ASRock Rack

OPEN
Industry Standard, Flexible Architecture

GREEN
Less Heat, Less Power Consumption

STABLE
Robust Design, Quality Parts

Stable and
Reliable Solution

Server/Workstation
Motherboard

E3C236D4U
E3C232D4U
E3C232D4U-V1L

User Manual

English

Version 1.2
Published April 2017

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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 ***E3C236D4U / E3C232D4U / E3C232D4U-V1L*** 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 E3C236D4U / E3C232D4U / E3C232D4U-V1L Motherboard (mATX Form Factor: 9.6-in x 9.6-in, 24.4 cm x24.4 cm)
- Support CD
- User Manual
- 4 x SATA3 Cables (50cm)
- 2 x SATA3 Cables (60cm)
- 1 x I/O Shield
- 1 x Screw for M.2 Socket

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

English

1.2 Specifications

E3C236D4U / E3C232D4U / E3C232D4U-V1L	
MB Physical Status	
Form Factor	mATX
Dimension	9.6" x 9.6" (24.4 cm x24.4 cm)
Processor System	
CPU	Intel® Xeon® E3-1200 v5/v6 Series Processors* **BIOS version 2.0 or above is required for v4 series.*
Chipset	***E3C236D4U:*** Intel® C236 ***E3C232D4U / E3C232D4U-V1L:*** Intel® C232
System Memory	
Capacity	4 x DDR4 DIMM slots
Type	- Dual Channel DDR4 memory technology - Supports DDR4 2400*/2133/1866/1600 ECC/non-ECC** UDIMM memory **Only E3-1200 v6 CPUs can support DDR4 2400* ***Non-ECC UDIMM support Client OS only.*
DIMM Size Per DIMM	ECC and non-EDD UDIMM : 16GB, 8GB, 4GB
Voltage	1.2V
Expansion Slot	
PCIe 3.0 x16	1 slot (PCIE4/6: x16/x0, x8/x8)
PCIe 3.0 x8	1 slot (PCIE4 /x8)
PCIe 3.0 x4	1 slot (PCIE7 : shared with M.2)
PCIe 3.0 x1	1 slot
Storage	
SATA Controller	***E3C236D4U:*** Intel® C236: 8x SATA3 6Gb/s (1 port supports SATA DOM), support RAID 0, 1, 5, 10 ***E3C232D4U-V1L:*** Intel® C232: 6x SATA3 6Gb/s (1 port supports SATA DOM), support RAID 0, 1, 5, 10 ***E3C232D4U:*** Intel® C232: 4x SATA3 6Gb/s (1 port supports SATA DOM), support RAID 0, 1, 5, 10

Ethernet	
Interface	1000 /100 /10 Mbps
LAN	***E3C232D4U / E3C236D4U:*** 2 x RJ45 GLAN by Intel® i210 - Supports Wake-On-LAN - Supports Energy Efficient Ethernet 802.3az - Supports Dual LAN with Teaming function - Supports PXE - LAN1 supports NCSI
	E3C232D4U-V1L: 1 x RJ45 GLAN by Intel® i210 - Supports Wake-On-LAN - Supports Energy Efficient Ethernet 802.3az - Supports PXE
Management	
BMC Controller	ASPEED AST2400
IPMI Dedicated GLAN	***E3C232D4U / E3C236D4U:*** 1 x Realtek RTL8211E for dedicated management GLAN ***E3C232D4U-V1L:*** N/A
Features	- Watch Dog - NMI
Graphics	
Controller	ASPEED AST2400
VRAM	DDR3 16MB
Rear Panel I/O	
VGA Port	1 x D-Sub
USB 3.0 Port	4
LAN Port	***E3C232D4U / E3C236D4U:*** - RJ45: 2x GLAN(by Intel® i210) - LAN Ports with LED (ACT/LINK LED and SPEED LED) ***E3C232D4U-V1L:*** - RJ45: 1x GLAN(by Intel® i210) - LAN Ports with LED (ACT/LINK LED and SPEED LED)
Dedicated LAN	***E3C232D4U / E3C236D4U:*** RT8211E ***E3C232D4U-V1L:*** N/A
Serial Port	1 (COM1)
UID Button/ LED	1

Internal Connector	
Auxiliary Panel Header	1 (includes chassis intrusion, location button & LED, and front LAN LED)
M.2	1
SATA DOM	1
TPM Header	1
IPMB Header	***E3C232D4U / E3C236D4U:*** 1 ***E3C232D4U-V1L:*** N/A
Buzzer	1
Fan Header	6 (1CPU/3Front/2Rear)
ATX Power	1x (24-pin) + 1x (8-pin)
Type A USB 3.0 Port	***E3C236D4U:*** 1 ***E3C232D4U / E3C232D4U-V1L:*** N/A
Type A USB 2.0 Port	***E3C232D4U:*** 1 ***E3C236D4U / E3C232D4U-V1L:*** N/A
USB 3.0 Header	1 (2 port)
USB 2.0 Header	1 (2 port)
System BIOS	
BIOS Type	128 Mb AMI UEFI Legal BIOS
BIOS Features	- Plug and Play (PnP) - ACPI 2.0 Compliance Wake Up Events - SMBIOS 2.8.0 Support - ASRock Rack Instant Flash
Hardware Monitor	
Temperature	- CPU Temperature Sensing - System Temperature Sensing - System Inlet 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: +12V, +5V, +3.3V, CPU Vcore, DRAM, 1.0V_M, +BAT, 3VSB, 5VSB
Watchdog	Yes

Support OS	
OS	Microsoft® Windows® - Server 2008 R2 SP1 (64 bit) - Server 2012 (64 bit) - Server 2012 R2 (64 bit) Linux® - RedHat Enterprise Linux Server 6.6 (32 / 64 bit) / 7.0 (64 bit) - CentOS 6.6 (32 / 64 bit) / 7.0 (64 bit) - SUSE Enterprise Linux Server 11 SP3 (32 / 64 bit) / 12.0 (64 bit) - Fedora core 22 (64 bit) - Ubuntu 15.04 (64 bit) / 15.10 (64 bit) (AHCI mode) *Please refer to our website for the latest OS support list. *Note: Server 2008 R2 installation media does not include native driver support for USB 3.0. Please update a Server 2008 R2 installation image to include USB 3.0 drivers when installing OS by Server 2008 R2 installation image. For detail operation, please reference ASRock Rack's website: www.ASRockRack.com.*
Environment	
Temperature	Operation temperature: 10°C ~ 35°C / Non operation temperature: -40°C ~ 70°C

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

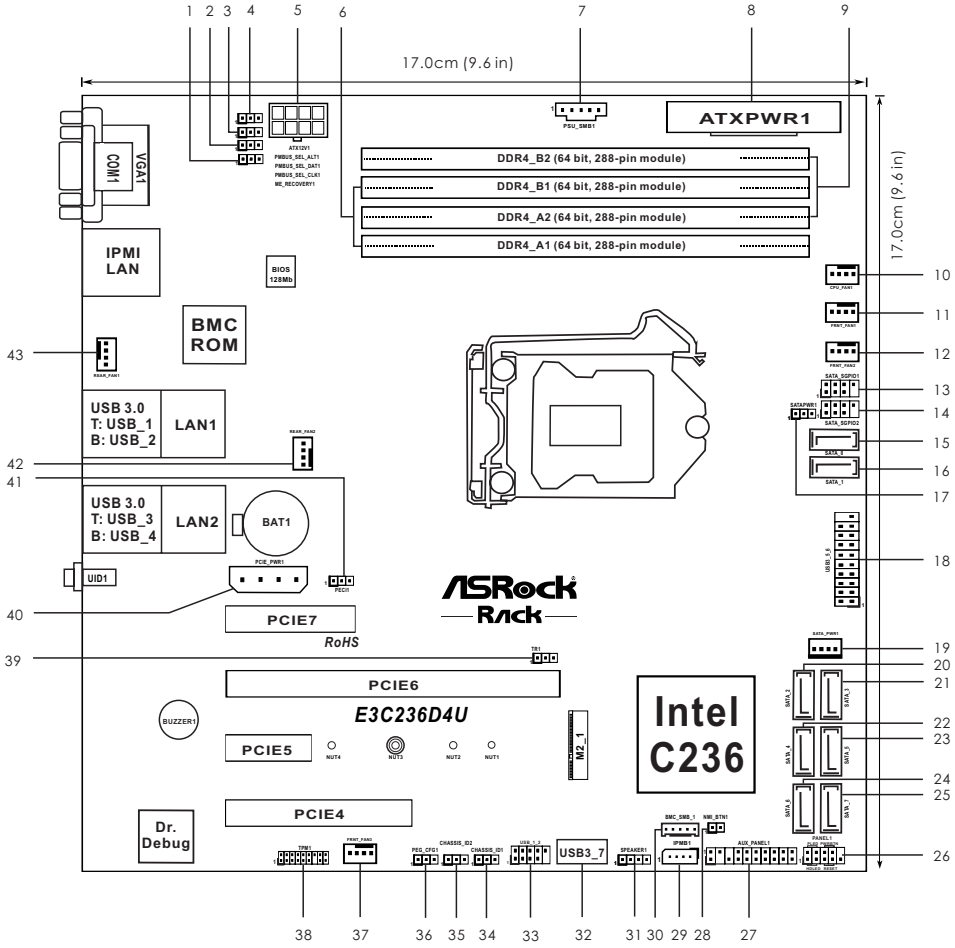
If you install Intel® LAN utility or Marvell SATA utility, this motherboard may fail Windows® Hardware Quality Lab (WHQL) certification tests. If you install the drivers only, it will pass the WHQL tests.

1.3 Unique Features

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

1.4 Motherboard Layout

E3C236D4U

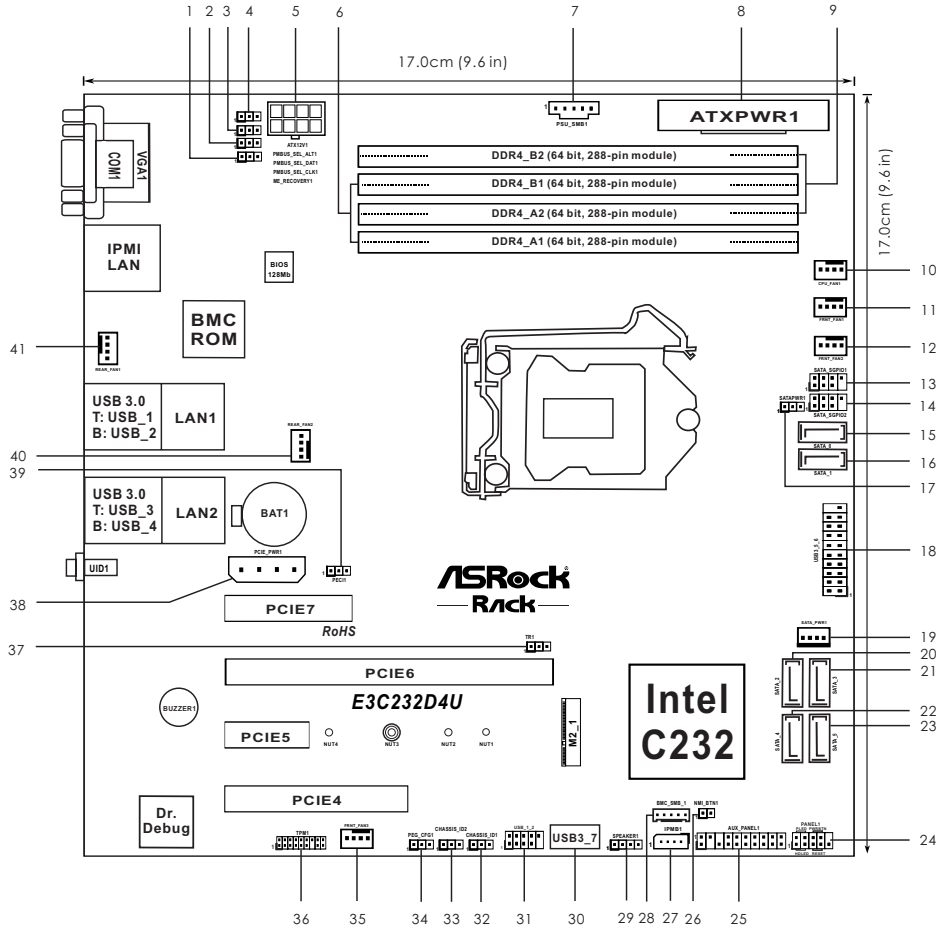


No.	Description
1	ME Recovery Jumper (ME_RECOVERY1)
2	PMBUS Mode Jumper (PMBUS_SEL_CLK1)
3	PMBUS Mode Jumper (PMBUS_SEL_DAT1)
4	PMBUS Mode Jumper (PMBUS_SEL_ALT1)
5	ATX 12V Power Connector (ATX12V1)
6	2 x 288-pin DDR4 DIMM Slots (DDR4_A1, DDR4_B1, White)
7	PSU SMBus (PSU_SMB1)
8	ATX Power Connector (ATXPWR1)
9	2 x 288-pin DDR4 DIMM Slots (DDR4_A2, DDR4_B2, Blue)
10	CPU Fan Connector (CPU_FAN1)
11	Front Fan Connector (FRNT_FAN1)
12	Front Fan Connector (FRNT_FAN2)
13	SATA SGPIO Connector (SATA_SGPIO1)
14	SATA SGPIO Connector (SATA_SGPIO2)
15	SATA3 DOM Connector (SATA_0), Red
16	SATA3 Connector (SATA_1)
17	SATA DOM Power Jumper (SATAPWR1)
18	USB 3.0 Header (USB3_5_6)
19	SATA DOM Power Header (SATA_PWR1)
20	SATA3 Connector (SATA_2)
21	SATA3 Connector (SATA_3)
22	SATA3 Connector (SATA_4)
23	SATA3 Connector (SATA_5)
24	SATA3 Connector (SATA_6)
25	SATA3 Connector (SATA_7)
26	System Panel Header (PANEL1)
27	Auxiliary Panel Header (AUX_PANEL1)
28	Non Maskable Interrupt Button (NMI_BTN1)
29	Intelligent Platform Management Bus Header (IPMB1)
30	BMC SMBus Header (BMC_SMB1)
31	Speaker Header (SPEAKER1)
32	Vertical Type A USB 3.0 (USB3_7)
33	USB 2.0 Header (USB_1_2)

No.	Description
34	Chassis ID1 Jumper (CHASSIS_ID1)
35	Chassis ID2 Jumper (CHASSIS_ID2)
36	PCI Express Graphics Configuration Jumper (PEG_CFG1)
37	Front Fan Connector (FRNT_FAN3)
38	TPM Header (TPM1)
39	Thermal Sensor Header (TR1)
40	PCIe Power Connector (PCIE_PWR1)
41	CPU PECI Mode Jumper (PECI1)
42	Rear Fan Connector (REAR_FAN2)
43	Rear Fan Connector (REAR_FAN1)

For DIMM installation and configuration instructions, please see p.27 (Installation of Memory Modules (DIMM)) for more details.

E3C232D4U


17.0cm (9.6 in)
17.0cm (9.6 in)
ATXPWR1
DDR4_B2 (64 bit, 288-pin module)
DDR4_B1 (64 bit, 288-pin module)
DDR4_A2 (64 bit, 288-pin module)
DDR4_A1 (64 bit, 288-pin module)
COM1
VGA1
IPMI LAN
BIOS 128Mb
BMC ROM
USB 3.0 T: USB_1 B: USB_2
LAN1
USB 3.0 T: USB_3 B: USB_4
LAN2
BAT1
UID1
PCIE7
RoHS
PCIE6
E3C232D4U
PCIE5
PCIE4
Intel C232
BUZZER1
Dr. Debug
USB3_7
M2_1
ASRock Rack
1 2 3 4 5 6 7 8 9
10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
25 26 27 28 29 30 31 32 33 34 35 36
37 38 39 40 41

No.	Description
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30	Vertical Type A USB 2.0 (USB3_7)
31	USB 2.0 Header (USB_1_2)
32	Chassis ID1 Jumper (CHASSIS_ID1)
33	Chassis ID2 Jumper (CHASSIS_ID2)

No.	Description
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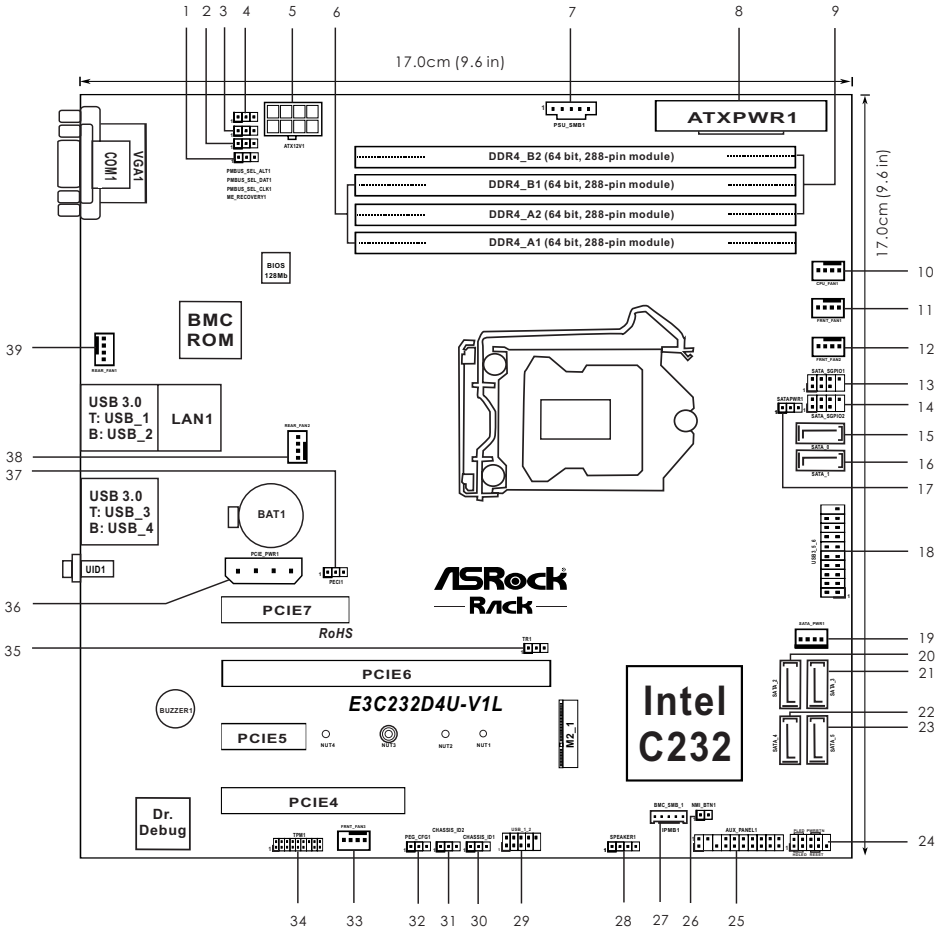
36	TPM Header (TPM1)
37	Thermal Sensor Header (TR1)
38	PCIe Power Connector (PCIE_PWR1)
39	CPU PECI Mode Jumper (PECI1)
40	Rear Fan Connector (REAR_FAN2)
41	Rear Fan Connector (REAR_FAN1)

For DIMM installation and configuration instructions, please see p.27 (Installation of Memory Modules (DIMM)) for more details.

E3C232D4U-V1L



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23	SATA3 Connector (SATA_5)
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25	Auxiliary Panel Header (AUX_PANEL1)
26	Non Maskable Interrupt Button (NMI_BTN1)
27	BMC SMBus Header (BMC_SMB1)
28	Speaker Header (SPEAKER1)
29	USB 2.0 Header (USB_1_2)
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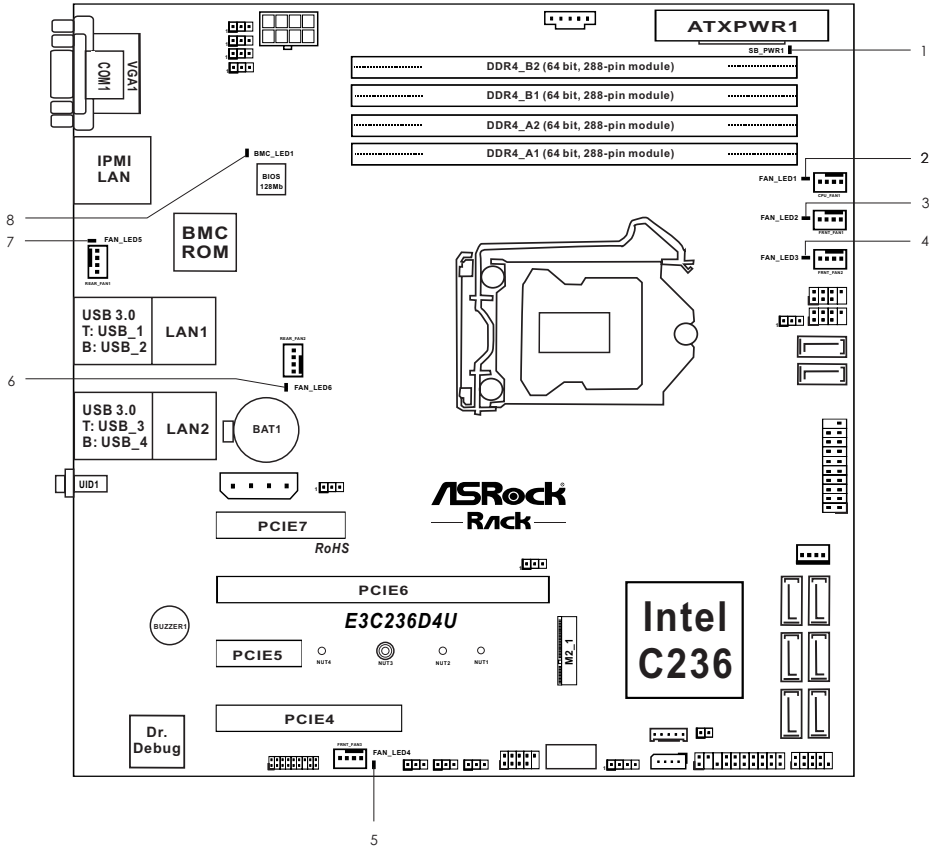
34	TPM Header (TPM1)
35	Thermal Sensor Header (TR1)
36	PCIe Power Connector (PCIE_PWR1)
37	CPU PECI Mode Jumper (PECI1)
38	Rear Fan Connector (REAR_FAN2)
39	Rear Fan Connector (REAR_FAN1)

For DIMM installation and configuration instructions, please see p.27 (Installation of Memory Modules (DIMM)) for more details.

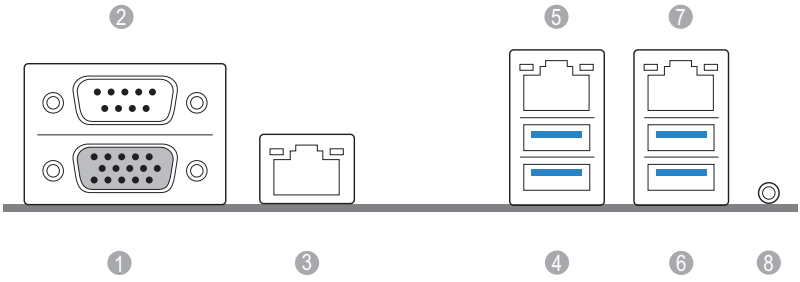
1.5 Onboard LED Indicators



No.	Status	Description
1	Green	STB PWR ready
2	Amber	CPU1_FAN1 failed
3	Amber	Front_FAN1 failed
4	Amber	Front_FAN2 failed
5	Amber	Front_FAN3 failed
6	Amber	Rear_FAN2 failed
7	Amber	Rear_FAN1 failed
8	Green	BMC heartbeat LED

1.6 I/O Panel

E3C232D4U / E3C236D4U



No.	Description	No.	Description
1	VGA Port (VGA1)	5	LAN RJ-45 Port (LAN1)**
2	Serial Port (COM1)	6	USB 3.0 Ports (USB3_3_4)
3	LAN RJ-45 Port (IPMI_LAN)*	7	LAN RJ-45 Port (LAN2)**
4	USB 3.0 Ports (USB3_1_2)	8	UID Switch (UID1)

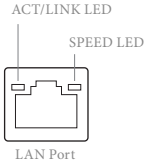
Note: LAN1 supports NCSI.

E3C232D4U-V1L

No.	Description	No.	Description
1	VGA Port (VGA1)	4	LAN RJ-45 Port (LAN1)**
2	Serial Port (COM1)	5	USB 3.0 Ports (USB3_3_4)
3	USB 3.0 Ports (USB3_1_2)	6	UID Switch (UID1)

LAN Port LED Indications

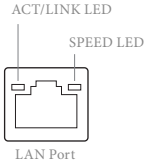
*There are two LED next to the LAN port. Please refer to the table below for the LAN port LED indications.



Dedicated IPMI LAN Port LED Indications

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

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

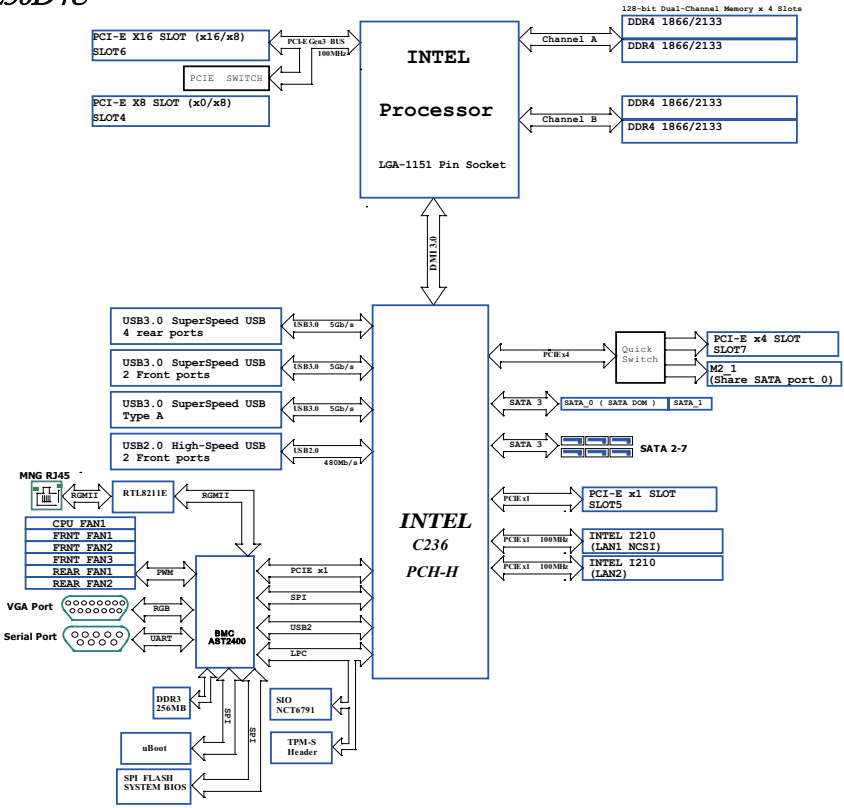


LAN Port LED Indications

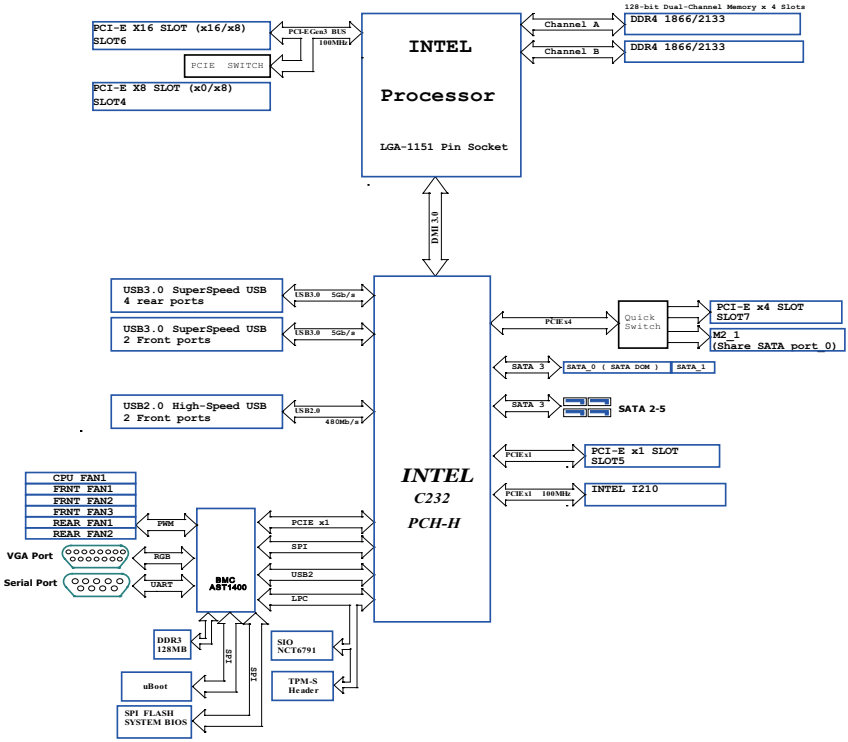
Speed LED		Activity / Link LED	
Status	Description	Status	Description
Off	10Mbps connection or no link	Off	No Link
Yellow	100Mbps connection	Blinking Green	Data Activity
Green	1Gbps connection	On	Link

1.7 Block Diagram

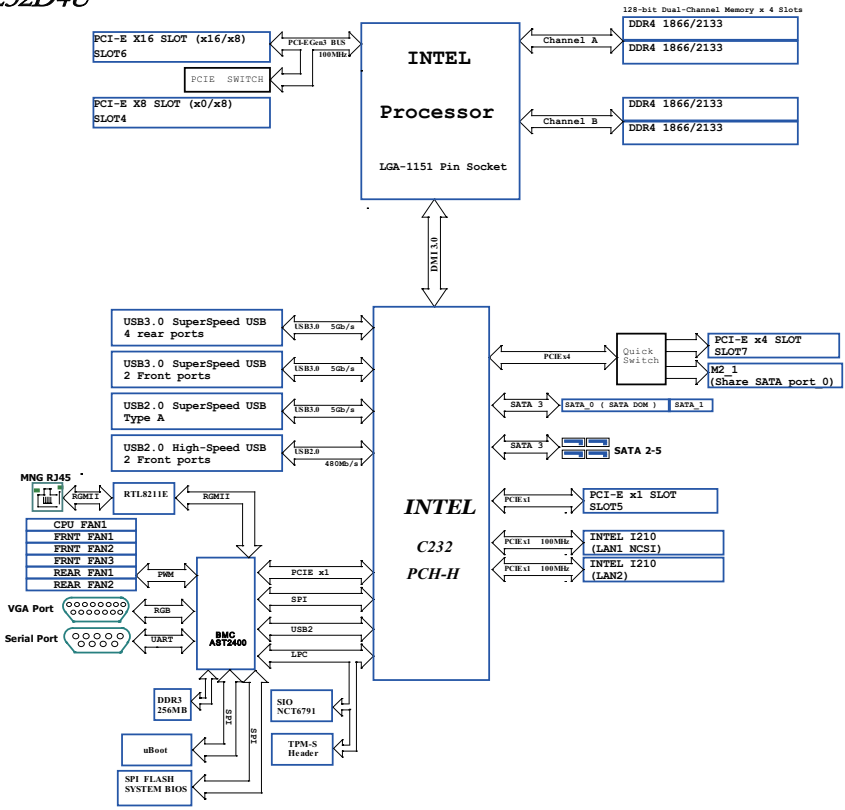
E3C236D4U



E3C232D4U-V1L



E3C232D4U


128-bit Dual-Channel Memory x 4 Slots
PCI-E X16 SLOT (x16/x8)
SLOT6
PCI-E Gen3 BUS
100MHz
PCIE SWITCH
PCI-E X8 SLOT (x0/x8)
SLOT4
INTEL
Processor
LGA-1151 Pin Socket
Channel A
Channel B
DDR4 1866/2133
DDR4 1866/2133
DDR4 1866/2133
DDR4 1866/2133
DMI 3.0
INTEL
C232
PCH-H
USB3.0 SuperSpeed USB
4 rear ports
USB3.0 SuperSpeed USB
2 Front ports
USB2.0 SuperSpeed USB
Type A
USB2.0 High-Speed USB
2 Front ports
USB3.0 5Gb/s
USB3.0 5Gb/s
USB3.0 5Gb/s
USB2.0 480Mb/s
PCIEx4
Quick Switch
PCI-E x4 SLOT
SLOT7
M2_1
(Share SATA port_0)
SATA 3
SATA_0 (SATA DOM)
SATA_1
SATA 3
SATA 2-5
PCIEx1
PCI-E x1 SLOT
SLOT5
PCIEx1 100MHz
INTEL I210
(LAN1 NCSI)
PCIEx1 100MHz
INTEL I210
(LAN2)
MNG RJ45
RGMII
RTL8211E
RGMII
CPU FAN1
FRNT FAN1
FRNT FAN2
FRNT FAN3
REAR FAN1
REAR FAN2
PWM
VGA Port
RGB
Serial Port
UART
BMC
AST2400
PCIE x1
SPI
USB2
LPC
DDR3
256MB
SIO
NCT6791
uBoot
TPM-S
Header
SPI FLASH
SYSTEM BIOS
16S
16S

Chapter 2 Installation

This is a mATX 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.

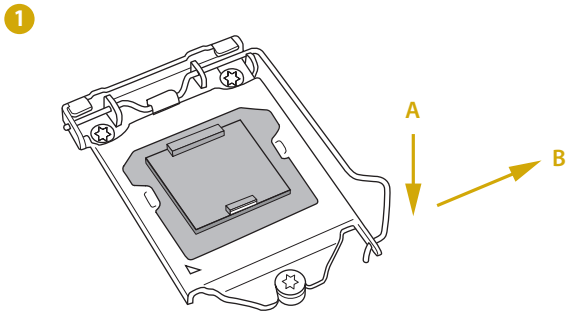
1. Unplug the power cord from the wall socket before touching any components.
2. To avoid damaging the motherboard's components due to static electricity, NEVER place your motherboard directly on the carpet or the like. Also remember to use a grounded wrist strap or touch a safety grounded object before 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.

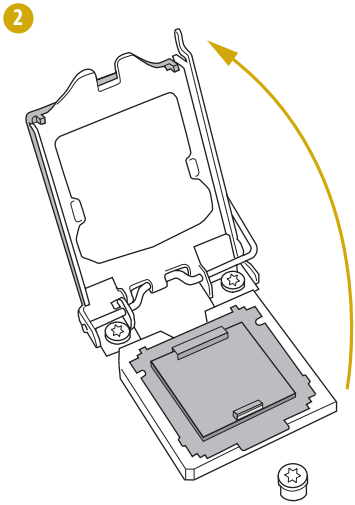
Before you install or remove any component, ensure that the power is switched off or the power cord is detached from the power supply. Failure to do so may cause severe damage to the motherboard, peripherals, and/or components.

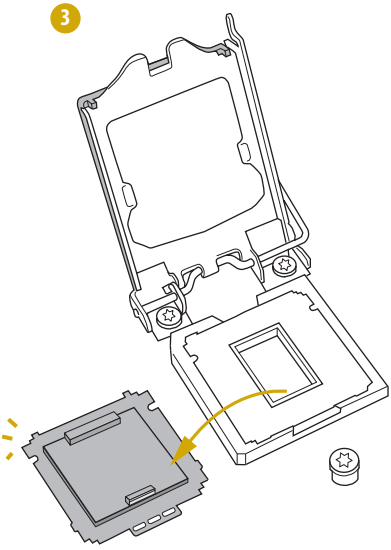
2.3 Installing the CPU

1. *Before you insert the 1151-Pin 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.*

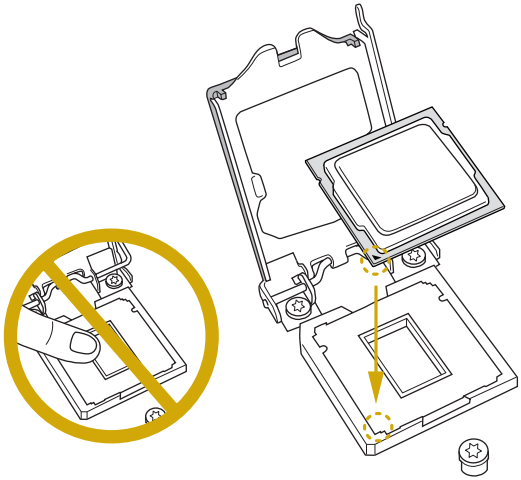
Illustrations in this User Manual are provided for reference only and may slightly differ from actual product appearances.







4



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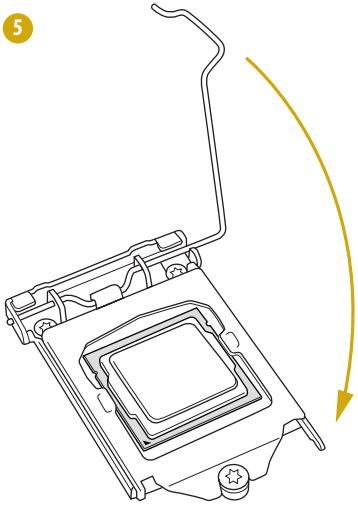
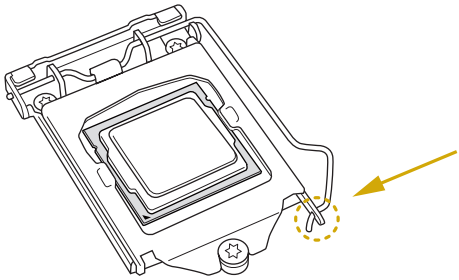
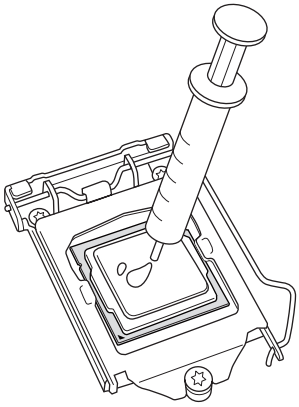


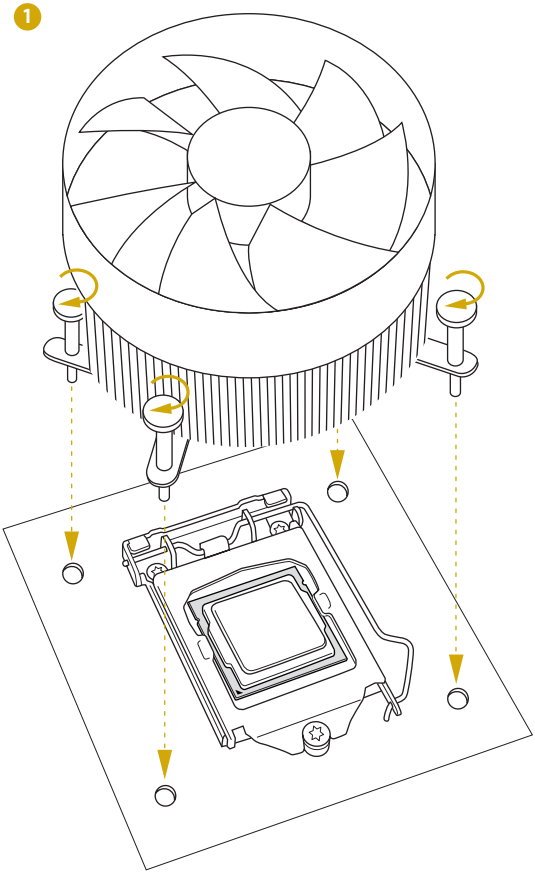
6

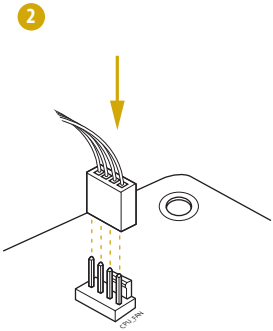


Please save and replace the cover if the processor is removed. The cover must be placed if you wish to return the motherboard for after service.

2.4 Installing the CPU Fan and Heatsink







2.5 Installation of Memory Modules (DIMM)

This motherboard provides four 288-pin DDR4 (Double Data Rate 4) DIMM slots, and supports Dual Channel Memory Technology.

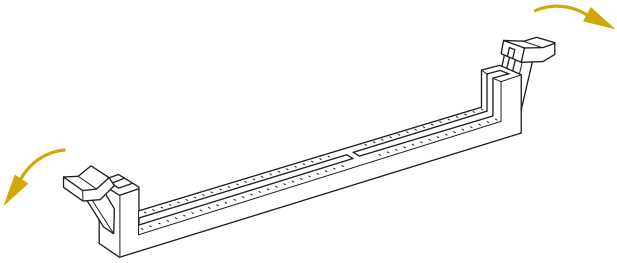
1. *For dual channel configuration, you always need to install identical (the same brand, speed, size and chip-type) DDR4 DIMM pairs.*
2. *It is unable to activate Dual Channel Memory Technology with only one or three memory module installed.*
3. *It is not allowed to install a DDR, DDR2 or DDR3 memory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

Dual Channel Memory Configuration

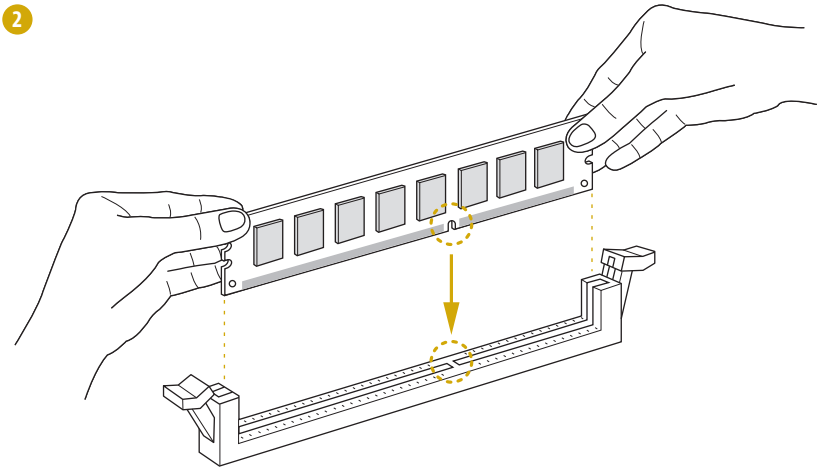
Priority	DDR4_A1	DDR4_A2	DDR4_B1	DDR4_B2
1		Populated		Populated
2	Populated		Populated	
3	Populated	Populated	Populated	Populated

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.

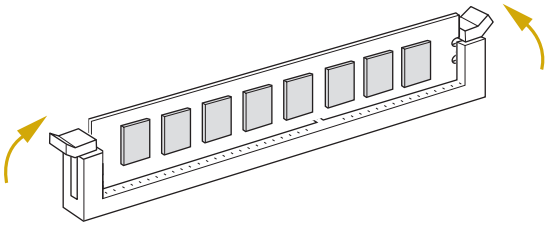
1



2



3



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

2.6 Expansion Slots (PCI Express Slots)

There are 4 PCI Express slots on this motherboard.

PCIE slot:

PCIE4 (PCIe 3.0 x4 slot) is used for PCI Express x4 lane width cards.
PCIE5 (PCIe 3.0 x16 slot) is used for PCI Express x16 lane width cards.
PCIE6 (PCIe 3.0 x1 slot) is used for PCI Express x1 lane width cards.
PCIE7 (PCIe 3.0 x8 slot) is used for PCI Express x8 lane width cards.

Slot	Generation	Mechanical	Electrical	Source
PCIE 7	3.0	x4	x4	PCH
PCIE 6	3.0	x16	x16	CPU
PCIE 5	3.0	x1	x1	PCH
PCIE 4	3.0	x8	x8	CPU

**The M.2 slot (M2_1) is shared with the PCIE7 slot. When M2_1 is populated with a M.2 PCI Express module, PCIE7 is disabled.*

PCI Express Slot Configuration

	PCIE 4	PCIE6
Single PCIE Card	x0	x16
Two PCIE Cards	x8	x8

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.

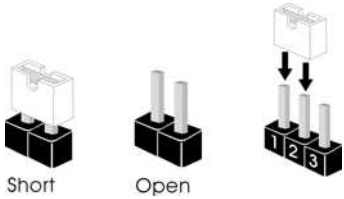
Step 4. Align the card connector with the slot and press firmly until the card is completely seated on the slot.

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

Step 6. Replace the system cover.

2.7 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.



Please refer to page 7, 10 and 13 for motherboard layout.

ME Recovery Jumper (3-pin ME_RECOVERY1)	1_2 Normal Mode (Default)	2_3 ME Recovery Mode
CPU PECI Mode Jumper (3-pin PECI1)	1_2 CPU PECI connect to PCH	2_3 CPU PECI connect to BMC (Default)
PMBUS Mode Jumper (3-pin PMBUS_SEL_ALT1) (3-pin PMBUS_SEL_DAT1) (3-pin PMBUS_SEL_CLK1)	1_2 PMBus connected to BMC (Default)	2_3 PMBus connected to PCH

Chassis ID1 Jumper (3-pin CHASSIS_ID1) Chassis ID2 Jumper (3-pin CHASSIS_ID2)	  Board Level SKU (Default)	  Reserved for system level use
Chassis ID1 Jumper (3-pin CHASSIS_ID1) Chassis ID2 Jumper (3-pin CHASSIS_ID2)	  Reserved for system level use	  Reserved for system level use
PCI Express Graphics Configuration Jumper (PEG_CFG1)	 Normal Mode (Default)	 PCIE6 force @ x8 x8
SATA DOM Power Jumper (3-pin SATAPWR1)	 SATA DOM (SATA_0) requires 5V power supply	 SATA DOM (SATA_0) 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 (SATAPWR_SEL) from pins 2-3 (default) to pins 1-2.

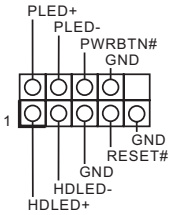
If the connected SATA DOM does NOT require 5V power supply, connect the SATA DOM power cable to the SATA DOM power header (SATA_PWR1) and there is no need to change the default jumper setting of the SATA DOM Power Jumper (pins 2-3).

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

2.8 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)



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.

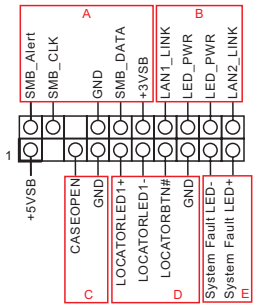
RESET (Reset Switch):
Connect to the reset switch on the chassis front panel. Press the reset switch to restart the computer if the computer freezes and fails to perform a normal restart.

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)



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.

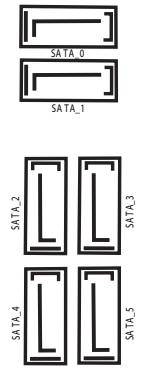
B. Internet status indicator (2-pin LAN1_LED, LAN2_LED)
These two 2-pin headers allow you to use the Gigabit internet indicator cable to connect to the LAN status indicator. When this indicator flickers, it means that the internet is properly connected.

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 Connectors
(SATA_0)
(SATA_1)
(SATA_2)
(SATA_3)
(SATA_4)
(SATA_5)



These SATA3 connectors support SATA data cables for internal storage devices with up to 6.0 Gb/s data transfer rate.

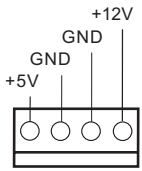
**The M.2 slot (M2_1) is shared with the SATA_0 connector. When M2_1 is populated with a M.2 SATA3 module, SATA_0 is disabled.*

E3C236D4U only:
(SATA_6)
(SATA_7)

Serial ATA3 DOM Connector
(SATA_0)

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

SATA Power Connector
(4-pin SATA_PWR1)

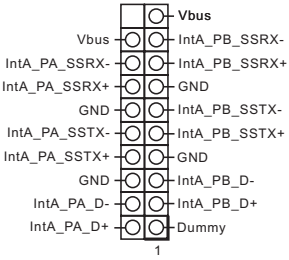
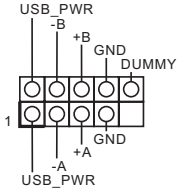
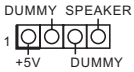
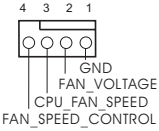


Please connect a SATA power cable to the SATA power connector.

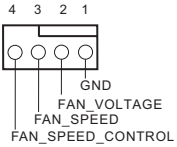
E3C236D4U only:
USB 3.0 Connector
(USB3_7)

E3C232D4U only:
USB 2.0 Connector
(USB3_7)

English

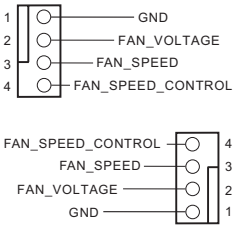
USB 3.0 Header (19-pin USB3_5_6)		Besides four default USB 3.0 ports on the I/O panel, there is one USB 3.0 header on this motherboard. This USB 3.0 header can support two USB 3.0 ports.
USB 2.0 Header (9-pin USB_1_2)		There is one USB 2.0 header on this motherboard. Each USB 2.0 header can support two ports.
Chassis Speaker Header (4-pin SPEAKER1)		Please connect the chassis speaker to this header.
CPU Fan Connector (4-pin CPU1_FAN1)		This motherboard provides one 4-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.*

Front and Rear Fan Connectors
(4-pin FRNT_FAN1)
(4-pin FRNT_FAN2)
(4-pin FRNT_FAN3)

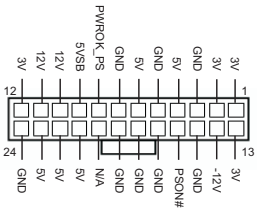


Please connect fan cables to the fan connectors and match the black wire to the ground pin. All fans support Fan Control.

(4-pin REAR_FAN1)
(4-pin REAR_FAN2)

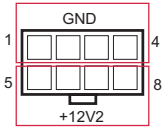


ATX Power Connector
(24-pin ATXPWR1)



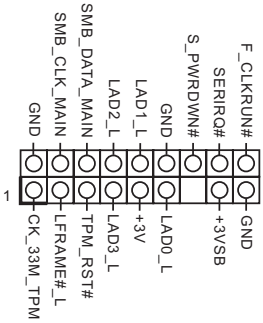
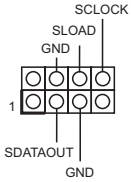
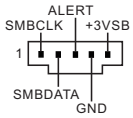
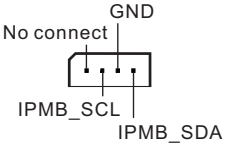
This motherboard provides a 24-pin ATX power connector. To use a 20-pin ATX power supply, please plug it along Pin 1 and Pin 13.

ATX 12V Power Connector
(8-pin ATX12V1)

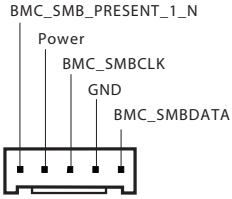
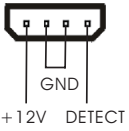


This motherboard provides one 8-pin ATX 12V power connector.

English

TPM Header (17-pin TPM1)		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.
Serial General Purpose Input/Output Headers (7-pin SATA_SGPIO1) (7-pin SATA_SGPIO2)		The headers support Serial Link interface for onboard SATA connections.
PSU SMBus (PSU_SMB1)		PSU SMBus monitors the status of the power supply, fan and system temperature.
Non Maskable Interrupt Button Header (NMI_BTN1)		Please connect a NMI device to this header.
E3C232D4U / E3C236D4U only: Intelligent Platform Management Bus Header (4-pin IPMB1)		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.

English

Baseboard Management Controller SMBus Header (5-pin BMC_SMB1)		The header is used for the SM BUS devices.
Thermal Sensor Header (3-pin TR1)		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.
PCIe Power Connector (4-pin PCIE_PWR1)		Please connect a 4 pin molex power cable to this connector when more than three PCI Express cards are installed.

2.9 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.

2.10 Unit Identification purpose LED/Switch

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

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

2.11 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.

2.12 Dua LAN and Teaming Operation Guide *(For E3C236D4U only)*

Dual LAN with Teaming enabled on this motherboard allows two single connections to act as one single connection(s) for twice the transmission bandwidth, making data transmission more effective and improving the quality of transmission of distant images. Fault tolerance on the dual LAN network prevents network downtime by transferring the workload from a failed port to a working port.

The speed of transmission is subject to the actual network environment or status even with Teaming enabled.

Before setting up Teaming, please make sure whether your Switch (or Router) supports Teaming (IEEE 802.3ad Link Aggregation). You can specify a preferred adapter in Intel PROSet. Under normal conditions, the Primary adapter handles all non-TCP/IP traffic. The Secondary adapter will receive fallback traffic if the primary fails. If the Preferred Primary adapter fails, but is later restored to an active status, control is automatically switched back to the Preferred Primary adapter.

Step 1

From **Device Manager**, open the properties of a team.

Step 2

Click the **Settings** tab.

Step 3

Click the **Modify Team** button.

Step 4

Select the adapter you want to be the primary adapter and click the **Set Primary** button.

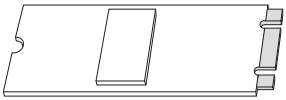
If you do not specify a preferred primary adapter, the software will choose an adapter of the highest capability (model and speed) to act as the default primary. If a failover occurs, another adapter becomes the primary. The adapter will, however, rejoin the team as a non-primary.

2.13 M.2_SSD (NGFF) Module Installation Guide

The M.2, also known as the Next Generation Form Factor (NGFF), is a small size and versatile card edge connector that aims to replace mPCIe and mSATA. The Ultra M.2 Socket (M2_1) supports a M.2 SATA3 6.0 Gb/s module or a M.2 PCI Express module up to Gen 3 x4 (32Gb/s).

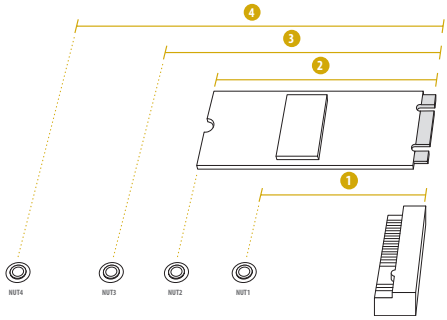
**The M.2 slot (M2_1) is shared with the PCIE7 slot and the SATA_0 connector. When M2_1 is populated with a M.2 SATA3 module, SATA_0 is disabled. When M2_1 is populated with a M.2 PCI Express module, PCIE7 is disabled.*

Installing the M.2_SSD (NGFF) Module



Step 1

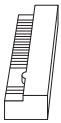
Prepare a M.2_SSD (NGFF) module and the screw.



Step 2

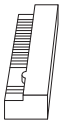
Depending on the PCB type and length of your M.2_SSD (NGFF) module, find the corresponding nut location to be used.

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



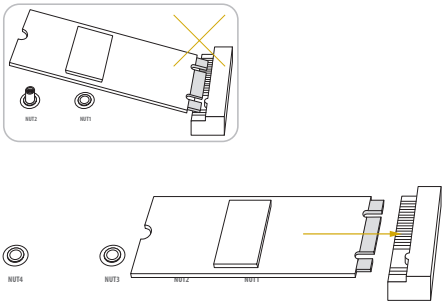
Step 3

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.



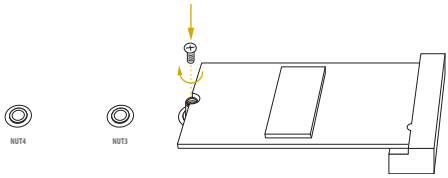
Step 4

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



Step 5

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



Step 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.

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
Boot	To set up the default system device to locate and load the Operating System
Security	To set up the security features
Event Logs	For event log configuration
Server Mgmt *(For E3C236D4U only)*	To manage the server
Exit	To exit the current screen or the UEFI SETUP UTILITY

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

English

3.1.2 Navigation Keys

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

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

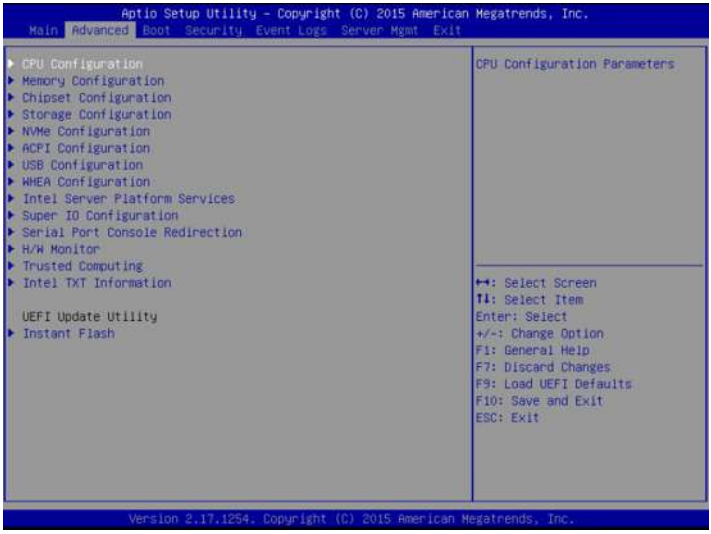
3.2 Main Screen

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

Note: The screenshots in this user manual are examples and for references only. The actual images may slightly vary depending on the model and the version you use.

3.3 Advanced Screen

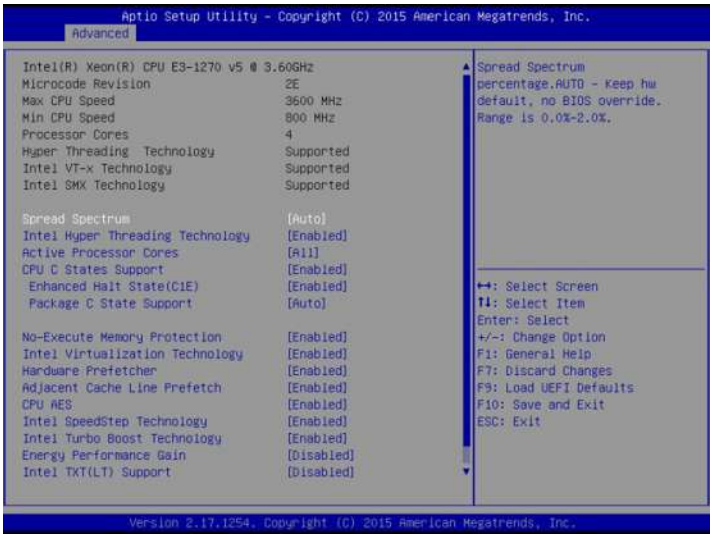
In this section, you may set the configurations for the following items: CPU Configuration, Memory Configuration, Chipset Configuration, Storage Configuration, NVMe Configuration, ACPI Configuration, USB Configuration, WHEA Configuration, Intel Server Platform Services, Super IO Configuration, Serial Port Console Redirection, H/W Monitor, Trusted Computing, Intel TXT Information and Instant Flash.



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

English

3.3.1 CPU Configuration



Spread Spectrum

Use this to enable and disable Spread Spectrum.

Intel Hyper Threading Technology

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

Active Processor Cores

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

CPU C States Support

Enable CPU C States Support for power saving. It is recommended to keep C3, C6 and C7 all enabled for better power saving.

Enhanced Halt State (C1E)

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

Package C State Support

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

No-Execute Memory Protection

Processors with No-Execution Memory Protection Technology may prevent certain classes

of malicious buffer overflow attacks.

Intel Virtualization Technology

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

Hardware Prefetcher

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

Adjacent Cache Line Prefetch

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

CPU AES

Use this to enable or disable CPU Advanced Encryption Standard instructions.

Intel SpeedStep Technology

Intel SpeedStep technology is Intel's new power saving technology. Processors can switch between multiple frequencies and voltage points to enable power saving. The default value is [Enabled]. Configuration options: [Enabled] and [Disabled]. This item will be hidden if the current CPU does not support Intel SpeedStep technology.

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

Intel Turbo Boost Technology

Use this item to enable or disable Intel Turbo Boost Mode Technology. Turbo Boost Mode allows processor cores to run faster than marked frequency in specific conditions. The default value is [Enabled].

Energy Performance Gain

Use this item to configure Energy Performance Gain.

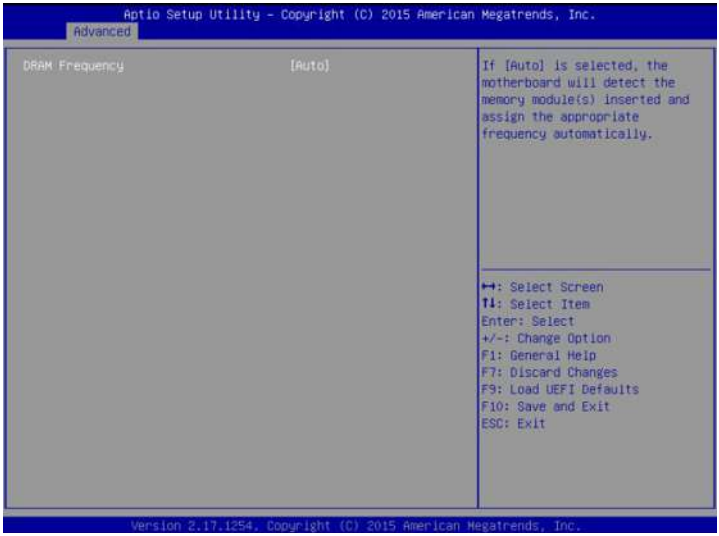
Intel TXT(LT) Support

Use this to enable or disable Intel Trusted Execution Technology.

CPU Thermal Throttling

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

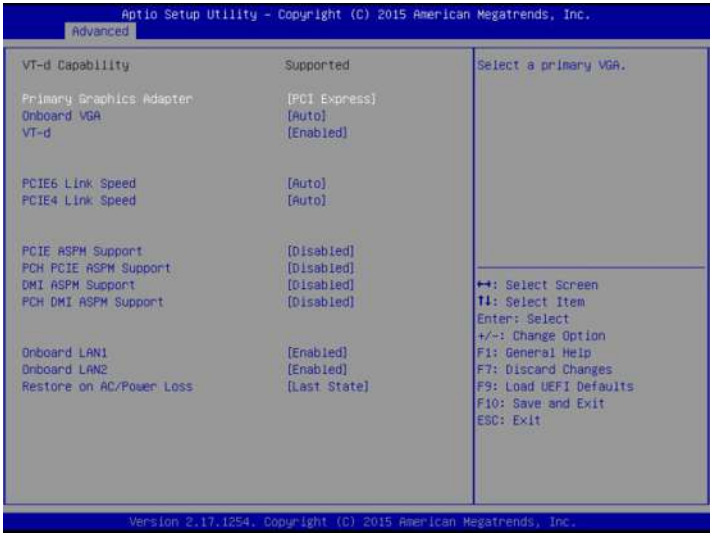
3.3.2 Memory Configuration



DRAM Frequency

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

3.3.3 Chipset Configuration



Primary Graphics Adapter

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

Onboard VGA

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

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

VT-d

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

PCIE 6 Link Speed

This allows you to select PCIE 6 Link Speed. The default value is [Auto].

PCIE 4 Link Speed

This allows you to select PCIE 4 Link Speed. The default value is [Auto].

PCI-E ASPM Support

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

PCH PCI-E ASPM Support

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

DMI ASPM Support

This option enables/disables the control of ASPM on CPU side of the DMI Link.

PCH DMI ASPM Support

This option enables/disables the ASPM support for all PCH DMI devices.

Onboard LAN1

This tem allows you to enable or disable the Onboard LAN 1 feature.

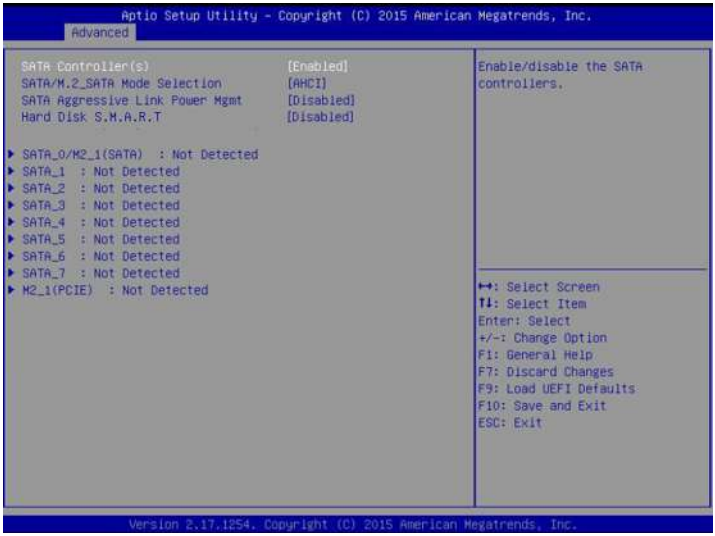
Onboard LAN2 *(For E3C236D4U / E3C232D4Uonly)*

This allows you to enable or disable the Onboard LAN 2 feature.

Restore on AC/Power Loss

This allows you to set the power state after an unexpected AC/power loss. If [Power Off] is selected, the AC/power remains off when the power recovers. If [Power On] is selected, the AC/power resumes and the system starts to boot up when the power recovers. If [Last State] is selected, it will recover to the state before AC/power loss.

3.3.4 Storage Configuration



SATA Controller(s)

Use this item to enable or disable SATA Controllers.

SATA/M.2_SATA Mode Selection

Identify the SATA/M.2_SATA port is connected to Solid State Drive or Hard Disk Drive. Press <Ctrl+I> to enter RAID ROM during UEFI POST process.

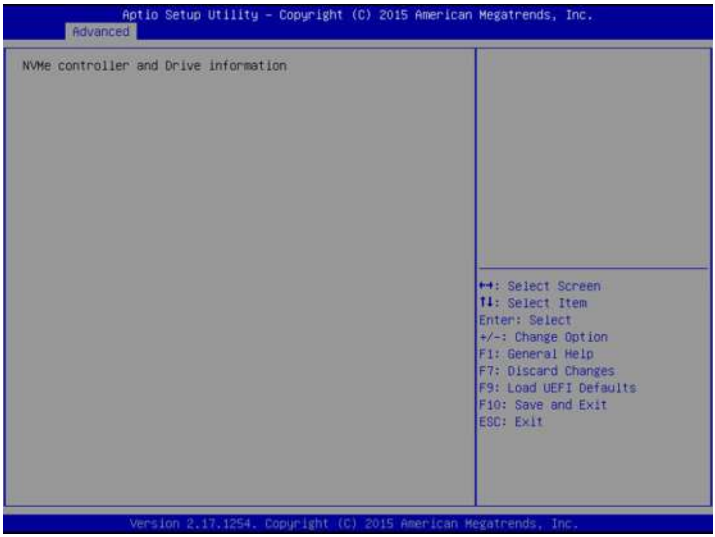
SATA Aggressive Link Power Mgmt

Use this item to enable or disable SALP.

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

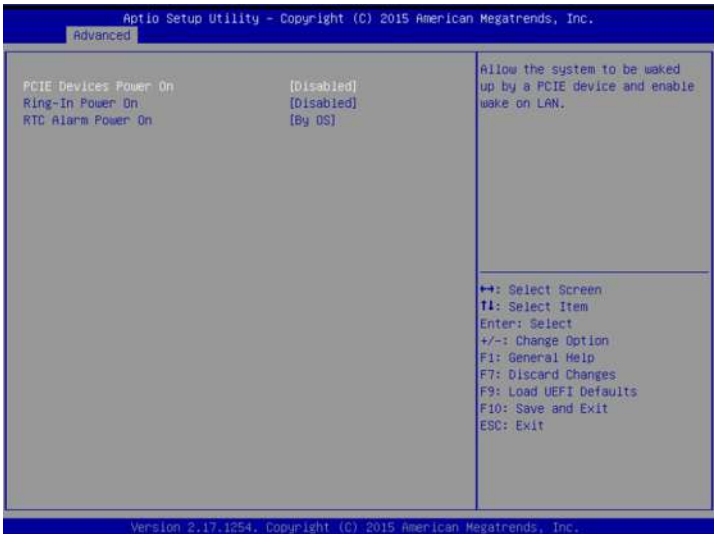
Use this item to enable or disable the S.M.A.R.T. (Self-Monitoring, Analysis, and Reporting Technology) feature. Configuration options: [Disabled] and [Enabled].

3.3.5 NVMe Configuration



The NVMe Configuration displays the NVMe controller and Drive information.

3.3.6 ACPI Configuration



PCIE Devices Power On

Use this item to enable or disable PCIE devices to turn on the system from the power-soft-off mode.

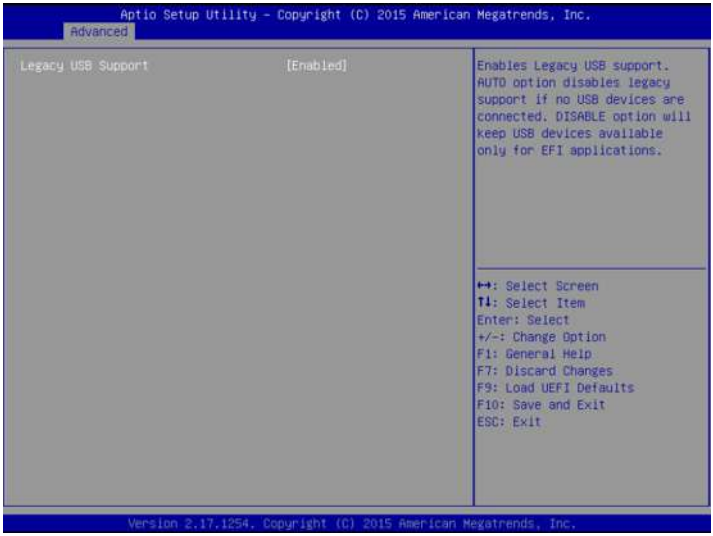
Ring-In Power On

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.

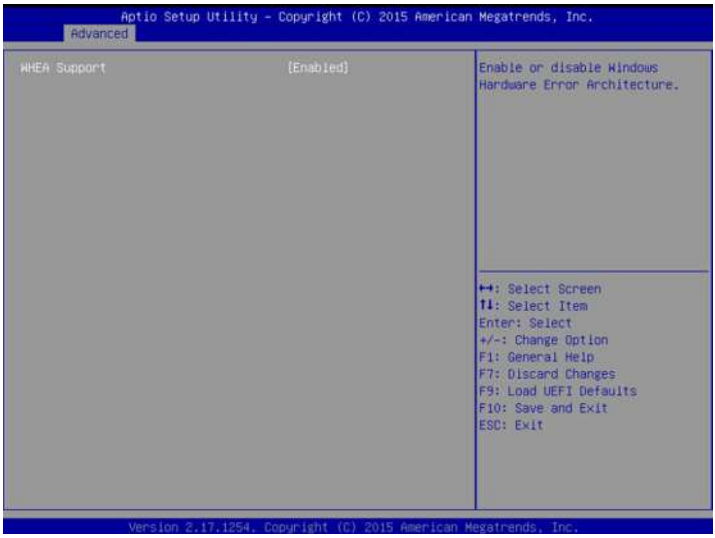
3.3.7 USB Configuration



Legacy USB Support

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

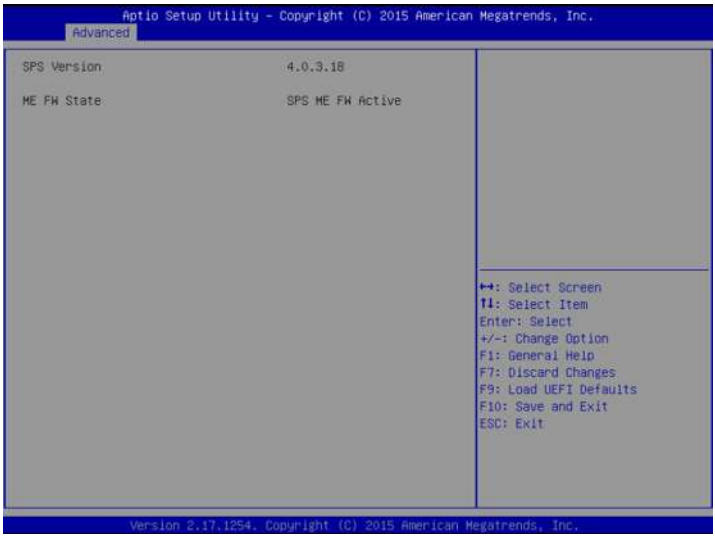
3.3.8 WHEA Configuration



WHEA Support

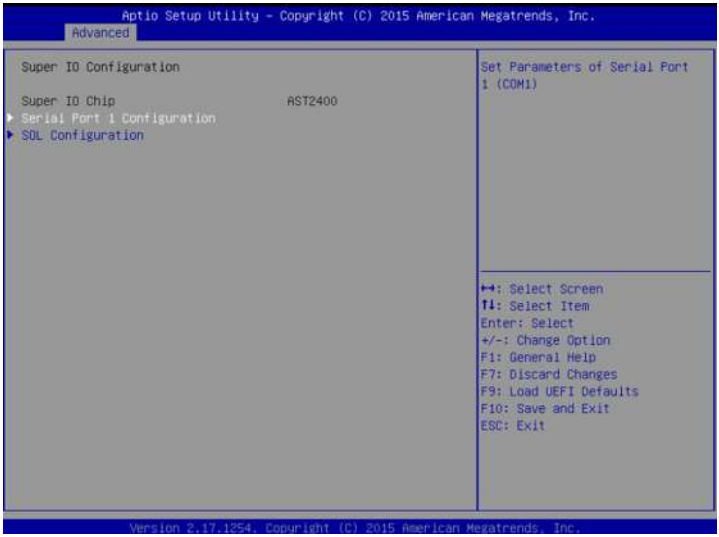
Use this item to enable or disable Windows Hardware Error Architecture.

3.3.9 Intel Server Platform Services



Displays the information of the Intel server platform services.

3.3.10 Super IO Configuration



Serial Port 1 Configuration

Use this item to configure the onboard serial port 1.

Select and enter the "Serial Port 1 Configuration" and you will see the followings:

Serial Port
Use this item to enable or disable the onboard serial port.

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

SOL Configuration *(For E3C236D4U / E3C232D4U only)*

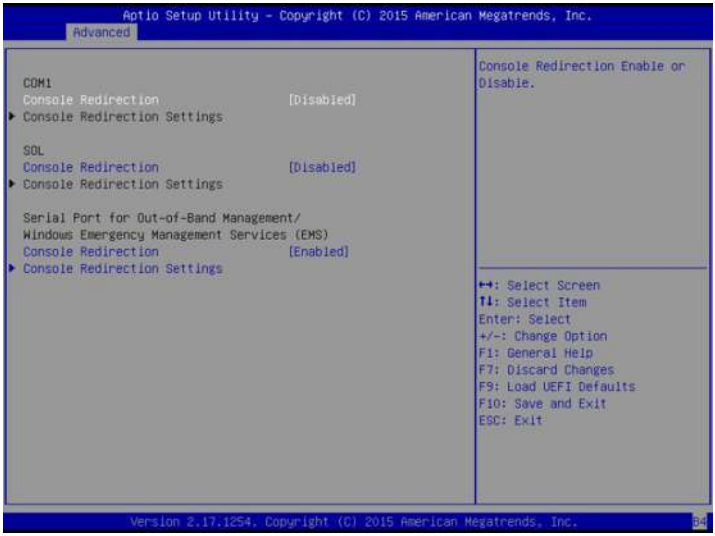
Use this item to set parameters of SOL.

Select and enter the ""SOL Configuration" and you will see the followings:

SOL Port
Use this item to enable or disable the SOL port.

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

3.3.11 Serial Port Console Redirection



COM1 *(For E3C236D4U / E3C232D4U-V1L)* / SOL *(For E3C236D4U only)*

Console Redirection

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

Console Redirection Settings

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

Terminal Type

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

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

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

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].

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

Console Redirection

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

Console Redirection Settings

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

Terminal Type

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

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

Bits Per Second

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

Flow Control

Use this item to set the flow control to prevent data loss from buffer overflow. When sending data, if the receiving buffers are full, a "stop" signal can be sent to stop the data flow. Once the buffers are empty, a "start" signal can be sent to restart the flow. Hardware flow uses two wires to send start/stop signals. The options include [None], [Hardware RTS/CTS], and [Software Xon/Xoff].

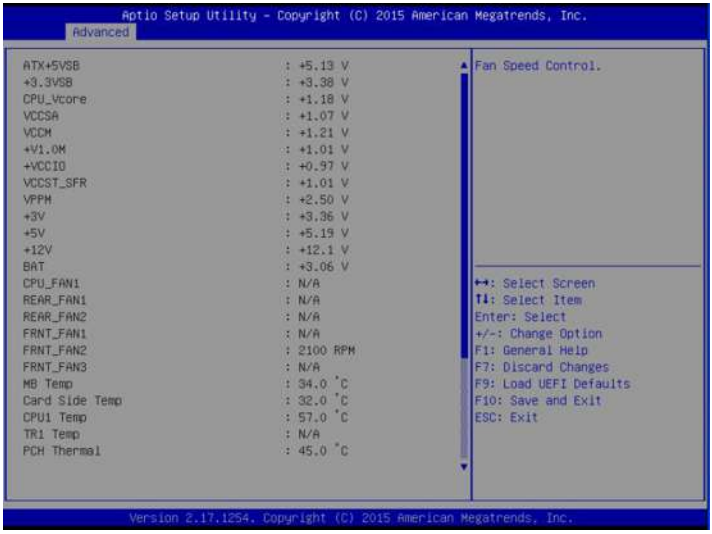
Data Bits

Parity

Stop Bits

3.3.12 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.



CPU_FAN1

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

REAR_FAN1

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

REAR_FAN2

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

FRNT_FAN1

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

FRNT_FAN2

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

FRNT_FAN3

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

Smart Fan Control *(For E3C236D4U only)*

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

Smart Fan Duty Control

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

This allows you to set duty cycle for each stage.

Smart Fan Temp Control

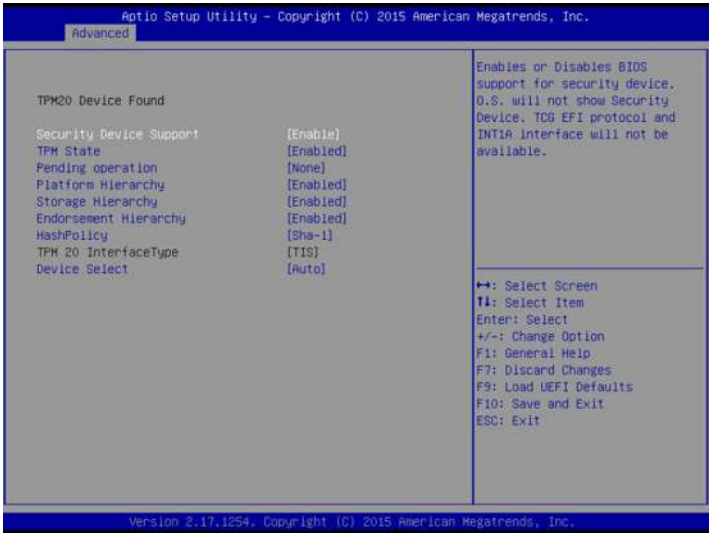
Smart Fan Temp x (x means 1 to 11 stage)

This allows you to set temperature for each stage.

Watch Dog Timer

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

3.3.13 Trusted Computing



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

Security Device Support

Use this item to enable or disable BIOS support for security device. O.S. will not show Security Device. TCG EFI protocol and INT1A interface will not be available.

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.

Device Select

Use this item to select the TPM device to be supported.

3.3.14 Intel TXT Information

Intel TXT(LT) Support

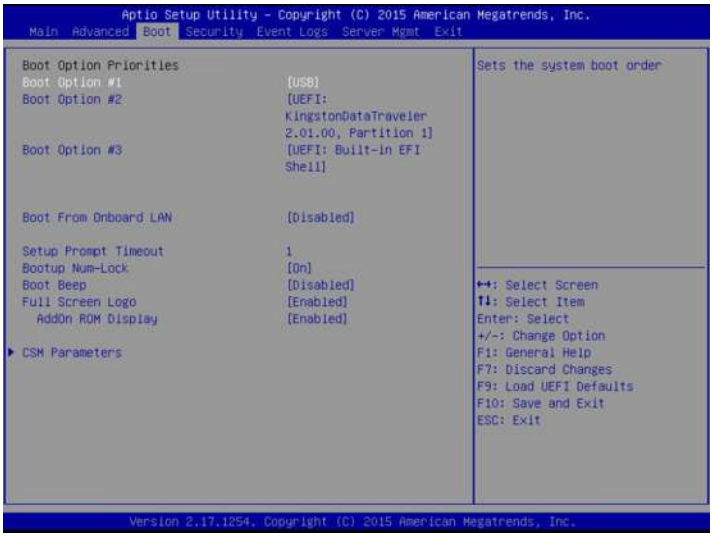
Use this item to enable or disable Intel(R) TXT(LT) support.

3.3.15 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 Boot Screen

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



Boot Option #1

Use this item to set the system boot order.

Boot Option #2

Use this item to set the system boot order.

Boot Option #3

Use this item to set the system boot order.

Boot From Onboard LAN

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

Setup Prompt Timeout

This shows the number of seconds to wait for setup activation key. 65535(0XFFFF) means indefinite waiting.

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.

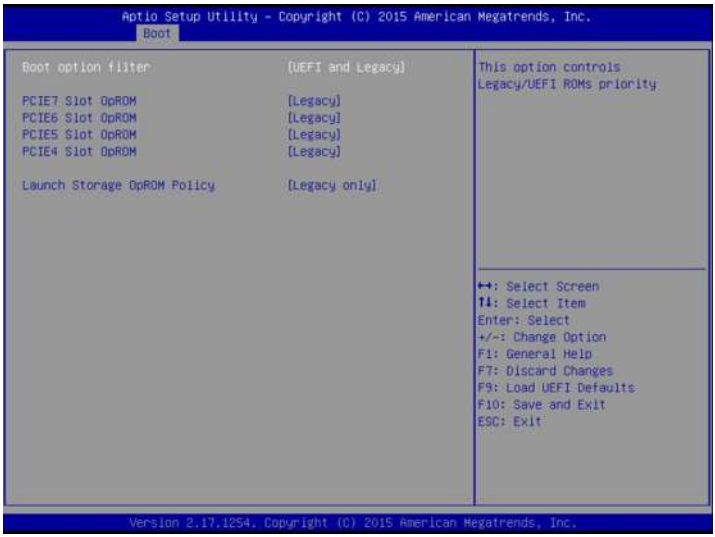
Full Screen Logo

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].

3.4.1 CSM Parameters



Boot Option Filter

This option controls Legacy/UEFI ROMs priority.

PCIE7 Slot OpROM

This option controls Legacy/UEFI ROMs priority.

PCIE6 Slot OpROM

This option controls Legacy/UEFI ROMs priority.

PCIE5 Slot OpROM

This option controls Legacy/UEFI ROMs priority.

PCIE4 Slot OpROM

This option controls Legacy/UEFI ROMs priority.

Launch 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.

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.

3.6 Event Logs

Change Smbios Event Log Settings

This allows you to configure the Smbios Event Log Settings.

When entering the item, you will see the followings:

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

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

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

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.

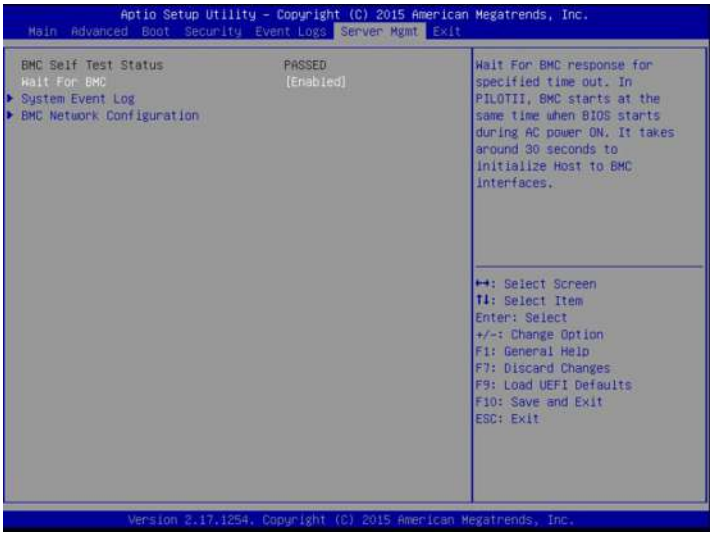
METW (Multiple Event Time Window)
Use this item to specify the number of minutes which must pass between duplicate log entries which utilize a multiple-event counter. The value ranges from 0 to 99 minutes.

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.

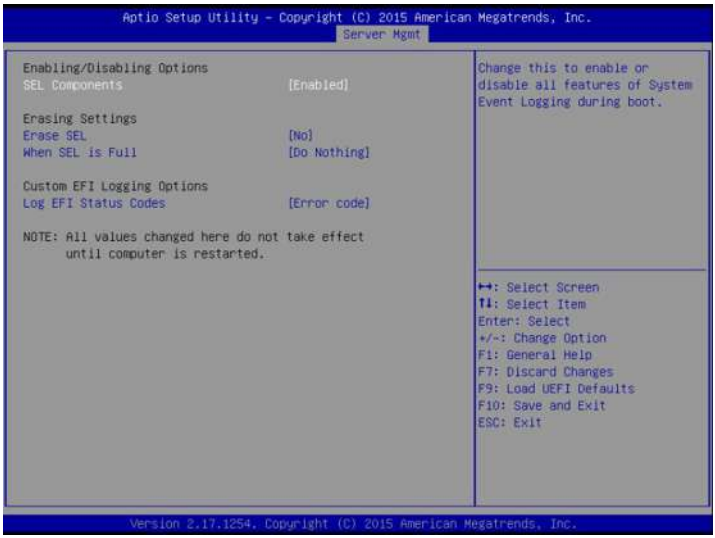
3.7 Server Mgmt (For E3C236D4U only)



Wait For BMC

Wait For BMC response for specified time out. In PILOTII, BMC starts at the same time when BIOS starts during AC power ON. It takes around 30 seconds to initialize Host to BMC interfaces.

3.7.1 System Event Log



SEL Components

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

Erase SEL

Use this to choose options for erasing 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 or both.

3.7.2 BMC Network Configuration

Lan Channel (Failover)

Manual setting IPMI LAN

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

Configuration Address Source

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

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

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

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

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

BMC Mac Backup Tool

Use this to restore BMC Mac from the backup.

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.

Chapter 4 Software Support

4.1 Install Operating System

This motherboard supports various Microsoft® Windows® Server 2008 R2 SP1 / 2012 / 2012 R2 / Linux compliant. Because motherboard settings and hardware options vary, use the setup procedures in this chapter for general reference only. Refer to your OS documentation for more information.

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

4.2 Support CD Information

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

4.2.1 Running The Support CD

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

4.2.2 Drivers Menu

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

4.2.3 Utilities Menu

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

4.2.4 Contact Information

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

Chapter 5 Troubleshooting

5.1 Troubleshooting Procedures

Follow the procedures below to troubleshoot your system.

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

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

If there is no power...

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

If there is no video...

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

If there are memory errors...

1. Verify that the DIMM modules are properly seated in the slots.
2. Use recommended DDR4 2133 UDIMMs.
3. If you have installed more than one DIMM modules, they should be identical with the same brand, speed, size and chip-type.
4. Try inserting different DIMM modules into different slots to identify faulty ones.
5. Check the settings of the 115V/230V switch on the power supply.

Unable to save system setup configurations...

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

Other problems...

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

5.2 Technical Support Procedures

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

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

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

5.3 Returning Merchandise for Service

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

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

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

Chapter 6 Net Framework Installation Guide

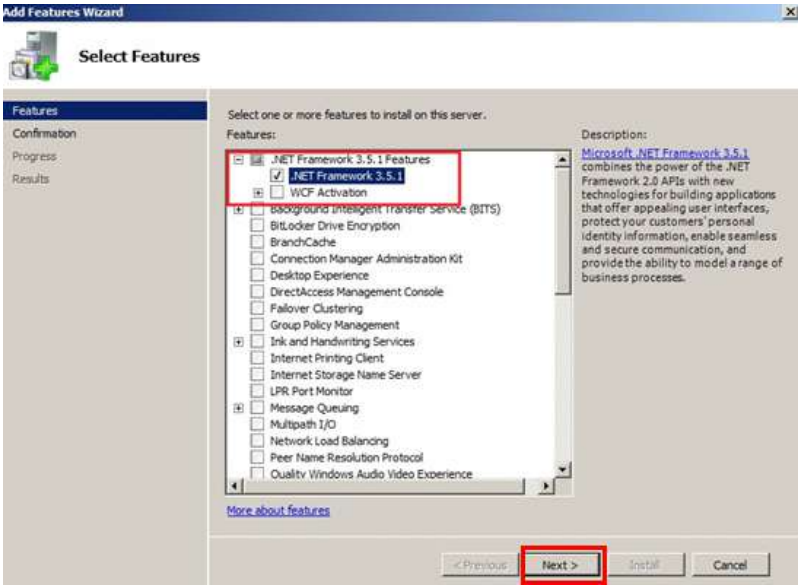
To let Intel® RSTe works properly, it is required to install Net Framework. Please follow the steps below to enable ".Net Framework" feature on Microsoft® Windows® Server 2008 R2.

6.1 Installing .Net Framework 3.5.1 (For Server 2008 R2)

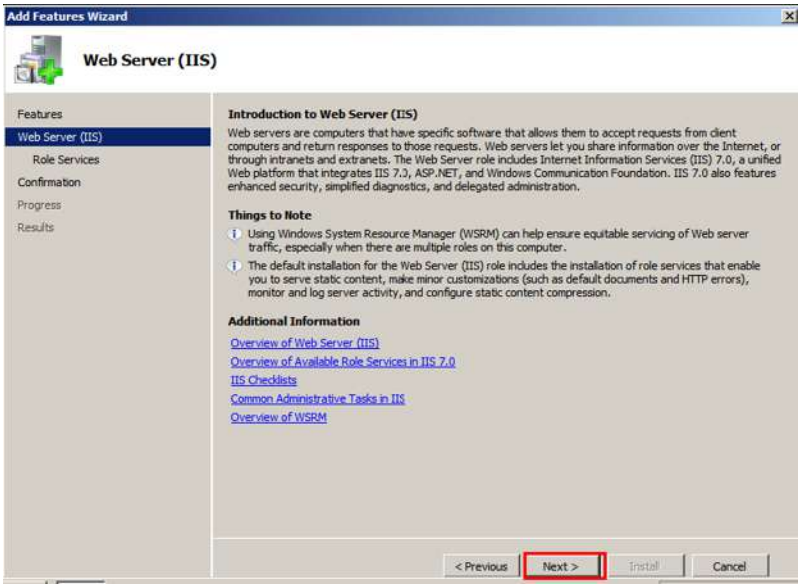
1. Double-click the Server Manager icon in the Windows system tray.

2. Click Add Features in the right hand pane.

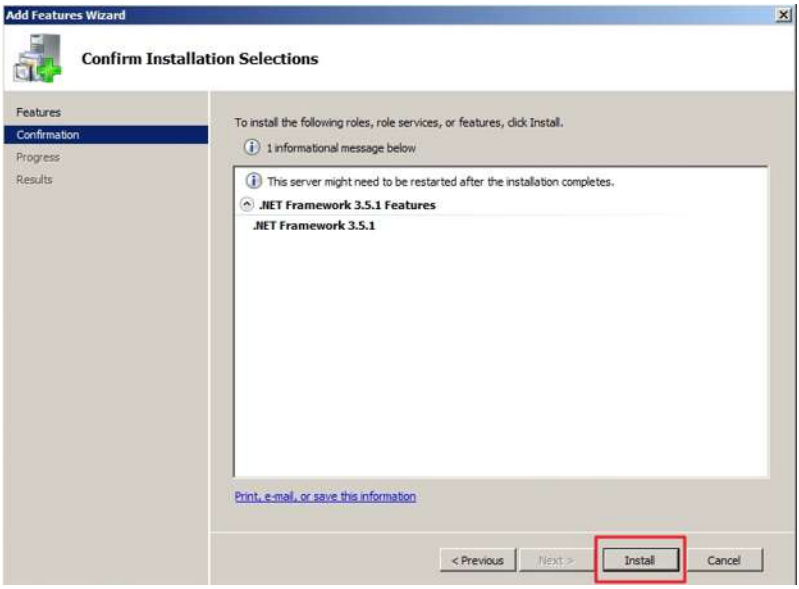
3. Check the box next to .Net Framework 3.5.1 and then click **Next.**



4. Click **Next** to continue.



5. Click **Install** to start installing .Net Framework 3.5.1.



6. After the installation completes, click **Close.**