 SP3_SLOAD1 SP3_SDATAIN1 1 +3.3V_AUX SP3_SDATAOUT1 GND	The header supports Serial Link interface for onboard SATA connections.
Serial ATA3 Connectors (SATA0) (see p.7, No. 28) (SATA1) (see p.7, No. 29)	SATA1 SATA0	These two SATA3 connectors support SATA data cables for internal storage devices with up to 6.0 Gb/s data transfer rate.
Serial Port Header (9-pin COM1) (see p.7, No. 31)	DDCD#1 TTXD1 GND RRTS#1 RRI#1 1 CCTS#1 DDSR#1 DDTR#1 RRXD1	This COM header supports a serial port module.
Slimline SAS Connectors (SLIM1) (see p.7, No. 17) (SLIM2) (see p.7, No. 16)		These connectors are used for the SLIM SAS devices.
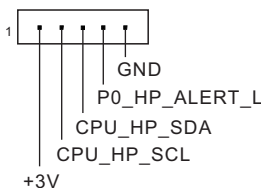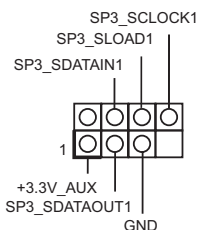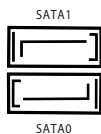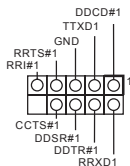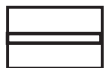
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2.7 ATX PSU / DC-IN Power Connections

This motherboard supports both +12V DC and ATX power input. Please refer to the table below for the required connections between the motherboard and the power supply.

Connector	DC-IN	ATX SPU
12V 8pin	O	O
ATX 4pin	X	O *(with the bundled ATX 24pin-to-4pin converter cable)*
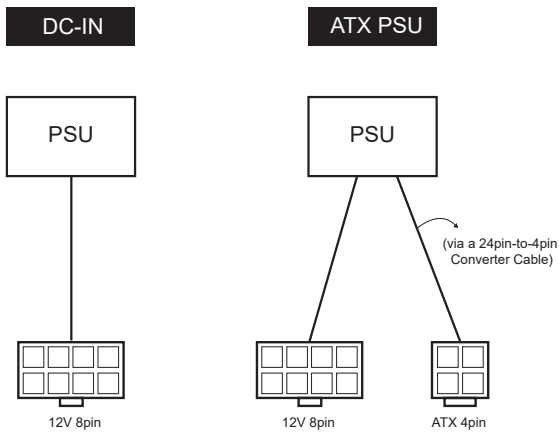
The following diagram illustrates how to connect the bundled ATX 24pin-to-4pin converter cable.
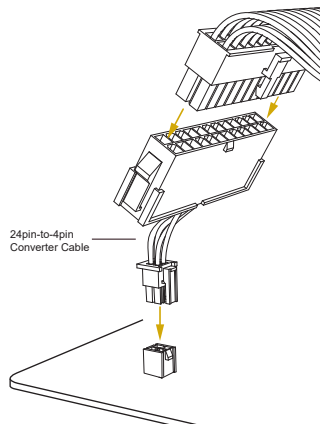
2.8 Unit Identification purpose LED/Switch

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

Unit Identification purpose LED/Switch (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.

2.9 Driver Installation Guide

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

2.10 M.2_SSD (NGFF) Module Installation Guide (M2_1)

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. This Hyper M.2 supports a SATA x1 6.0 Gb/s module or a PCI Express module up to Gen4 x4 (64 Gb/s) only.

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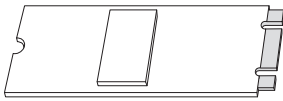
Step 1

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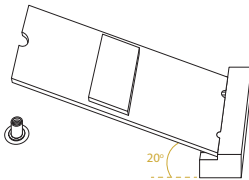
Step 2

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.

20°
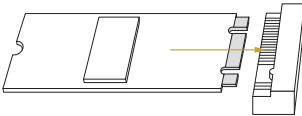
Step 3

Hand tighten the thumbscrew to secure the module into place. Please do not overtighten the screw as this might damage the module.
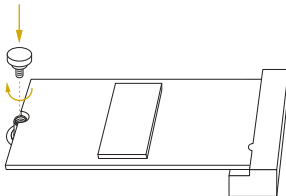
M.2_SSD (NGFF) Module Support List

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

English

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) 2021 American Megatrends, Inc.
  Main  Advanced  Server Mgmt  Security  Boot  Event Logs  Exit

  UEFI Version    : ROMED8U-2T L3.01              Set the Date. Use Tab to
  BMC Version     : 1.02.00                       switch between Date elements.
  Processor Type  : AMD EPYC 7552 48-Core Processor   Default Ranges:
                                                  Year: 2005-2099
  Processor Speed : 2212MHz                       Months: 1-12
  Microcode Update : 830F10/830104D              Days: dependent on month
  L1 Instruction Cache : 32KB
  L1 Data Cache Size  : 32KB
  L2 Cache Size       : 512KB
  L3 Cache per Socket : 192MB

  Total Memory    : 16GB

  DDR4_A1         : None                          ↔: Select Screen
  DDR4_B1         : None                          ↑↓: Select Item
  DDR4_C1         : None                          Enter: Select
  DDR4_D1         : 16GB RDIMM (DDR4-2666)        +/-: Change Option
  DDR4_E1         : None                          F1: General Help
  DDR4_F1         : None                          F7: Discard Changes
  DDR4_G1         : None                          F9: Load UEFI Defaults
  DDR4_H1         : None                          F10: Save and Exit
                                                  ESC: Exit
  System Date                    [Sat 07/10/2021]
  System Time                    [00:19:06]



           Version 2.20.1275. Copyright (C) 2021 American Megatrends, Inc.
```

3.3 Advanced Screen

In this section, you may set the configurations for the following items: CPU Configuration, Chipset Configuration, Storage Configuration, ACPI Configuration, USB Configuration, Super IO Configuration, Serial Port Console Redirection, H/W Monitor, PCI Subsystem Settings, AMD CBS, AMD PBS, PSP Firmware Versions and Instant Flash.

```
            Aptio Setup Utility – Copyright (C) 2021 American Megatrends, Inc.
    Main  Advanced  Server Mgmt  Security  Boot  Event Logs  Exit

 ▶ CPU Configuration                              CPU Configuration Parameters
 ▶ Chipset Configuration
 ▶ Storage Configuration
 ▶ ACPI Configuration
 ▶ USB Configuration
 ▶ Super IO Configuration
 ▶ Serial Port Console Redirection
 ▶ H/W Monitor
 ▶ PCI Subsystem Settings
 ▶ AMD CBS
 ▶ AMD PBS
 ▶ PSP Firmware Versions

   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 2.20.1275. Copyright (C) 2021 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) 2020 American Megatrends, Inc.
        Advanced

 SVM Mode                              [Enabled]              Enable/disable CPU
 ▶ Node 0 Information                                         Virtualization




                                                             ↔: 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 2.20.1275. Copyright (C) 2020 American Megatrends, Inc.
```
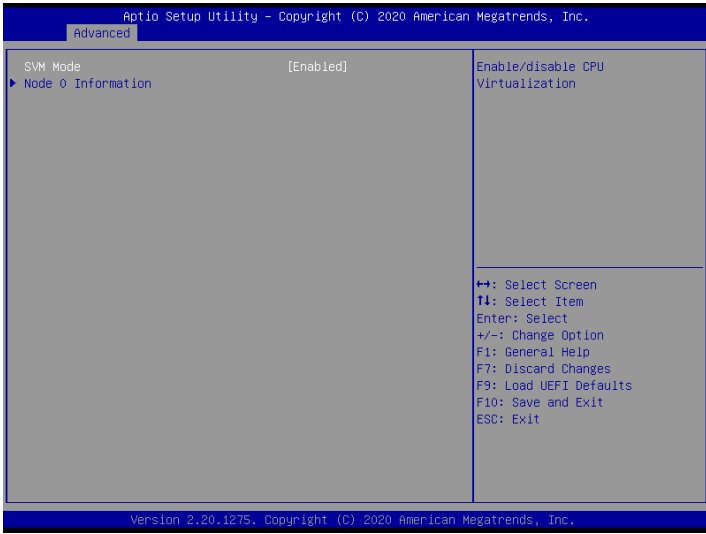
SVM Mode

Enable/disable CPU Virtualization.

Node 0 Information

View Memory Information related to Node 0.

3.3.2 Chipset Configuration

```
                  Aptio Setup Utility - Copyright (C) 2021 American Megatrends, Inc.
         Advanced

 SPI/LPC TPM switch                    [LPC TPM]           SPI/LPC TPM switch
 OnBrd/Ext VGA Select                  [Auto]
 Onboard LAN1                          [Enabled]
 Onboard LAN2                          [Enabled]

 SLIM1 Link Width                      [x4x4]
 SLIM2 Link Width                      [x4x4]
 PCIE4 Link Width                      [x16]
 PCIE5 Link Width                      [x16]
 PCIE6 Link Width                      [x16]

 SLIM1 Link Speed                      [Auto]
 SLIM2 Link Speed                      [Auto]
 PCIE4 Link Speed                      [Auto]             ↔: Select Screen
 PCIE5 Link Speed                      [Auto]             ↑↓: Select Item
 PCIE6 Link Speed                      [Auto]             Enter: Select
                                                          +/-: Change Option
 Restore AC Power Loss                 [No change]        F1: General Help
 Restore AC Power Current State        Power On           F7: Discard Changes
                                                          F9: Load UEFI Defaults
                                                          F10: Save and Exit
                                                          ESC: Exit

                  Version 2.20.1275. Copyright (C) 2021 American Megatrends, Inc.
```

SPI/LPC TPM Switch

Configure SPI/LPC TPM switch settings.

OnBrd/Ext VGA Select

Select between onboard or external VGA support.

Onboard LAN1

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

Onboard LAN2

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

SLIM1 Link Width

This allows you to set SLIM1's Link Width. The default value is [x4x4].

SLIM2 Link Width

This allows you to set SLIM2's Link Width. The default value is [x4x4].

PCIE4 Link Width

This allows you to set PCIE4's Link Width. The default value is [x16].

PCIE5 Link Width

This allows you to set PCIE5's Link Width. The default value is [x16].

PCIE6 Link Width

This allows you to set PCIE6's Link Width. The default value is [x16].

SLIM1 Link Speed

This allows you to configure SLIM1 Slot Link Speed. The default value is [Auto].

SLIM2 Link Speed

This allows you to configure SLIM2 Slot Link Speed. The default value is [Auto].

PCIE4 Link Width

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

PCIE5 Link Width

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

PCIE6 Link Width

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

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.

Restore AC Power Current State

This allows you to restore AC Power Current State.

3.3.3 Storage Configuration

```
                 Aptio Setup Utility - Copyright (C) 2021 American Megatrends, Inc.
          Advanced

   SATA Hot Plug                        [Enabled]              SATA Hot Plug

 ▶ SATA0 : Not Detected
 ▶ SATA1 : Not Detected

 ▶ MSAS_HD0 SATA0 : Not Detected
 ▶ MSAS_HD0 SATA1 : Not Detected
 ▶ MSAS_HD0 SATA2 : Not Detected
 ▶ MSAS_HD0 SATA3 : Not Detected
 ▶ MSAS_HD0 SATA4 : Not Detected
 ▶ MSAS_HD0 SATA5 : Not Detected
 ▶ MSAS_HD0 SATA6 : Not Detected
 ▶ MSAS_HD0 SATA7 : Not Detected                             ↔: Select Screen
                                                             ↑↓: Select Item
 ▶ M2_1(PCIE) : Not Detected                                 Enter: Select
 ▶ M2_1(SATA) : Not Detected                                 +/-: Change Option
                                                             F1: General Help
                                                             F7: Discard Changes
                                                             F9: Load UEFI Defaults
                                                             F10: Save and Exit
                                                             ESC: Exit


                 Version 2.20.1275. Copyright (C) 2021 American Megatrends, Inc.
```

SATA Hot Plug

Enable/disable the SATA Hot Plug Function.

3.3.4 ACPI Configuration

```
            Aptio Setup Utility – Copyright (C) 2021 American Megatrends, Inc.
      Advanced

  PCIE Devices Power On              [Disabled]          Allow the system to be waked
  RTC Alarm Power On                 [By OS]             up by a PCIE device and enable
                                                         wake on LAN.




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


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```

PCIE Devices Power On

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

RTC Alarm Power On

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

3.3.5 USB Configuration

```
                Aptio Setup Utility - Copyright (C) 2020 American Megatrends, Inc.
     Advanced

  Legacy USB Support              [Enabled]           Enables Legacy USB support.
                                                      AUTO option disables legacy
                                                      support if no USB devices are
                                                      connected. DISABLE option will
                                                      keep USB devices available
                                                      only for EFI applications.




                                                      ──────────────────────────────
                                                      ↔: 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 2.20.1275. Copyright (C) 2020 American Megatrends, Inc.
```

Legacy USB Support

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

3.3.6 Super IO Configuration

```
              Aptio Setup Utility - Copyright (C) 2020 American Megatrends, Inc.
   Advanced

   AST2500 Super IO Configuration                          Set Parameters of Serial Port
                                                           1 (COM1)
   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 2.20.1275. Copyright (C) 2020 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.

Serial Port Address

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.

Serial Port Address

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

3.3.7 Serial Port Console Redirection

```
              Aptio Setup Utility - Copyright (C) 2020 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


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```

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

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.

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.

Redirection COM Port

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

Resolution

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

Redirection After 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].

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

3.3.8 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) 2020 American Megatrends, Inc.
        Advanced

 3VSB                              : 3.38 V          ▲ Watch Dog Timer
 5VSB                              : 4.92 V
 VDDCR_CPU                         : 1.23 V
 VDDCR_SOC                         : 0.84 V
 VCCM ABCD                         : 1.22 V
 VCCM EFGH                         : 1.22 V
 VPPM ABCD                         : 2.62 V
 VPPM EFGH                         : 2.6  V
 1.8VSB                            : 1.81 V
 1.8V                             : 1.82 V
 BAT                               : 3.02 V
 3V                                : 3.42 V
 5V                                : 5.07 V
 12V                               : 11.9 V          ↔: Select Screen
 LAN_1.8V                          : 1.78 V          ↑↓: Select Item
 LAN_1.0V                          : 0.98 V          Enter: Select
 PSU1 VIN                          : N/A             +/−: Change Option
 PSU2 VIN                          : N/A             F1: General Help
 PSU1 IOUT                         : N/A             F7: Discard Changes
 PSU2 IOUT                         : N/A             F9: Load UEFI Defaults
 MB Temp                           : 34   ˚C         F10: Save and Exit
 Card Side Temp                    : 32   ˚C         ESC: Exit
 TR1 Temp                          : N/A
 CPU Temp                          : 67   ˚C
 LAN Temp                          : 36   ˚C     ▼

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```

Watch Dog Timer

This allows you to configure the Watch Dog Timer settings. The default value is [Auto].

3.3.9 PCI Subsystem Settings

```
              Aptio Setup Utility – Copyright (C) 2021 American Megatrends, Inc.
          Advanced

     Above 4G Decoding                    [Enabled]          Globally Enables or Disables
     SR-IOV Support                       [Disabled]         64bit capable Devices to be
                                                             Decoded in Above 4G Address
                                                             Space (Only if System Supports
                                                             64 bit PCI Decoding).




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




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```

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.

3.3.10 AMD CBS
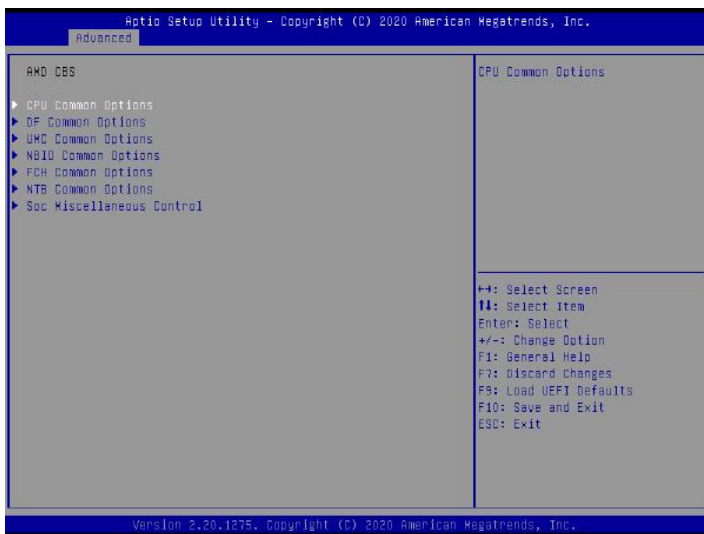
Zen Common Options

Use this item to configure Zen Common options.

DF Common Options

Use this item to configure DF Common options.

UMC Common Options

Use this item to configure UMC Common options.

NBIO Common Options

Use this item to configure NBIO Common options.

FCH Common Options

Use this item to configure FCH Common options.

NTB Common Options

Use this item to configure NTB Common options.

Soc Miscellaneous Contro

Use this item to configure Soc Miscellaneous Control options.

3.3.11 AMD PBS
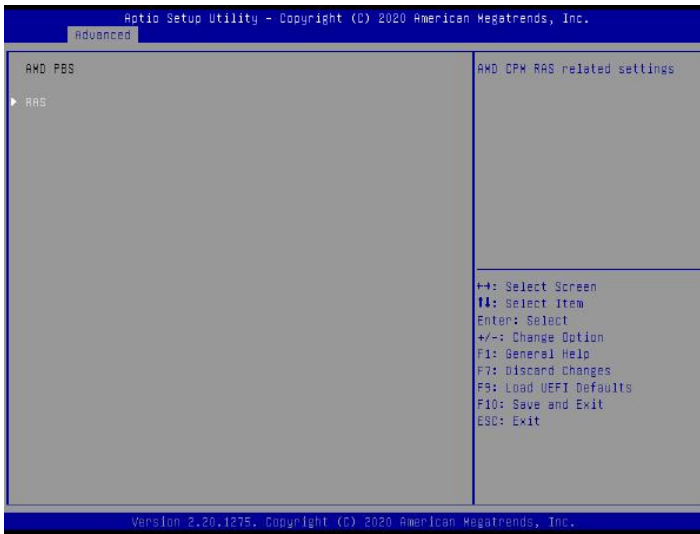
RAS

Use this item to configure AMD CPM RAS related settings.

3.3.12 PSP Firmware Versions

```
               Aptio Setup Utility - Copyright (C) 2020 American Megatrends, Inc.
       Advanced

    PSP Firmware Versions

    PSP Directory Level 1 (Fixed)
    PSP Recovery BL Ver                 FF.C.0.78
    SMU FW Version                      0.36.98.0

    PSP Directory Level 2 (Updateable)
    PSP BootLoader Version              0.C.0.78
    SMU FW Version                      0.36.98.0


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


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```

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

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.

English

3.4 Server Mgmt

```
             Aptio Setup Utility - Copyright (C) 2021 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
                                                     at the same time when BIOS
 ▶ System Event Log                                  starts during AC power ON. It
 ▶ BMC Network Configuration                         takes around 90 seconds to
 ▶ BMC Tools                                         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

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```

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
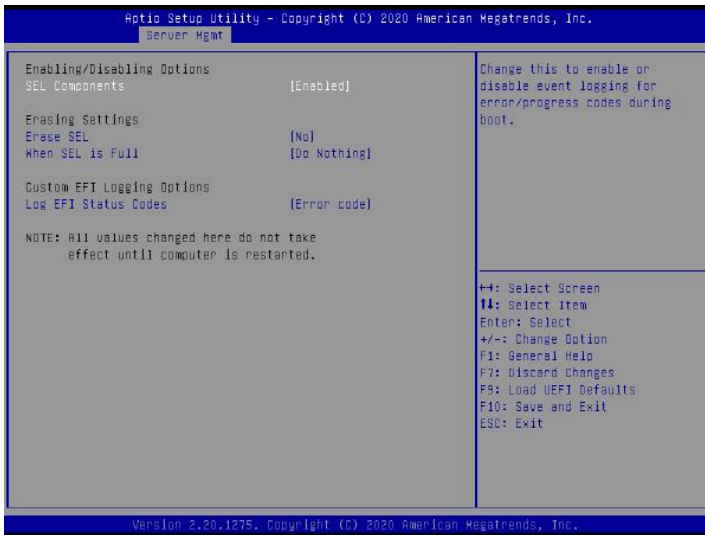
SEL Components

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) 2020 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

 *************************
 Configure IPV4 support
 *************************
 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-f1-39-52             ↔: Select Screen
 Current router IP address           0.0.0.0                      ↑↓: Select Item
                                                                  Enter: Select
 VLAN                                [Disabled]                   +/-: Change Option
                                                                  F1: General Help
 *************************                                         F7: Discard Changes
 Configure IPV6 support                                           F9: Load UEFI Defaults
 *************************                                         F10: Save and Exit
 Lan channel 1                                                    ESC: Exit
 IPV6 Support                        [Enabled]
 Manual setting IPMI LAN(IPV6)       [No Change]
 IPV6 Index                          0                         ▼

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```

BMC Out of Band Access

Enabled/Disabled BMC Out of band Access.

Manual Setting IPMI LAN

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

Configuration Address Source

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

Static: Manually enter the IP Address, Subnet Mask and Gateway Address in the BIOS for BMC LAN channel configuration.

DHCP: IP address, Subnet Mask and Gateway Address are automatically assigned by the network's DHCP server.

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

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

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

VLAN

Enabled/Disabled Virtual Local Area Network.
If [Enabled] is selected, configure the items below.

IPV6 Support

Enabled/Disable LAN1 IPV6 Support.

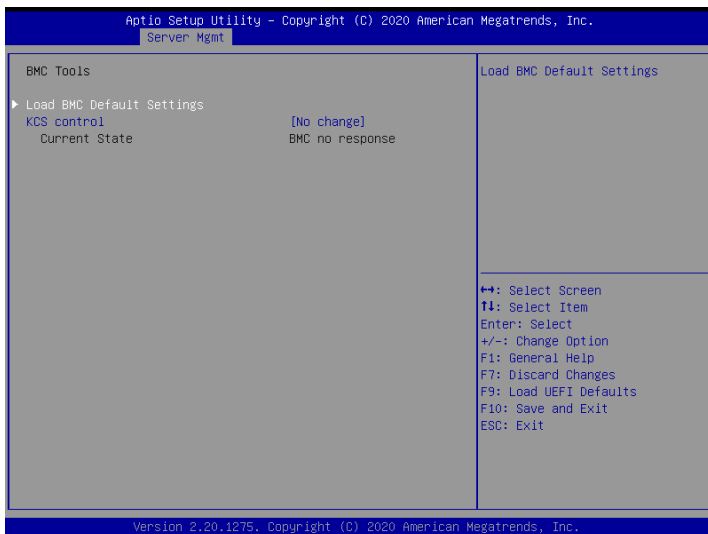## Configuration Address Source(IPV6)

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

IPV6 Index

IPV6 Index - Set Selector for Static IP, range 0 to 15.

3.4.3 BMC Tools

```
            Aptio Setup Utility - Copyright (C) 2020 American Megatrends, Inc.
                   Server Mgmt

   BMC Tools                                                 Load BMC Default Settings

 ▶ Load BMC Default Settings
   KCS control                          [No change]
     Current State                      BMC no response



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


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```

Load BMC Default Settings

Use this item to Load BMC Default Settings

KCS Control

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

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.
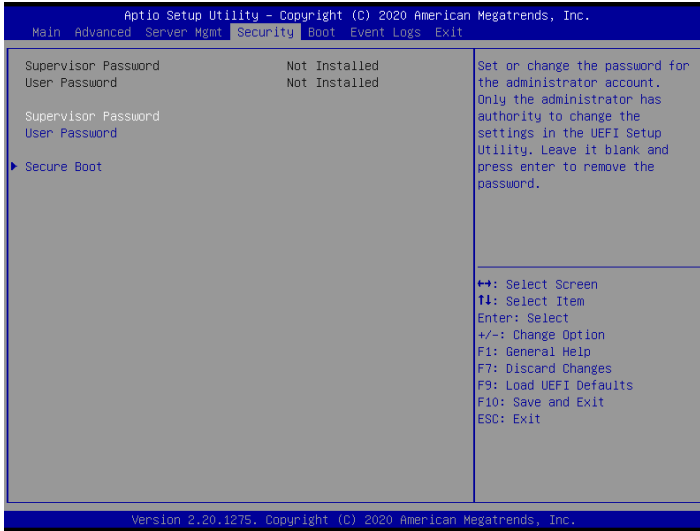
Supervisor Password

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.
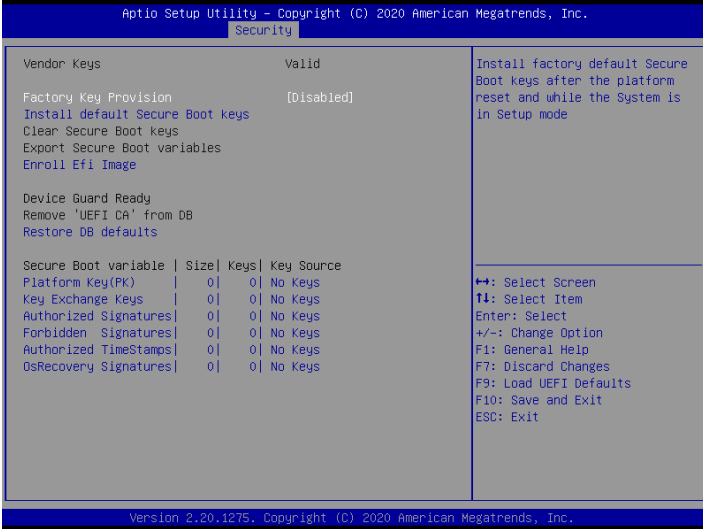
Secure Boot

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.

3.5.1 Key Management

In this section, expert users can modify Secure Boot Policy variables without full authenti-cation.

```
              Aptio Setup Utility - Copyright (C) 2020 American Megatrends, Inc.
                                   Security

  Vendor Keys                      Valid                    Install factory default Secure
                                                            Boot keys after the platform
  Factory Key Provision            [Disabled]               reset and while the System is
  Install default Secure Boot keys                          in Setup mode
  Clear Secure Boot keys
  Export Secure Boot variables
  Enroll Efi Image

  Device Guard Ready
  Remove 'UEFI CA' from DB
  Restore DB defaults

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

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```

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)

c) EFI_CERT_RSA2048 (bin)

d) EFI_CERT_SHAXXX

2. Authenticated UEFI Variable

3. EFI PE/COFF Image(SHA256)

Key Source: Default, External, Mixed

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)

c) EFI_CERT_RSA2048 (bin)

d) EFI_CERT_SHAXXX

2. Authenticated UEFI Variable

3. EFI PE/COFF Image(SHA256)

Key Source: Default, External, Mixed

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)

c) EFI_CERT_RSA2048 (bin)

d) EFI_CERT_SHAXXX

2. Authenticated UEFI Variable

3. EFI PE/COFF Image(SHA256)

Key Source: Default, External, Mixed

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)

c) EFI_CERT_RSA2048 (bin)

d) EFI_CERT_SHAXXX

2. Authenticated UEFI Variable

3. EFI PE/COFF Image(SHA256)

Key Source: Default, External, Mixed

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)

c) EFI_CERT_RSA2048 (bin)

d) EFI_CERT_SHAXXX

2. Authenticated UEFI Variable

3. EFI PE/COFF Image(SHA256)

Key Source: Default, External, Mixed

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)

c) EFI_CERT_RSA2048 (bin)

d) EFI_CERT_SHAXXX

2. Authenticated UEFI Variable

3. EFI PE/COFF Image(SHA256)

Key Source: Default, External, Mixed

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.

English

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Full Screen Logo

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

AddOn ROM Display

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

3.6.1 CSM Parameters
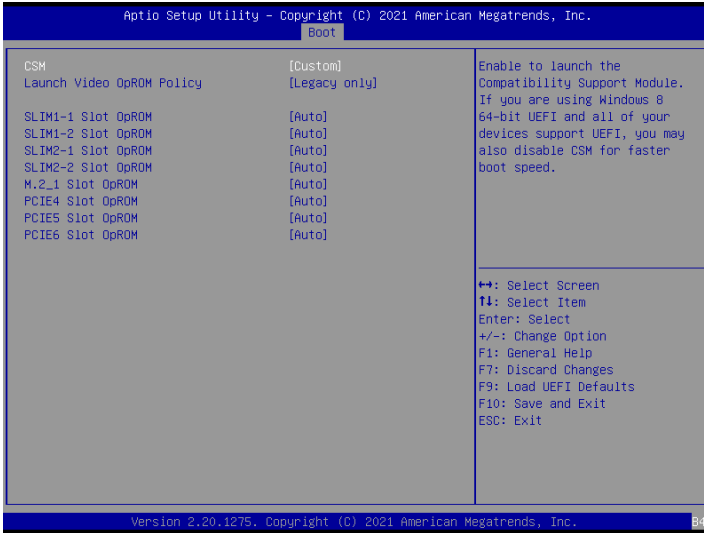
CSM

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

Launch 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.

SLIM1-1 Slot OpROM

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

SLIM1-2 Slot OpROM

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

SLIM2-1 Slot OpROM

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

SLIM2-2 Slot OpROM

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

M.2_1 Slot OpROM

Use this item to select slot storage and Network Option ROM policy. In Auto option, the default is Disabled with NVMe device, but it is Legacy with other devices. (This item can't select Video Option ROM policy.)
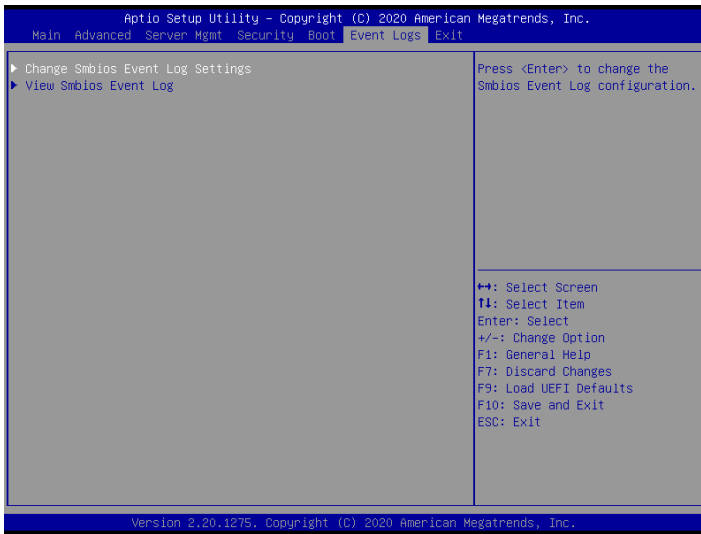
PCIE4 Slot OpROM

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.)

3.7 Event Logs

```
                Aptio Setup Utility - Copyright (C) 2020 American Megatrends, Inc.
         Main  Advanced  Server Mgmt  Security  Boot  Event Logs  Exit
     ▶ Change Smbios Event Log Settings                          Press <Enter> to change the
     ▶ View Smbios Event Log                                     Smbios Event Log 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


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```

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

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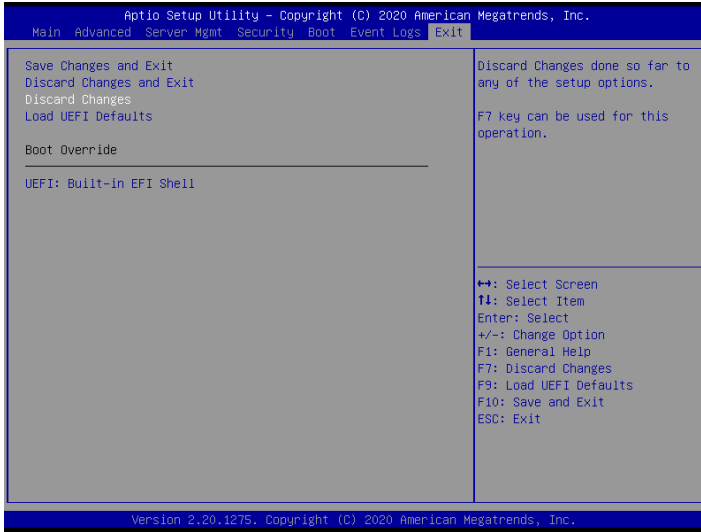
View Smbios Event Log

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.

Chapter 4 Software Support

4.1 Install Operating System

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

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

4.2 Support CD Information

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

4.2.1 Running The Support CD

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

4.2.2 Drivers Menu

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

4.2.3 Utilities Menu

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

4.2.4 Contact Information

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

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 DDR4 RDIMM/ RDIMM-3DS/ LRDIMM/ LRDIMM-3DS/ NVDIMM modules.
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.

English

5. Check the settings of the 115V/230V switch on the power supply.

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

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

5.2 Technical Support Procedures

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

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

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

5.3 Returning Merchandise for Service

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

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

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

English