HPM-621DE

Intel® Xeon® Scalable Processors / Intel® Xeon® Scalable Processors up to 150W TDP

User's Manual

6th Ed –16 February 2023

Part No: E2047PM2105R

FCC Statement

THIS DEVICE COMPLIES WITH PART 15 FCC RULES. OPERATION IS SUBJECT TO THE FOLLOWING TWO CONDITIONS:

(1) THIS DEVICE MAY NOT CAUSE HARMFUL INTERFERENCE.

(2) THIS DEVICE MUST ACCEPT ANY INTERFERENCE RECEIVED INCLUDING INTERFERENCE THAT MAY CAUSE UNDESIRED OPERATION.

THIS EQUIPMENT HAS BEEN TESTED AND FOUND TO COMPLY WITH THE LIMITS FOR A CLASS "A" DIGITAL DEVICE, PURSUANT TO PART 15 OF THE FCC RULES.

THESE LIMITS ARE DESIGNED TO PROVIDE REASONABLE PROTECTION AGAINST HARMFUL INTERFERENCE WHEN THE EQUIPMENT IS OPERATED IN A COMMERCIAL ENVIRONMENT. THIS EQUIPMENT GENERATES, USES, AND CAN RADIATE RADIO FREQUENCY ENERGY AND, IF NOT INSTALLED AND USED IN ACCORDANCE WITH THE INSTRUCTION MANUAL, MAY CAUSE HARMFUL INTERFERENCE TO RADIO COMMUNICATIONS.

OPERATION OF THIS EQUIPMENT IN A RESIDENTIAL AREA IS LIKELY TO CAUSE HARMFUL INTERFERENCE IN WHICH CASE THE USER WILL BE REQUIRED TO CORRECT THE INTERFERENCE AT HIS OWN EXPENSE.

Notice

This guide is designed for experienced users to setup the system within the shortest time. For detailed information, please always refer to the electronic user's manual.

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5. Write the RMA number visibly on the outside of the package and ship it prepaid to your dealer.

Content

1. Getting Started 8
1.1 Safety Precautions 8
1.2 Packing List 8
1.3 Document Amendment History 9
1.4 Manual Objectives 10
1.5 System Specifications 11
1.6 Architecture Overview—Block Diagram 15
2. Hardware Configuration 16
2.1 Product Overview 17
2.2 Jumper and Connector List 18
2.3 Setting Jumpers & Connectors 21
2.3.1 ME Firmware Recovery (JME_RCVR1) 21
2.3.2 Flash Descriptor Security override (JME1) 21
2.3.3 BMC strap setting (JBMC_DB1) 22
2.3.4 Clear CMOS (JCMOS1) 23
2.3.5 CPLD strap setting for BMC Present or not (JBMC_PST1) 23
2.3.6 Audio connector (JHD-AUDIO1) 24
2.3.7 CPLD JTAG header (JCPLD_JTAG1) 24
2.3.8 System fan connector 1 (SYS_FAN1) 25
2.3.9 System fan connector 2 (SYS_FAN2) 25
2.3.10 System fan connector 3 (SYS_FAN3) 26
2.3.11 System fan connector 4 (SYS_FAN4) 26
2.3.12 CPU fan connector 1 (CPU1_FAN1) 27
2.3.13 CPU fan connector 2 (CPU2_FAN1) 27
2.3.14 HDD fan connector (HDD_FAN1) 28
2.3.15 SPI connector (JSPI1) 28
2.3.16 Serial port 1 connector (JCOM1) 29
2.3.17 Serial port 2 connector (JCOM2) 29
2.3.18 Serial General purpose I/O connector 1 (JSGPIO1) 30
2.3.19 Serial General purpose I/O connector 2 (JSGPIO2) 30
2.3.20 ATX 12V Power connector 1 (ATX12V1) 31
2.3.21 ATX 12V Power connector 2 (ATX12V2) 31
2.3.22 ATX Power connector (ATXPWR1) 32
2.3.23 Power supply PMBus connector (PMBUS1) 32
2.3.24 USB3.2 Gen1 connector (JUSB1) 33
2.3.25 USB2.0 connector (JUSB2) 33
2.3.26 Front Panel connector (JFP1) 34

2.3.27 PCIE 12V power connector (PCIE12V1) 34
2.3.28 Inlet Thermal Sensors connector (INLET_SER1) 35
2.3.29 Outlet Thermal Sensors connector (OUTLET_SER1) 35
2.3.30 HDD Backplane thermal Sensors connector (HDD_SER1) 36
2.3.31 VGA connector (JVGA1) 36
2.3.32 For BMC debug message read (JBMC_UART5) 37
2.3.33 CASE OPEN connector (JCASE_OPEN1) 37
2.3.34 RAID KEY connector (RAID_KEY1) 38
2.4 CPU installation 39
3.BIOS Setup 43
3.1 Introduction 44
3.2 Starting Setup 44
3.3 Using Setup 45
3.4 Getting Help 46
3.5 In Case of Problems 46
3.6 BIOS setup 47
3.6.1 Main Menu 47
3.6.1.1 System Language 48
3.6.1.2 System Date 48
3.6.1.3 System Time 48
3.6.2 Advanced Menu 48
3.6.2.1 Processor Configuration 49
3.6.2.1.1 CPU P State Control 50
3.6.2.1.2 CPU C State Control 50
3.6.2.1.3 Package C State Control 51
3.6.2.2 Common RefCode Configuration 52
3.6.2.3 UPI Configuration 52
3.6.2.4 Memory Configuration 53
3.6.2.4.1 Memory Topology 54
3.6.2.5 IIO Configuration 54
3.6.2.5.1 Intel® VT for Directed I/O (VT-d) 55
3.6.2.5.2 Intel® VMD Technology 55
3.6.2.6 PCI Express Configuration 57
3.6.2.7 sSATA Configuration 58
3.6.2.8 SATA Configuration 59
3.6.2.8.1 SATA Mode options 60
3.6.2.9 Miscellaneous Configuration 60
3.6.2.10 Server ME Configuration 61
3.6.2.11 Trusted Computing 62
3.6.2.12 ACPI Settings 62

3.6.2.13 Serial Port Console Redirection 63
3.6.2.13.1 Legacy Console Redirection Settings 64
3.6.2.14 Super IO Configuration 65
3.6.2.14.1 Serial Port 1 Configuration 65
3.6.2.14.2 Serial Port 2 Configuration 66
3.6.2.15 USB Configuration 67
3.6.2.16 NVMe Configuration 68
3.6.2.17 Option ROM Dispatch Policy 68
3.6.2.18 Network Stack Configuration 70
3.6.2.19 Intel® Virtual RAID on CPU 70
3.6.2.19.1 All Intel VMD Controllers 71
3.6.3 Server Mgmt 71
3.6.3.1 System Event Log 72
3.6.3.2 Bmc self test log 73
3.6.3.3 BMC network configuration 74
3.6.3.4 BMC User Settings 75
3.6.3.4.1 BMC Add User Details 76
3.6.3.4.2 BMC Delete User Details 77
3.6.3.4.3 BMC Change User Settings 77
3.6.4 Security 78
3.6.4.1 Secure Boot 78
3.6.4.1.1 Key Management 79
3.6.5 Boot 80
3.6.6 Save and exit 81
3.6.6.1 Save Changes and Reset 82
3.6.6.2 Discard Changes and Reset 82
3.6.6.3 Restore Default Values 82
3.6.6.4 Save the User Default Values 82
3.6.6.5 Restore the User Default Values 82
4. Drivers Installation 83
4.1 Install Chipset Driver 84
4.2 Install VGA Driver 85
4.3 Install Ethernet Driver 86
4.4 Install VROC Driver 87
5. Mechanical Drawing 89

1. Getting Started

1.1 Safety Precautions

Warning!

Always completely disconnect the power cord from your chassis whenever you work with the hardware. Do not make connections while the power is on. Sensitive electronic components can be damaged by sudden power surges. Only experienced electronics personnel should open the PC chassis.

Caution!

Always ground yourself to remove any static charge before touching the CPU card. Modern electronic devices are very sensitive to static electric charges. As a safety precaution, use a grounding wrist strap at all times. Place all electronic components in a static-dissipative surface or static-shielded bag when they are not in the chassis.

1.2 Packing List

Before you begin installing your single board, please make sure that the following materials have been shipped:

- 1 x HPM-621DE motherboard
- 1 x I/O Shield

If any of the above items is damaged or missing, contact your retailer.

1.3 Document Amendment History

Revision	Date	By	Comment
1st	September 2020	Avalue	Initial Release
2nd	December 2020	Avalue	Update 2.2 Jumper and Connector Lis
3rd	July 2021	Avalue	Update 2.3 Setting Jumpers & Connectors
4th	October 2021	Avalue	Update 2.3 Setting Jumpers & Connectors
5th	April 2022	Avalue	Update 2.3 Setting Jumpers & Connectors
6th	February 2023	Avalue	Update 1.5 System Specifications

1.4 Manual Objectives

This manual describes in details Avalue Technology HPM-621DE Single Board.

We have tried to include as much information as possible but we have not duplicated information that is provided in the standard IBM Technical References, unless it proved to be necessary to aid in the understanding of this board.

We strongly recommend that you study this manual carefully before attempting to set up HPM-621DE or change the standard configurations. Whilst all the necessary information is available in this manual we would recommend that unless you are confident, you contact your supplier for guidance.

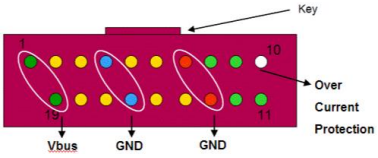
Please be aware that it is possible to create configurations within the CMOS RAM that make booting impossible. If this should happen, clear the CMOS settings, (see the description of the Jumper Settings for details).

If you have any suggestions or find any errors regarding this manual and want to inform us of these, please contact our Customer Service department with the relevant details.

1.5 System Specifications

<table>
<tr><th>System</th><td></td></tr>
<tr><th>CPU</th><td>Supports dual 2nd Gen. Intel® Xeon® Scalable Processors / Intel® Xeon® Scalable Processors up to 150W TDP</td></tr>
<tr><th>BIOS</th><td>AMI UEFI BIOS</td></tr>
<tr><th>System Chipset</th><td>Intel C621 Chipset</td></tr>
<tr><th>System Memory</th><td>12 x DDR4 2933/2666/2400/2133 RDIMM/LRDIMM up to 1.5TB
<table>
<tr><th rowspan="3">Type</th><th rowspan="3">Ranks Per DIMM and Data Width</th><th colspan="3" rowspan="2">DIMM Capacity (GB)</th><th colspan="3">Speed (MT/s); Voltage (V); Slots per Channel (SPC) & DIMMs per Channel (DPC)</th></tr>
<tr><th colspan="1">1 Slot per Channel</th><th colspan="2">2 Slots per Channel</th></tr>
<tr><th colspan="3">DRAM Density</th><th>1DPC</th><th>1DPC</th><th>2DPC</th></tr>
<tr><th>4Gb[2]</th><th>8Gb</th><th>16Gb[1]</th><th>1.2V</th><th>1.2V</th><th>1.2V</th></tr>
<tr><td>RDIMM</td><td>SRx8</td><td>4GB</td><td>8GB</td><td>16GB</td><td rowspan="10">2933[3]</td><td rowspan="10">2933[3]</td><td rowspan="10">2666</td></tr>
<tr><td>RDIMM</td><td>SRx4</td><td>8GB</td><td>16GB</td><td>32GB</td></tr>
<tr><td>RDIMM</td><td>DRx8</td><td>8GB</td><td>16GB</td><td>32GB</td></tr>
<tr><td>RDIMM</td><td>DRx4</td><td>16GB</td><td>32GB</td><td>64GB</td></tr>
<tr><td rowspan="2">RDIMM 3DS</td><td>QRx4</td><td>N/A</td><td>2H-64GB</td><td>2H-128GB</td></tr>
<tr><td>8Rx4</td><td>N/A</td><td>4H-128GB</td><td>4H-256GB</td></tr>
<tr><td>LRDIMM</td><td>QRx4</td><td>32GB</td><td>64GB</td><td>128GB</td></tr>
<tr><td rowspan="2">LRDIMM 3DS</td><td>QRx4</td><td>N/A</td><td>2H-64GB</td><td>2H-128GB</td></tr>
<tr><td>8Rx4</td><td>N/A</td><td>4H-128GB</td><td>4H-256GB</td></tr>
</table>
[1] 16Gb DRAM density based DIMMs are supported on Cascade Lake only (not available on Skylake-SP)
[2] 4Gb DRAM density is only supported on speeds up to 2666MT/s
[3] 2933 MT/s 1DPC is available on Cascade Lake Platinum 82xx and Gold 62xx Series SKUs only</td></tr>
<tr><th>Watchdog Timer</th><td>System reset event
0~6553 second.</td></tr>
<tr><th>H/W Status Monitor</th><td>Temperature.
Fan.
Voltage.
Case open. (1 x 2.5mm pitch Box Wafer, Pinrex 753-71-02TW07 or equivalent)
Please refer to note 1 for more information.</td></tr>
<tr><th>RAID</th><td>Intel C621 software RAID 0,1,5,10</td></tr>
<tr><th>TPM</th><td>TPM 2.0 onboard</td></tr>
<tr><th>Other</th><td>IPMI 2.0 with AST 2500 BMC controller onboard.</td></tr>
<tr><th>Expansion Slot</th><td></td></tr>
<tr><th>PCIe</th><td>4 x PCIe x16 slots, 2 x PCIe x8 slots
Slot 1, PCIe 3.0 x16 from CPU1
Slot 3, PCIe 3.0 x16 from CPU1
Slot 4, PCIe 3.0 x16 from CPU2
Slot 5, PCIe 3.0 x16 from CPU2
Slot 6, PCIe 3.0 x8 from CPU1
Slot 7, PCIe 3.0 x8 from CPU1 (Slot 7 is the slot closest to CPU)</td></tr>
<tr><th>PCI</th><td>Slot 2, PCI 3.0 slot</td></tr>
<tr><th>Storage</th><td></td></tr>
</table>

For use under CMI-1 AD2304 only

<table>
<tr><td>M.2</td><td>1 x M.2 M-Key PCIe 3.0 x4 NVMe SSD
2242/2260/2280 form factor</td></tr>
<tr><td>SATA</td><td>10 x SATA III Supports up to 6.0 Gb/s</td></tr>
<tr><td>Oculink</td><td>4 x OCuLink ports from CPU 2</td></tr>
<tr><td>Edge I/O</td><td></td></tr>
<tr><td>LAN</td><td>4 x RJ45 (LAN1 share IPMI port)</td></tr>
<tr><td>USB 3.1</td><td>4 x USB 3.2 Gen1</td></tr>
<tr><td>Onboard I/O</td><td></td></tr>
<tr><td>COM</td><td>2 x RS232 ports (2 x 2.0mm pitch Box Header, CKM 2008WVS-10-AA or equivalent)
Pin definition: Follow Avalue standard.</td></tr>
<tr><td>USB 2.0</td><td>2 x USB 2.0 ports (1 x USB 2.0 2.54mm pitch Box Header)
Pin definition :
<table>
<tr><td>VCC</td><td>Pin 1</td><td>Pin 2</td><td>VCC</td></tr>
<tr><td>USB0-</td><td>Pin 3</td><td>Pin 4</td><td>USB1-</td></tr>
<tr><td>USB0+</td><td>Pin 5</td><td>Pin 6</td><td>USB1+</td></tr>
<tr><td>GND</td><td>Pin 7</td><td>Pin 8</td><td>GND</td></tr>
<tr><td>Key</td><td>Pin 9</td><td>Pin 10</td><td>No Connection</td></tr>
</table></td></tr>
<tr><td>USB 3.1</td><td>2 x USB 3.2 Gen1 ports (1 x 2.0mm pitch Box Header, Pinrex 52X-8020GB52 or equivalent)
Pin definition :
 

<table>
<tr><th>Pin No.</th><th>Signal</th><th>Description</th></tr>
<tr><td>1</td><td>Vbus</td><td>Power</td></tr>
<tr><td>2</td><td>IntA_P1_SSRX-</td><td>USB3 ICC Port1 SuperSpeed Rx-</td></tr>
<tr><td>3</td><td>IntA_P1_SSRX+</td><td>USB3 ICC Port1 SuperSpeed Rx+</td></tr>
<tr><td>4</td><td>GND</td><td>GND</td></tr>
<tr><td>5</td><td>IntA_P1_SSTX-</td><td>USB3 ICC Port1 SuperSpeed Tx-</td></tr>
<tr><td>6</td><td>IntA_P1_SSTX+</td><td>USB3 ICC Port1 SuperSpeed Tx+</td></tr>
<tr><td>7</td><td>GND</td><td>GND</td></tr>
<tr><td>8</td><td>IntA_P1_D-</td><td>USB3 ICC Port1 D- (USB2 Signal D-)</td></tr>
<tr><td>9</td><td>IntA_P1_D+</td><td>USB3 ICC Port1 D+ (USB2 Signal D+)</td></tr>
<tr><td>10</td><td>ID</td><td>Over Current Protection</td></tr>
<tr><td>11</td><td>IntA_P2_D+</td><td>USB3 ICC Port2 D+ (USB2 Signal D+)</td></tr>
<tr><td>12</td><td>IntA_P2_D-</td><td>USB3 ICC Port2 D- (USB2 Signal D-)</td></tr>
<tr><td>13</td><td>GND</td><td>GND</td></tr>
<tr><td>14</td><td>IntA_P2_SSTX+</td><td>USB3 ICC Port2 SuperSpeed Tx+</td></tr>
<tr><td>15</td><td>IntA_P2_SSTX-</td><td>USB3 ICC Port2 Super Speed Tx-</td></tr>
<tr><td>16</td><td>GND</td><td>GND</td></tr>
<tr><td>17</td><td>IntA_P2_SSRX+</td><td>USB3 ICC Port2 SuperSpeed Rx+</td></tr>
<tr><td>18</td><td>IntA_P2_SSRX-</td><td>USB3 ICC Port2 SuperSpeed Rx-</td></tr>
<tr><td>19</td><td>Vbus</td><td>Power</td></tr>
</table></td></tr>
<tr><td>CPU/System</td><td>2 x 4 Pin CPU Fan Header (4 Pin PWM)</td></tr>
</table>

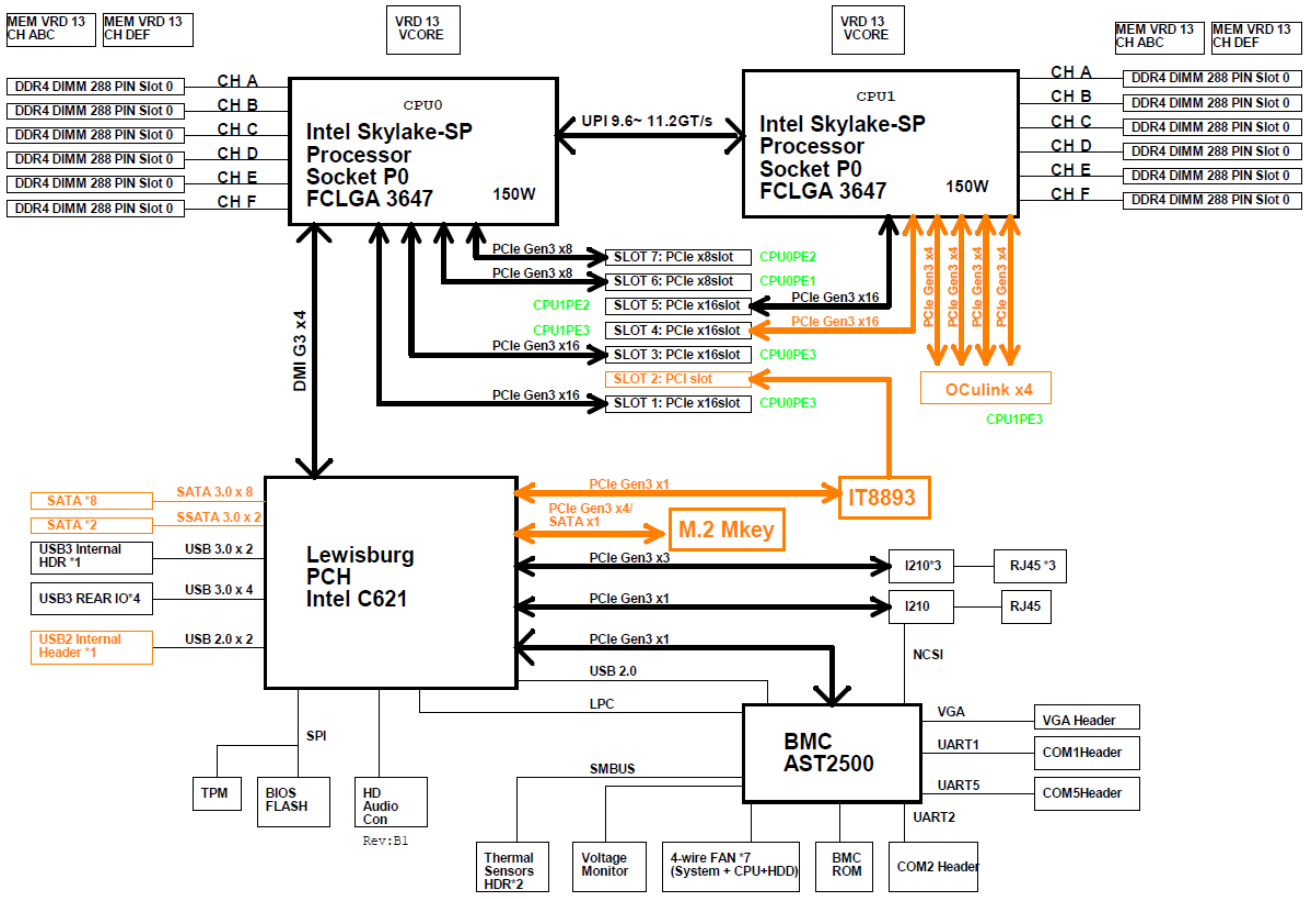
<table>
<tr><td>FAN</td><td>5 x 4 Pin Chassis Fan Header (4 Pin PWM)</td></tr>
<tr><td>Buzzer</td><td>1 x onboard buzzer</td></tr>
<tr><td>Front Panel</td><td>1 x front panel connector (2.54 mm Pitch)
<table>
<tr><td>Pin</td><td>Function</td><td>Pin</td><td>Function</td></tr>
<tr><td>1-3</td><td>HDD LED</td><td>2-4</td><td>POWER LED</td></tr>
<tr><td>5-7</td><td>RESET BUTTON</td><td>6-8</td><td>POWER BUTTON</td></tr>
<tr><td>9-11</td><td>STATUS LED</td><td>10-12</td><td>LAN1 ACT LED</td></tr>
<tr><td>13-15</td><td>UID LED</td><td>14-16</td><td>STBY POWER LED</td></tr>
<tr><td>17-19</td><td>UID BUTTON</td><td>18-20</td><td>LAN2-X ACT LED</td></tr>
</table></td></tr>
<tr><td>RTC Battery</td><td>1 x Horizontal Socket Type CMOS Battery Holder with CR2450</td></tr>
<tr><td>Clear CMOS</td><td>1 x Clear CMOS header (1 x 2.0 mm pitch Header)</td></tr>
<tr><td>HD Audio</td><td>1 x HD Audio Header (2.0mm pitch header)</td></tr>
<tr><td>Display</td><td></td></tr>
<tr><td>Graphic Chipset</td><td>1 x VGA port (1 x 2.0mm pitch Box Header, CKM 2008WV-16-BK-HF or equivalent)
AST2500 BMC controller</td></tr>
<tr><td>Spec. & Resolution</td><td>1920 x 1200@60Hz 32bpp</td></tr>
<tr><td>Ethernet</td><td></td></tr>
<tr><td>LAN Chipset</td><td>4 x Intel I210AT</td></tr>
<tr><td>LAN Spec.</td><td>1 Gigabit Ethernet Controller</td></tr>
<tr><td>Mechanical & Environmental</td><td></td></tr>
<tr><td>Power Requirement</td><td>1 x Std. 24 pin ATX Connector
2 x 8 Pin SSI 12V Connectors</td></tr>
<tr><td>ACPI</td><td>Yes</td></tr>
<tr><td>Power Mode</td><td>H/W: ATX power well design only
BMC: AT (Default)</td></tr>
<tr><td>Operating Temp.</td><td>0 °C to 60 °C</td></tr>
<tr><td>Storage Temp.</td><td>-40 °C to 85 °C</td></tr>
<tr><td>Operating Humidity</td><td>40°C 95% non-condensing</td></tr>
<tr><td>Size (L x W)
(Please consult product engineers for the production feasibility if the size is larger than 410x360mm or smaller than 80x70mm)</td><td>EATX form factor
12” x 13” (304.8mm x 330.2mm)</td></tr>
<tr><td>Weight</td><td>1.81 kg</td></tr>
</table>

Vibration Test	Follow Avalue standard test. Random Vibration Operation 1 Test PSD : 0.00454G²/Hz , 1.5 Grms 2 System condition : operation mode 3 Test frequency : 5~500 Hz 4 Test axis : X,Y and Z axis 5 Test time : 30 minutes per each axis 6 IEC60068-2-64 Test Fh 6 Storage : mSATA Random vibration test (Non-operation) 1 PSD: 0.00808G²/Hz , 2.0 Grms 2 Non-Operation mode 3 Test Frequency : 5-500Hz 4 Test Axis : X,Y and Z axis 5 30 min. per each axis 6 IEC 60068-2-64 Test:Fh Package Vibration Test: 1 Test PSD : 0.026G²/Hz , 2.16 Grms 2 Test frequency : 5~500 Hz 3 Test axis : X,Y and Z axis 4 Test time : 30 minutes per each axis 5 IEC 60068-2-64 Test Fh
Drop Test	Follow Avalue standard test. Reference ISTA 2A, Method : IEC-60068-2-32 Test:Ed Test Ea : Drop Test 1 Test phase : One corner, three edges, six faces 2 Test high : 96.5cm 3 Package weight : 5Kg 4 Test drawing
OS Information	Windows : Windows 10 IOT Enterprise, Windows server 2016, Windows server 2019 Linux : Ubuntu 18.04

Note: Specifications are subject to change without notice.

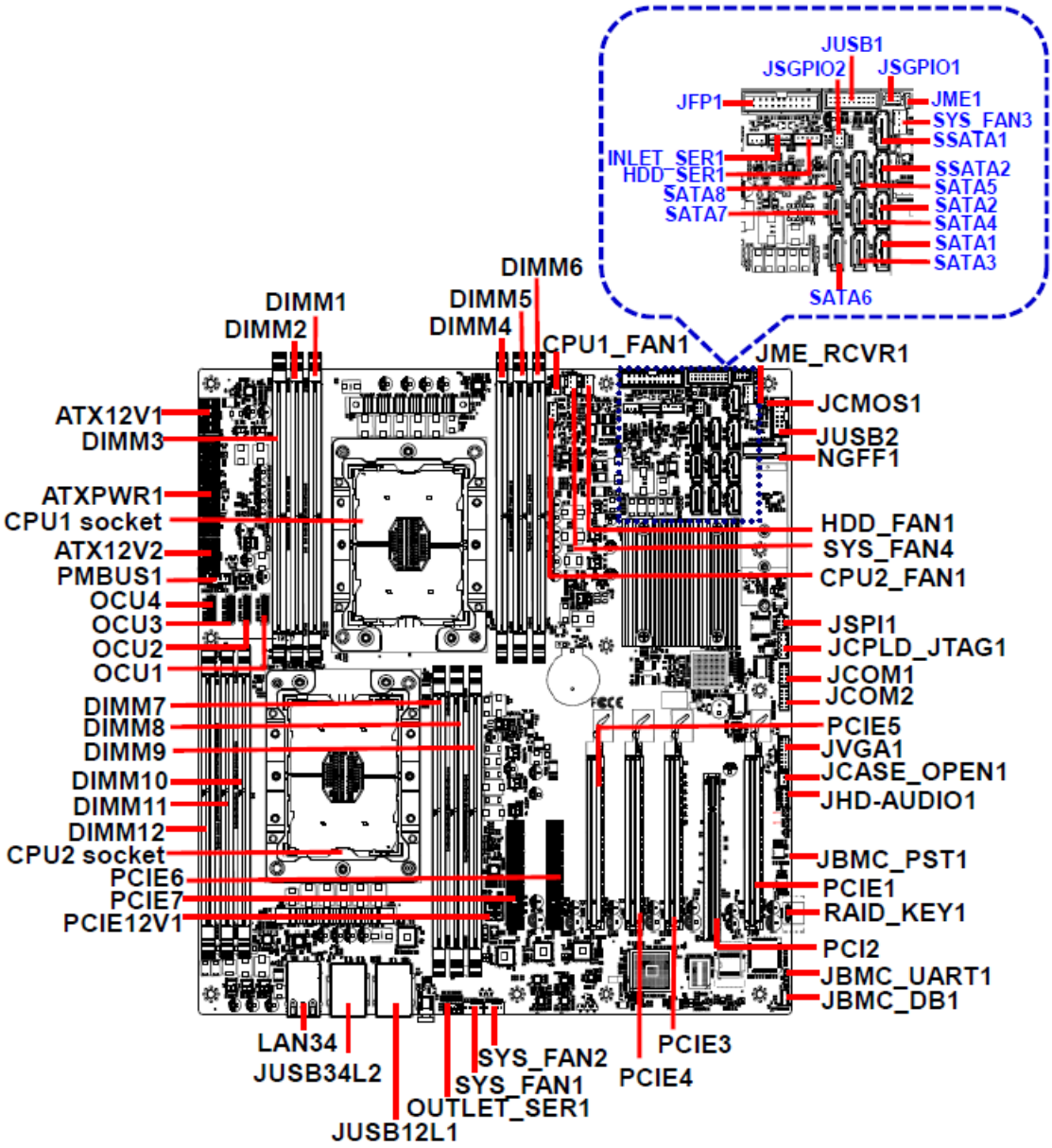
1.6 Architecture Overview—Block Diagram

The following block diagram shows the architecture and main components of HPM-621DE.



2. Hardware Configuration

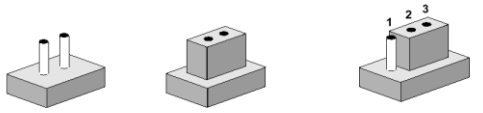
2.1 Product Overview



2.2 Jumper and Connector List

You can configure your board to match the needs of your application by setting jumpers. A jumper is the simplest kind of electric switch.

It consists of two metal pins and a small metal clip (often protected by a plastic cover) that slides over the pins to connect them. To "close" a jumper you connect the pins with the clip. To "open" a jumper you remove the clip. Sometimes a jumper will have three pins, labeled 1, 2, and 3. In this case, you would connect either two pins.



Open Closed Closed 2-3

The jumper settings are schematically depicted in this manual as follows:

Open Closed Closed 2-3

A pair of needle-nose pliers may be helpful when working with jumpers.

Connectors on the board are linked to external devices such as hard disk drives, a keyboard, or floppy drives. In addition, the board has a number of jumpers that allow you to configure your system to suit your application.

If you have any doubts about the best hardware configuration for your application, contact your local distributor or sales representative before you make any changes.

The following tables list the function of each of the board's jumpers and connectors.

Jumpers

Label	Function	Note
JME_RCVR1	ME Firmware Recovery	3 x 1 header, pitch 2.00mm
JME1	Flash Descriptor Security override	3 x 1 header, pitch 2.00mm
JBMC_DB1	BMC strap setting	4 x 2 header, pitch 2.00mm
JCMOS1	Clear CMOS	3 x 1 header, pitch 2.00mm
JBMC_PST1	CPLD strap setting for BMC Present or not	2 x 1 header, pitch 2.00mm

Connectors

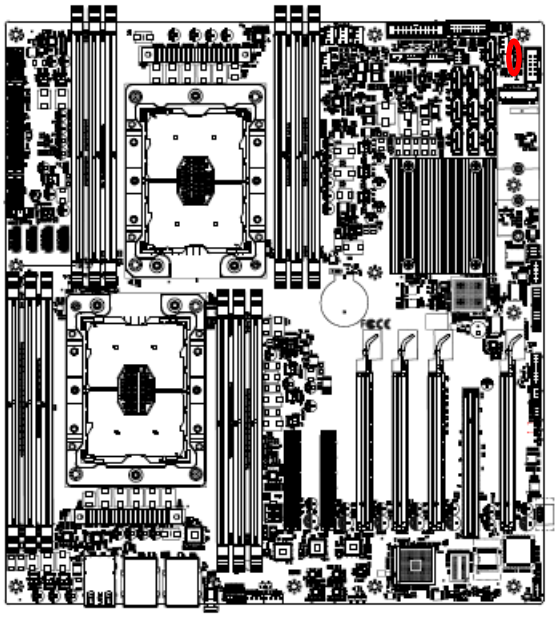
Label	Function	Note
SYS_FAN1	System fan connector 1	4 x 1 wafer, pitch 2.54mm
SYS_FAN2	System fan connector 2	4 x 1 wafer, pitch 2.54mm
SYS_FAN3	System fan connector 3	4 x 1 wafer, pitch 2.54mm

SYS_FAN4	System fan connector 4	4 x 1 wafer, pitch 2.54mm
CPU1_FAN1	CPU fan connector 1	4 x 1 wafer, pitch 2.54mm
CPU2_FAN1	CPU fan connector 2	4 x 1 wafer, pitch 2.54mm
HDD_FAN1	HDD fan connector	4 x 1 wafer, pitch 2.54mm
JCOM1	Serial Port 1 connector	5 x 2 wafer, pitch 2.00mm
JCOM2	Serial Port 2 connector	5 x 2 wafer, pitch 2.00mm
JSGPIO1	Serial General purpose I/O connector 1	3 x 2 wafer, pitch 2.00mm
JSGPIO2	Serial General purpose I/O connector 2	3 x 2 wafer, pitch 2.00mm
PCIE1	PCIe 3.0 x16 from CPU1	
PCIE3	PCIe 3.0 x16 from CPU1	
PCIE4	PCIe 3.0 x16 from CPU2	
PCIE5	PCIe 3.0 x16 from CPU2	
PCIE6	PCIe 3.0 x8 from CPU1	
PCIE7	PCIe 3.0 x8 from CPU1 (Slot 7 is the slot closest to CPU)	
PCIE12V1	PCIE 12V power connector	2 x 2 wafer, pitch 4.20mm
PCI2	PCI 3.0 connector	
JFP1	Front Panel connector	10 x 2 wafer, pitch 2.54mm
JUSB12L1	2 x USB3.2 Gen1 connector 1 x RJ-45 Ethernet (LAN1 Share IPMI Port)	
JUSB34L2	2 x USB3.2 Gen1 connector 1 x RJ-45 Ethernet	
LAN34	2 x RJ-45 Ethernet	
JUSB1	USB3.2 Gen1 connector	10 x 2 wafer, pitch 2.00mm
JUSB2	USB2.0 connector	5 x 2 wafer, pitch 2.54mm
JHD-AUDIO1	Audio connector	5 x 2 header, pitch 2.00mm
JSPI1	SPI connector	4 x 2 header, pitch 2.00mm
SATA1-8	8 x Serial ATA connector	
SSATA1/2	2 x Second Serial ATA connector	
DIMM1-12	12 x DDR4 DIMM socket	DIMM1~6: CPU1 Support DIMM7~12:CPU2 Support
JVGA1	VGA connector	8 x 2 wafer, pitch 2.00mm
JBMC_UART1	For BMC debug message read	4 x 1 header, pitch 2.54mm
JCASE_OPEN1	CASEOPEN connector	2 x 1 wafer, pitch 2.50mm

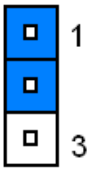
ATX12V1	ATX 12V power connector 1	4 x 2 wafer, pitch 4.20mm
ATX12V2	ATX 12V power connector 2	4 x 2 wafer, pitch 4.20mm
ATXPWR1	ATX power connector	12 x 2 wafer, pitch 4.20mm
PMBUS1	Power supply PMBus connector	5 x 1 wafer, pitch 2.54mm
INLET_SER1	Inlet Thermal Sensors connector	4 x 1 wafer, pitch 2.00mm
OUTLET_SER1	Outlet Thermal Sensors connector	4 x 1 wafer, pitch 2.00mm
HDD_SER1	HDD Backplane thermal Sensors connector	5 x 1 wafer, pitch 2.00mm
OCU1-4	4 x OCuLink ports from CPU 2	
NGFF1	M.2 M-Key PCIe 3.0 x4 NVMe SSD	
RAID_KEY1	RAID KEY connector	4x 1 header, pitch 2.00mm
CPU1 socket	CPU1 socket	One CPU shall install on CPU1 socket and DIMM1 to DIMM 6 shall be installed at least one memory module before booting the motherboard.
CPU2 socket	CPU2 socket	

2.3 Setting Jumpers & Connectors

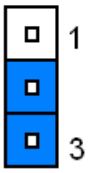
2.3.1 ME Firmware Recovery (JME_RCVR1)



Normal*

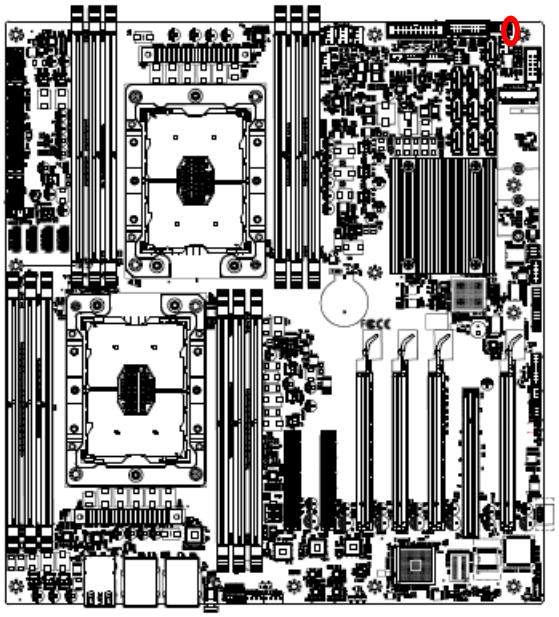


ME FORCE UPDATE

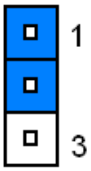


*** Default**

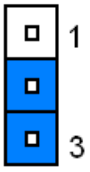
2.3.2 Flash Descriptor Security override (JME1)



Override disable*

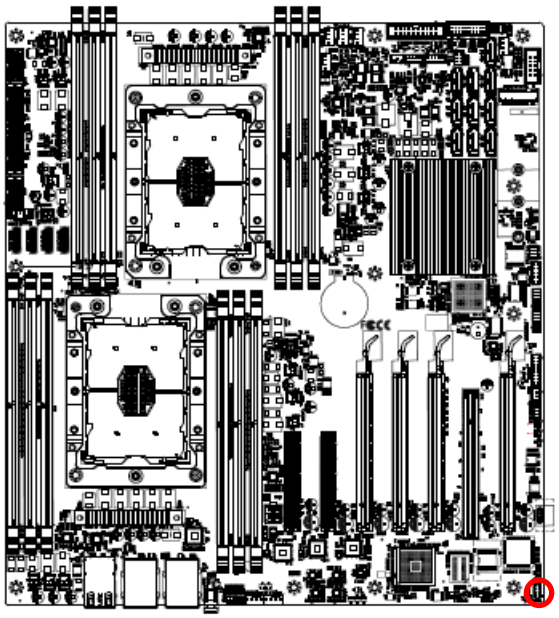


Override enable



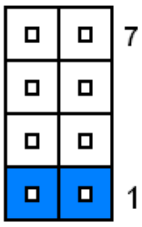
*** Default**

2.3.3 BMC strap setting (JBMC_DB1)

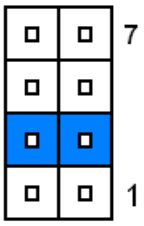


*** Default**

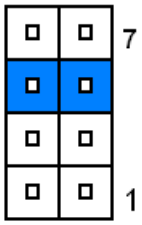
ENABLE PASS-THRU AT POWER ON*



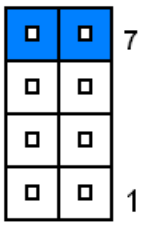
ENABLE DEDICATED VGA BIOS ROM



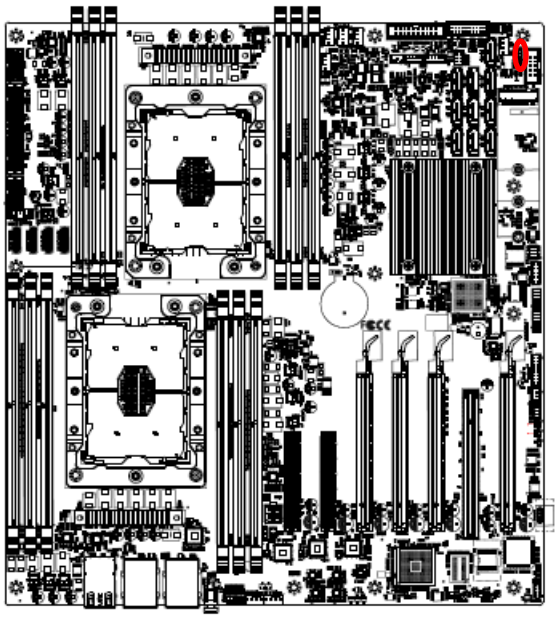
BMC SOC Level reset



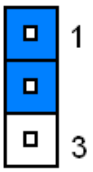
BMC Chip Level reset



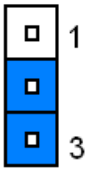
2.3.4 Clear CMOS (JCMOS1)



Normal*

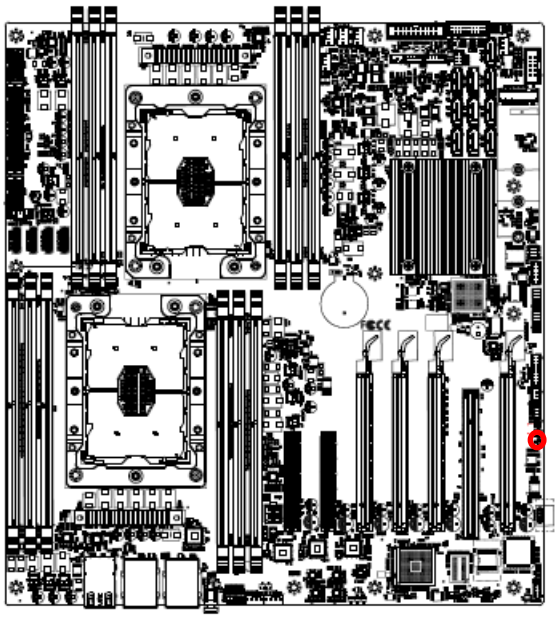


Clear RTC REGISTERS

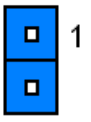


*** Default**

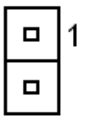
2.3.5 CPLD strap setting for BMC Present or not (JBMC_PST1)



BMC Present*

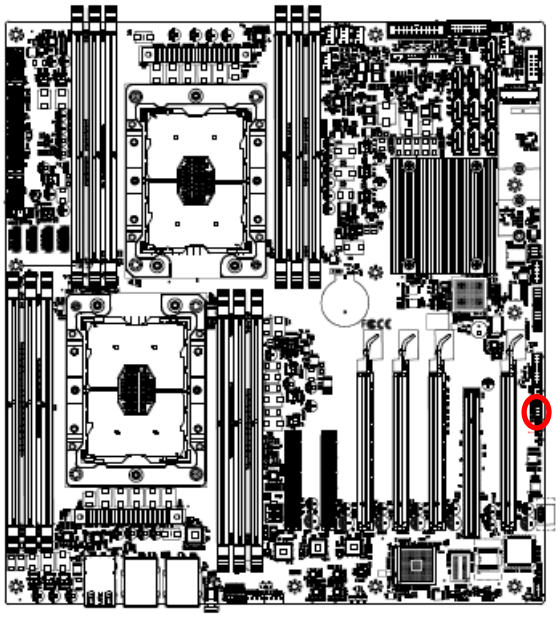


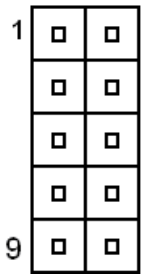
Non BMC



*** Default**

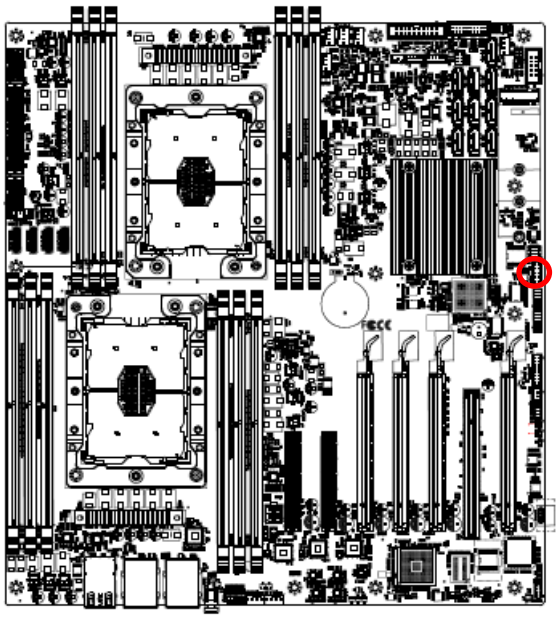
2.3.6 Audio connector (JHD-AUDIO1)

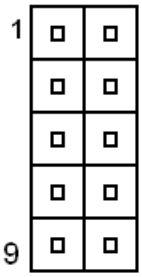




Signal	PIN	PIN	Signal
+3.3V	1	2	GND
AUD_AZA_SYNC_R	3	4	AUD_AZA_BCLK_R
AUD_AZA_SDO_R	5	6	AUD_AZA_SDI0
AUD_AZA_SDI1	7	8	AUD_AZA_RST_R_N
+5VSB	9	10	GND

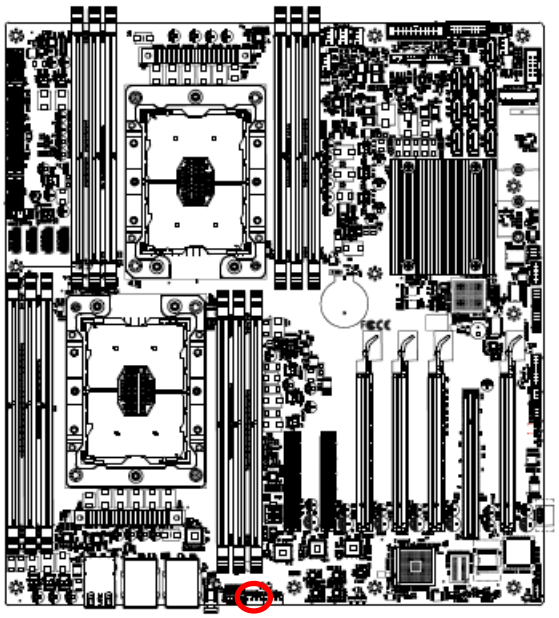
2.3.7 CPLD JTAG header (JCPLD_JTAG1)

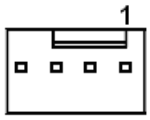




Signal	PIN	PIN	Signal
JTAG_TCK_CONN	1	2	CPLD_JTAG_MUX_CTL
JTAG_TDO_CONN	3	4	+3.3VSB
JTAG_TMS_CONN	5	6	NC
NC	7	8	NC
JTAG_TDI_CONN	9	10	GND

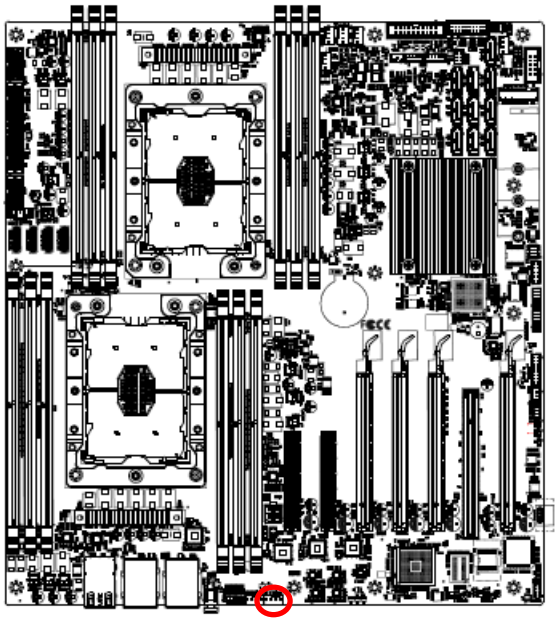
2.3.8 System fan connector 1 (SYS_FAN1)

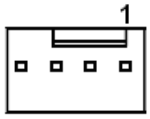




Signal	PIN
GND	1
+12V	2
FAN_TACH2	3
SYS_PWM1	4

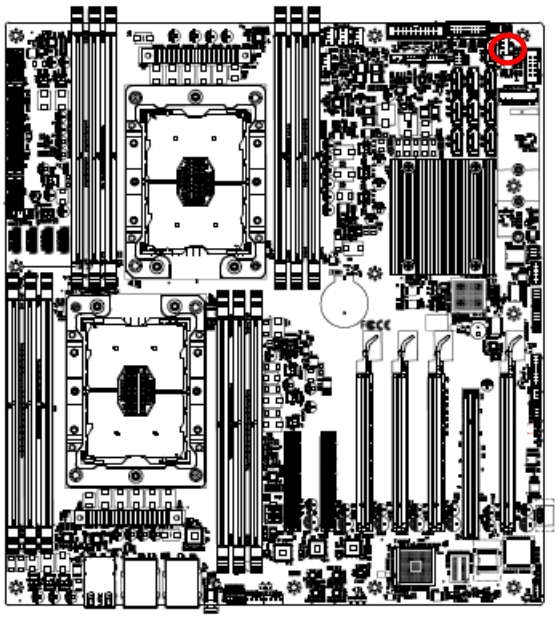
2.3.9 System fan connector 2 (SYS_FAN2)

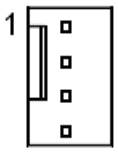




Signal	PIN
GND	1
+12V	2
FAN_TACH3	3
SYS_PWM2	4

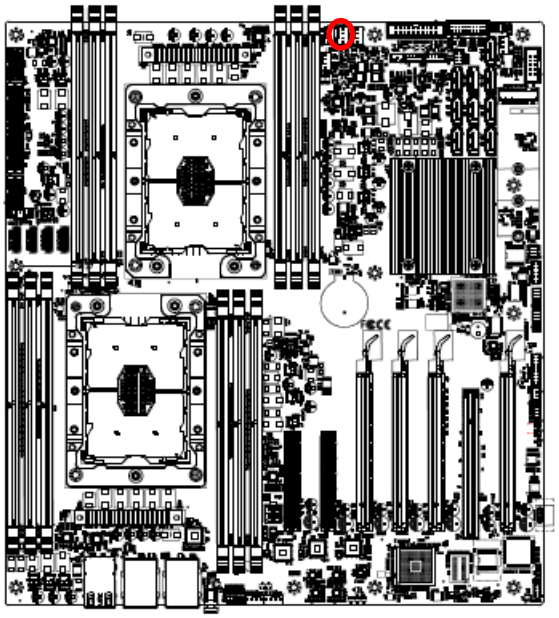
2.3.10 System fan connector 3 (SYS_FAN3)

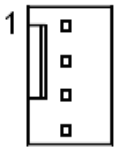




Signal	PIN
GND	1
+12V	2
FAN_TACH4	3
SYS_PWM3	4

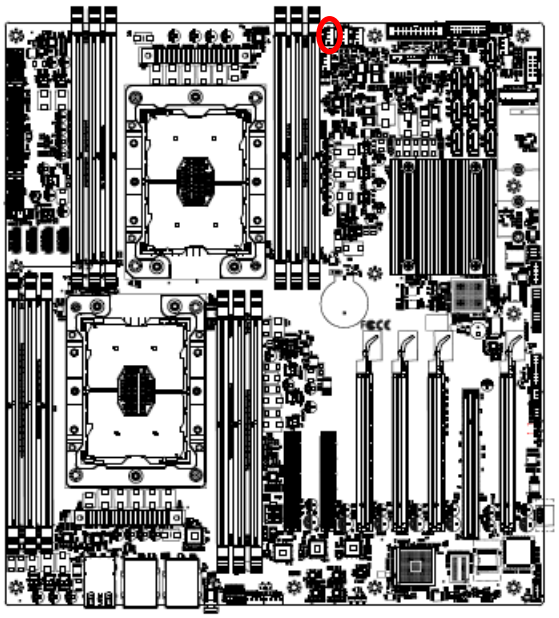
2.3.11 System fan connector 4 (SYS_FAN4)

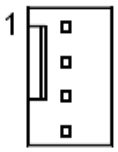




Signal	PIN
GND	1
+12V	2
FAN_TACH6	3
SYS_PWM4	4

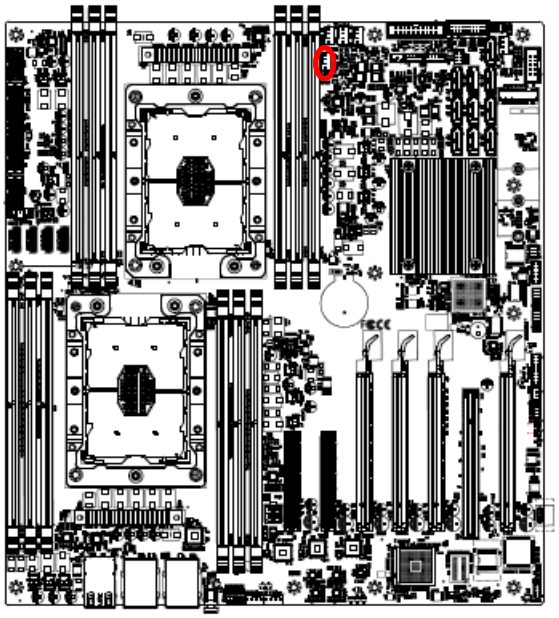
2.3.12 CPU fan connector 1 (CPU1_FAN1)

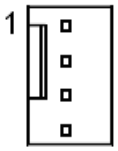




Signal	PIN
GND	1
+12V	2
FAN_TACH0	3
CPU1_PWM0	4

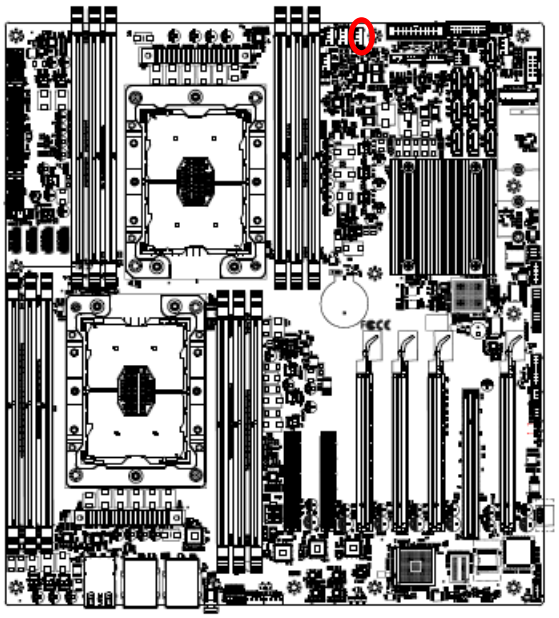
2.3.13 CPU fan connector 2 (CPU2_FAN1)

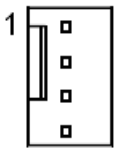




Signal	PIN
GND	1
+12V	2
FAN_TACH1	3
CPU2_PWM1	4

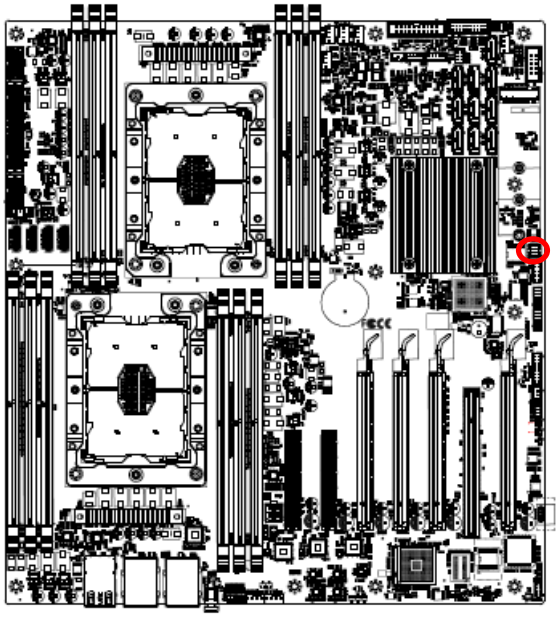
2.3.14 HDD fan connector (HDD_FAN1)

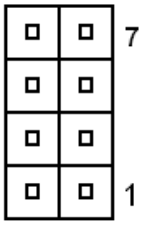




Signal	PIN
GND	1
+12V	2
FAN_TACH5	3
HDD_PWM1	4

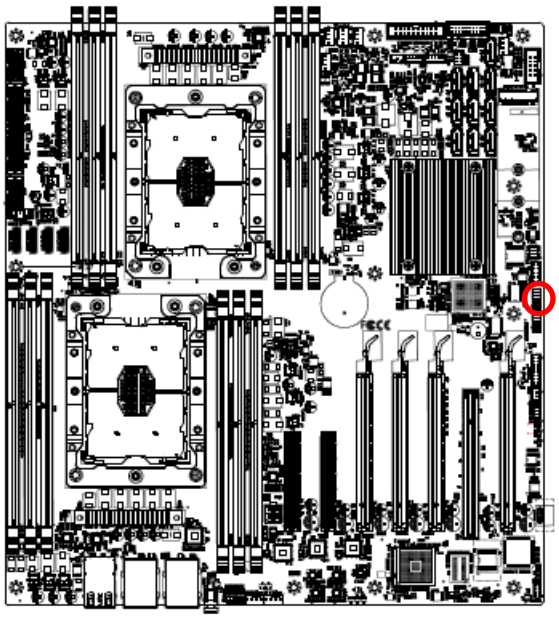
2.3.15 SPI connector (JSPI1)

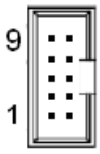




Signal	PIN	PIN	Signal
SPI_PCH_FLASH_IO2	8	7	SPI_PCH_FLASH_IO3
SPI_BIOS_CS0_N_R	6	5	SPI_BIOS_MISO_FLASH
SPI_BIOS_FLASH_CLK	4	3	SPI_BIOS_CS0_N_R
GND	2	1	+3.3VSB

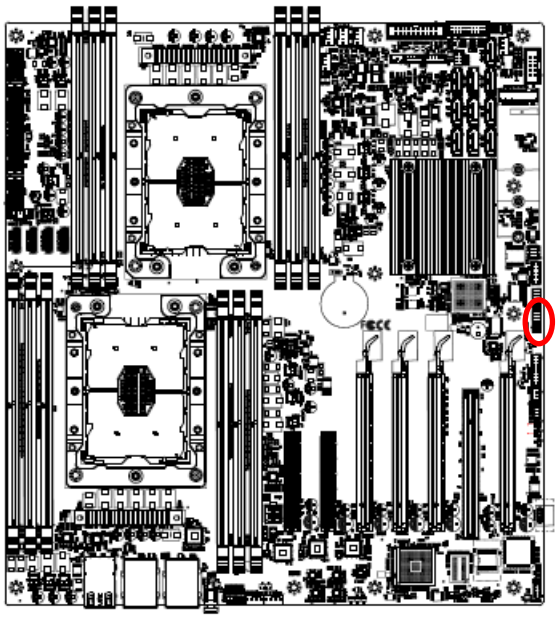
2.3.16 Serial port 1 connector (JCOM1)

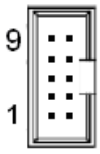




Signal	PIN	PIN	Signal
COM_RI#1	9	10	NC
COM_RTS#1	7	8	COM_CTS#1
GND	5	6	COM_DSR#1
COM_TXD1	3	4	COM_DTR#1
COM_DCD#1	1	2	COM_RXD1

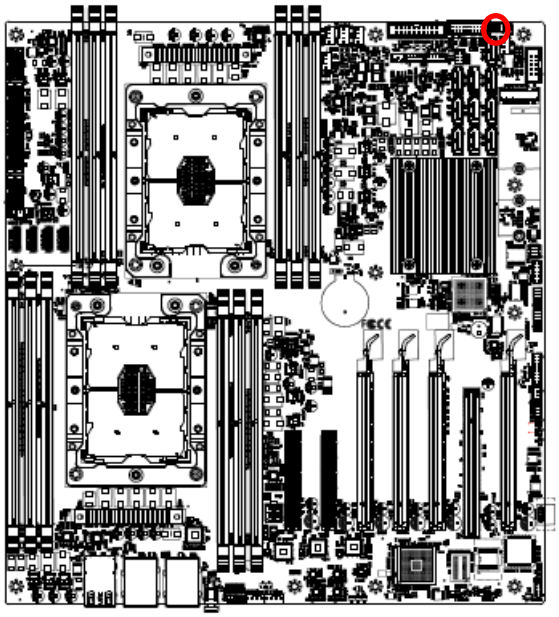
2.3.17 Serial port 2 connector (JCOM2)

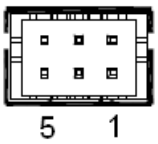




Signal	PIN	PIN	Signal
COM_RI#2	9	10	NC
COM_RTS#2	7	8	COM_CTS#2
GND	5	6	COM_DSR#2
COM_TXD2	3	4	COM_DTR#2
COM_DCD#2	1	2	COM_RXD2

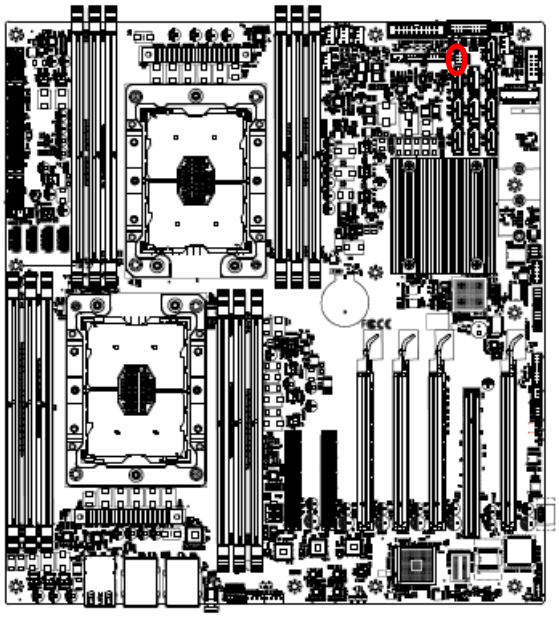
2.3.18 Serial General purpose I/O connector 1 (JSGPIO1)

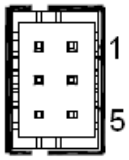




Signal	PIN	PIN	Signal
GND	2	1	GND
SGPIO_SSATA_DATA0_R	4	3	SGPIO_SSATA_LOAD_R
SGPIO_SSATA_DATA1_R	6	5	SGPIO_SSATA_CLOCK_R

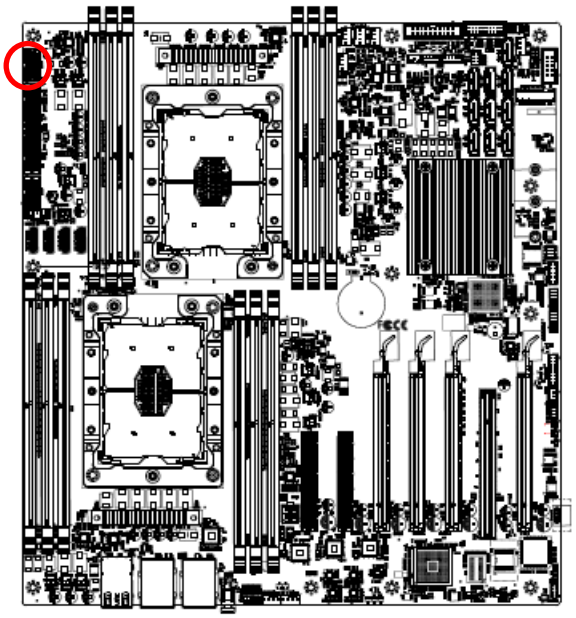
2.3.19 Serial General purpose I/O connector 2 (JSGPIO2)

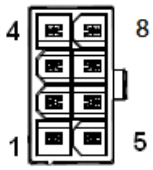




Signal	PIN	PIN	Signal
GND	2	1	GND
SGPIO_SATA_DATA0_R	4	3	SGPIO_SATA_LOAD_R
SGPIO_SATA_DATA1_R	6	5	SGPIO_SATA_CLOCK_R

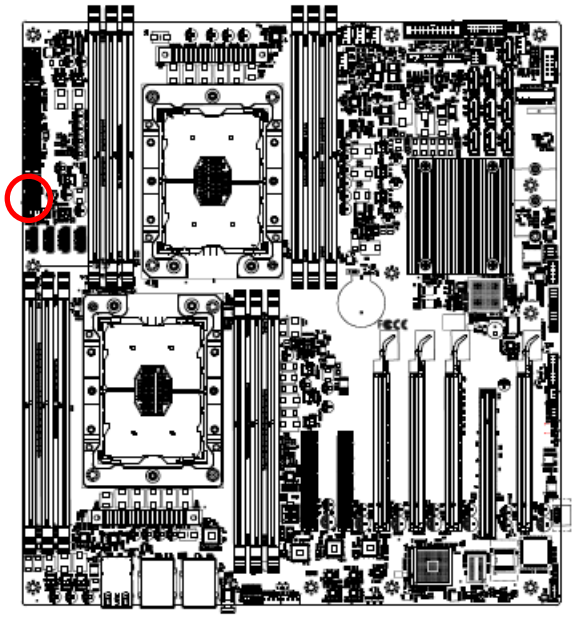
2.3.20 ATX 12V Power connector 1 (ATX12V1)

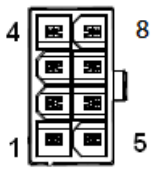




Signal	PIN	PIN	Signal
GND	4	8	+12V
GND	3	7	+12V
GND	2	6	+12V
GND	1	5	+12V

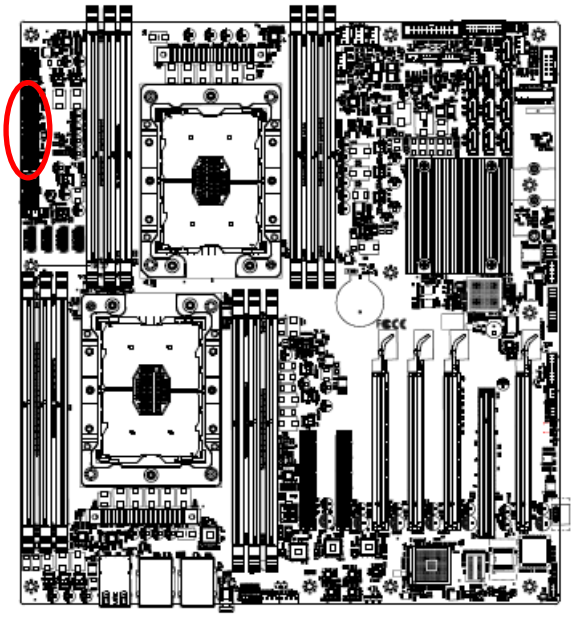
2.3.21 ATX 12V Power connector 2 (ATX12V2)

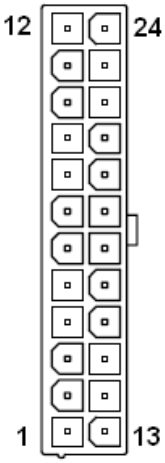




Signal	PIN	PIN	Signal
GND	4	8	+12V
GND	3	7	+12V
GND	2	6	+12V
GND	1	5	+12V

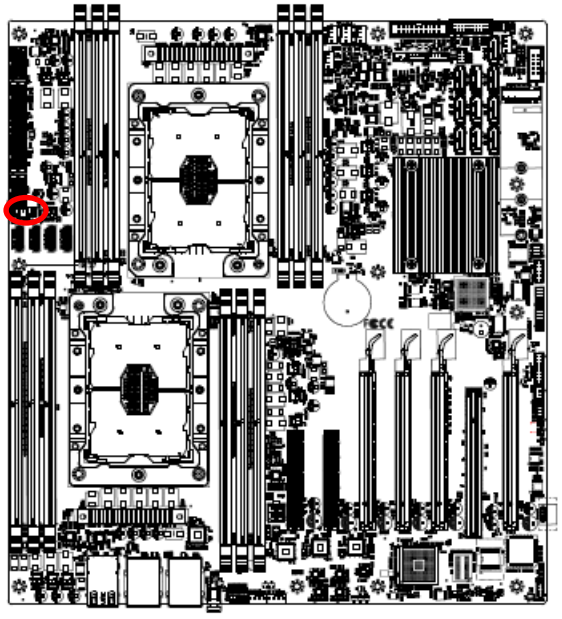
2.3.22 ATX Power connector (ATXPWR1)

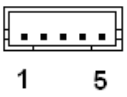




Signal	PIN	PIN	Signal
+3.3V	12	24	GND
+12V	11	23	+5V
+12V	10	22	+5V
+5VSB	9	21	+5V
PWRGD_PS_PWROK_R	8	20	NC
GND	7	19	GND
+5V	6	18	GND
GND	5	17	GND
+5V	4	16	FM_PS_EN_PSU_N
GND	3	15	GND
+3.3V	2	14	-12V
+3.3V	1	13	+3.3V

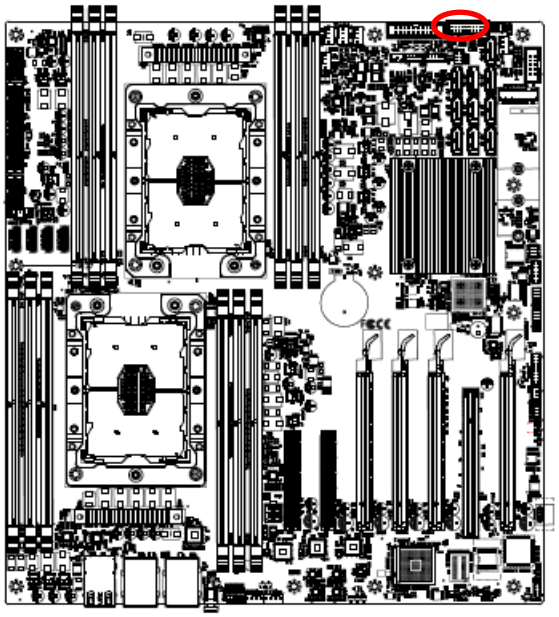
2.3.23 Power supply PMBus connector (PMBUS1)

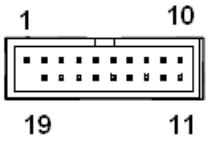




Signal	PIN
PSU_z_SCL	1
PSU_z_SDA	2
PSU1_ALERT_z_N	3
GND	4
NC	5

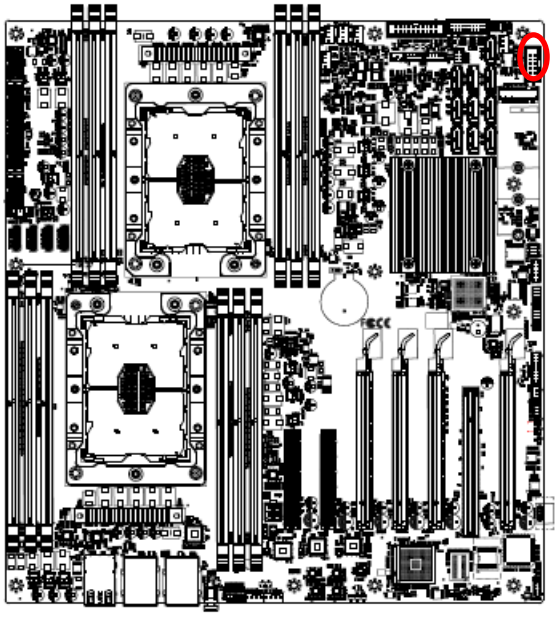
2.3.24 USB3.2 Gen1 connector (JUSB1)

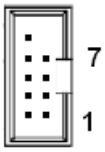




Signal	PIN	PIN	Signal
		1	+5VSB
+5VSB	19	2	USB3_z_RN5
USB3_z_RN6	18	3	USB3_z_RP5
USB3_z_RP6	17	4	GND
GND	16	5	USB3_z_TN5
USB3_z_TN6	15	6	USB3_z_TP5
USB3_z_TP6	14	7	GND
GND	13	8	USB3_z_PN5
USB3_z_PN6	12	9	USB3_z_PP5
USB3_z_PP6	11	10	USB_a_OC2#

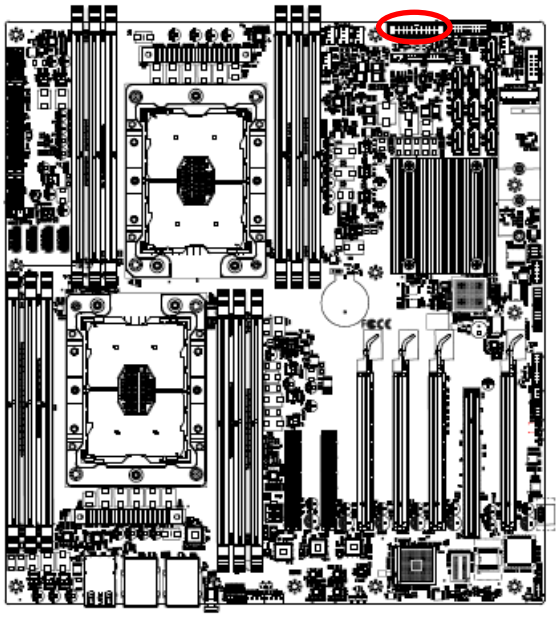
2.3.25 USB2.0 connector (JUSB2)

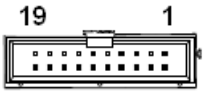




Signal	PIN	PIN	Signal
NC	10		
GND	8	7	GND
USB_z_PP8	6	5	USB_z_PP7
USB_z_PN8	4	3	USB_z_PN7
+5VSB	2	1	+5VSB

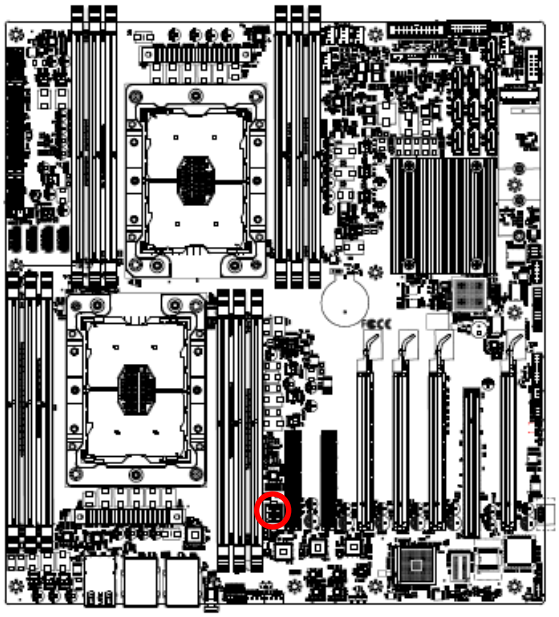
2.3.26 Front Panel connector (JFP1)

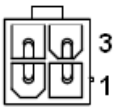




Signal	PIN	PIN	Signal
HDD_LED_P	1	2	+3.3VSB
HDD_LED_N	3	4	PWRLED_N
FP_RST_BTN_N	5	6	FP_PWR_BTN_N_R
GND	7	8	GND
STATUS_LED_P	9	10	LAN1_FRONT_LED_ACT_p
STATUS_LED_N	11	12	LAN1_LED_ACT_n
FRONT_UID_LED_N	13	14	SBPWRLED_P
FRONT_UID_LED_P	15	16	GND
FP_UID_BTN_N_R	17	18	+3.3VSB
GND	19	20	LAN_LED_ACT#

2.3.27 PCIE 12V power connector (PCIE12V1)



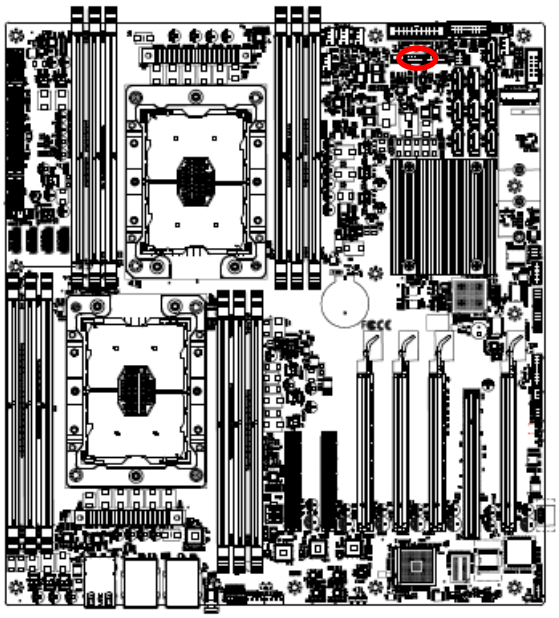


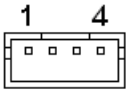
Signal	PIN	PIN	Signal
+12V	4	3	+12V
GND	2	1	GND

Note:

In case the high power consumption PCIe cards are installed, the PCIE12V1 connector support to supply extra 12 volt power from PSU to ensure all PCIe cards work properly.

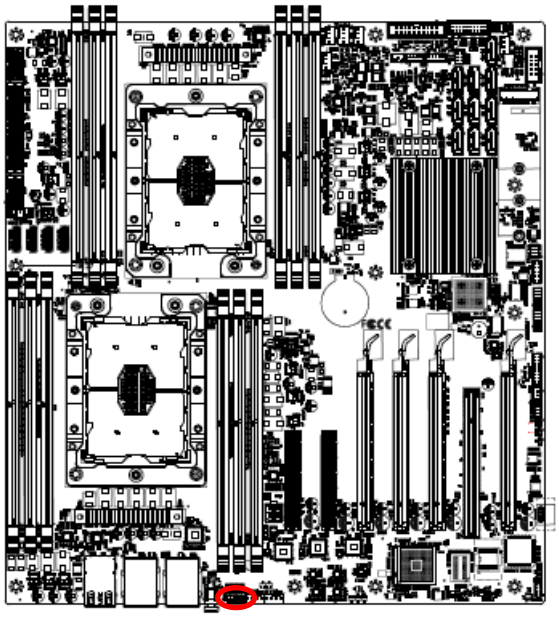
2.3.28 Inlet Thermal Sensors connector (INLET_SER1)

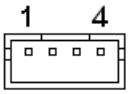




Signal	PIN
+3.3VSB	1
SMB1_TEMPSENSOR_STBY_LVC3_SDA	2
SMB1_TEMPSENSOR_STBY_LVC3_SCL	3
GND	4

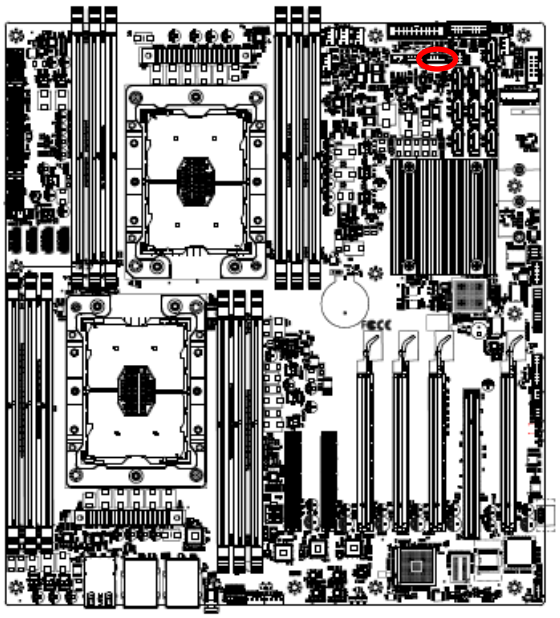
2.3.29 Outlet Thermal Sensors connector (OUTLET_SER1)

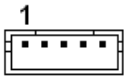




Signal	PIN
+3.3VSB	1
SMB_TEMPSENSOR_STBY_LVC3_SDA	2
SMB_TEMPSENSOR_STBY_LVC3_SCL	3
GND	4

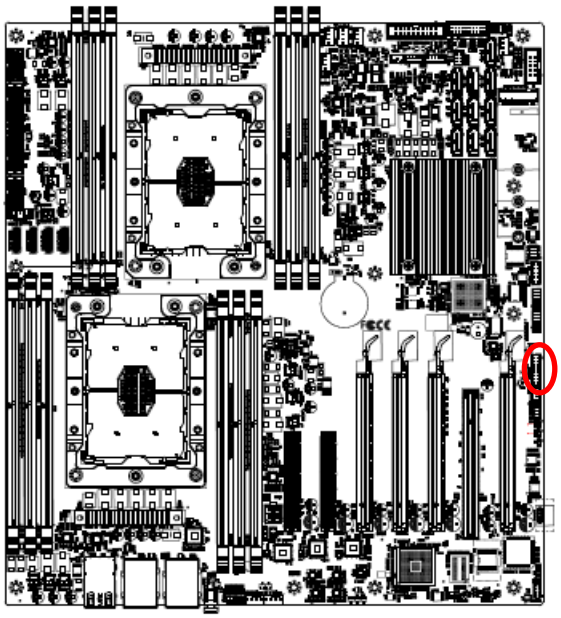
2.3.30 HDD Backplane thermal Sensors connector (HDD_SER1)

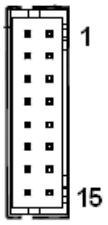




Signal	PIN
+3.3VSB	1
SMB2_TEMPSENSOR_STBY_LVC3_SDA	2
SMB2_TEMPSENSOR_STBY_LVC3_SCL	3
GND	4
SSD_LED_N	5

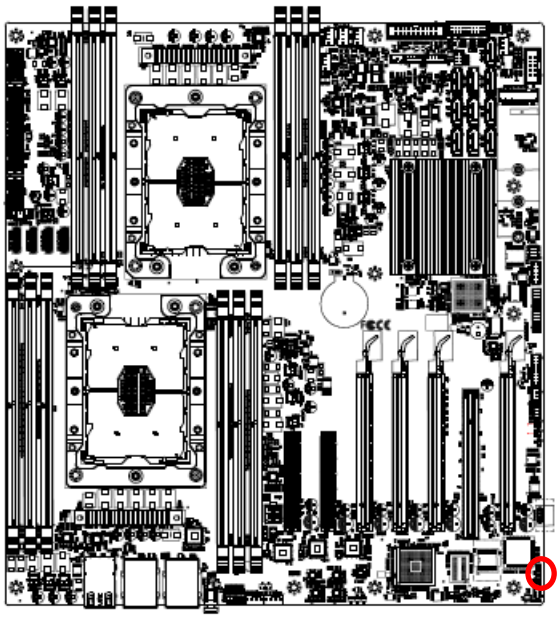
2.3.31 VGA connector (JVGA1)





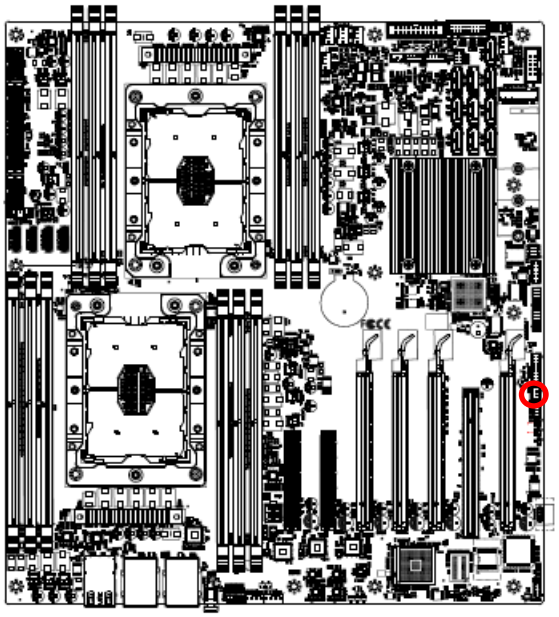
Signal	PIN	PIN	Signal
CRT_z_RED	2	1	+5V
CRT_z_GREEN	4	3	GND
CRT_z_BLUE	6	5	NC
NC	8	7	CRT_DDC_z_DATA
GND	10	9	CRT_z_HSYNC
GND	12	11	CRT_z_VSYNC
GND	14	13	CRT_DDC_z_CLK
GND	16	15	GND

2.3.32 For BMC debug message read (JBMC_UART5)



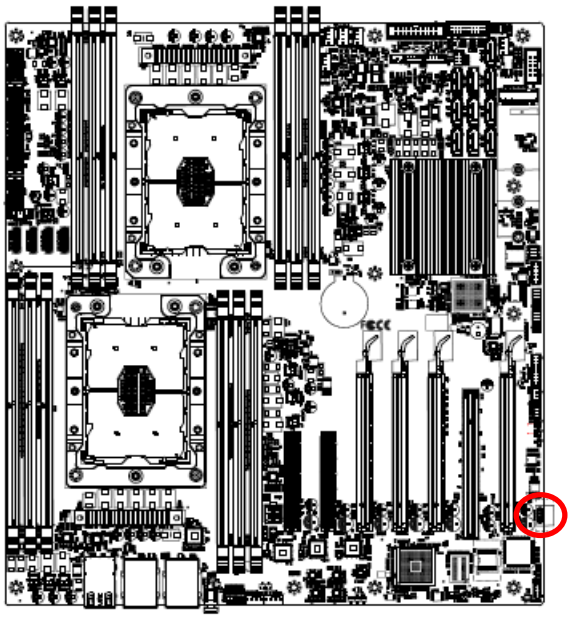
Signal	PIN
+3.3VSB	4
GND	3
UART5_RX	2
UART5_TX	1

2.3.33 CASE OPEN connector (JCASE_OPEN1)



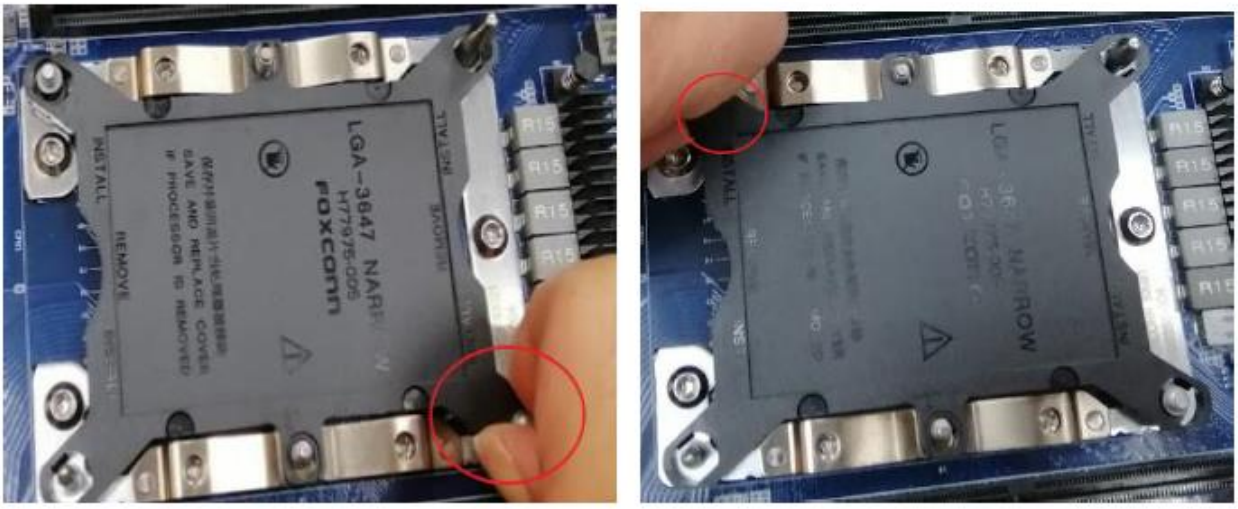
Signal	PIN
FP_CHASSIS_INTRUSION	1
GND	2

2.3.34 RAID KEY connector (RAID_KEY1)

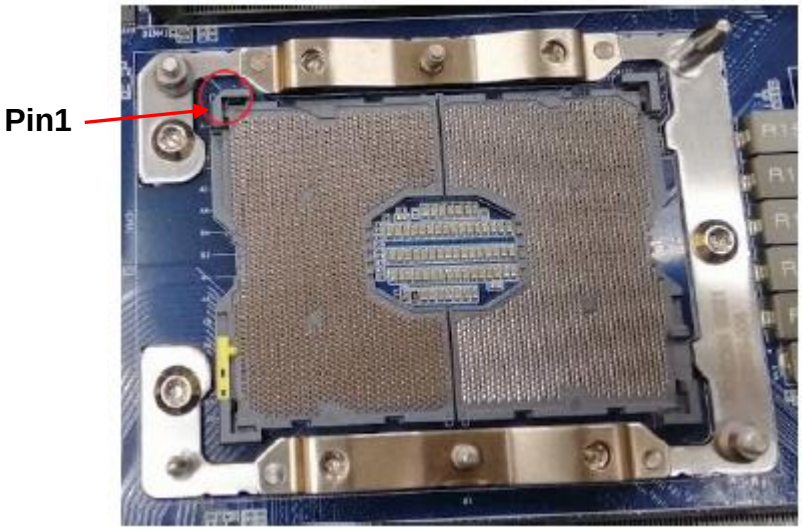


Signal	PIN
FM_PCH_SATA_KEY_R	4
GND	3
PU_KEY_CONN_PIN2_R	2
GND	1

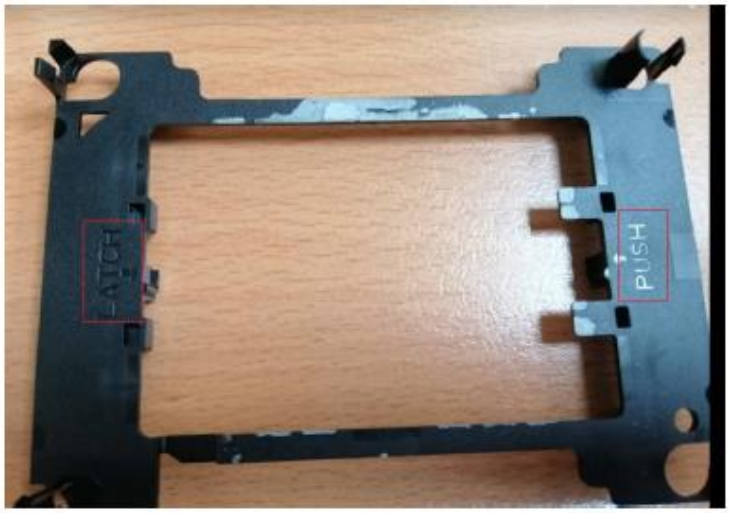
2.4 CPU installation



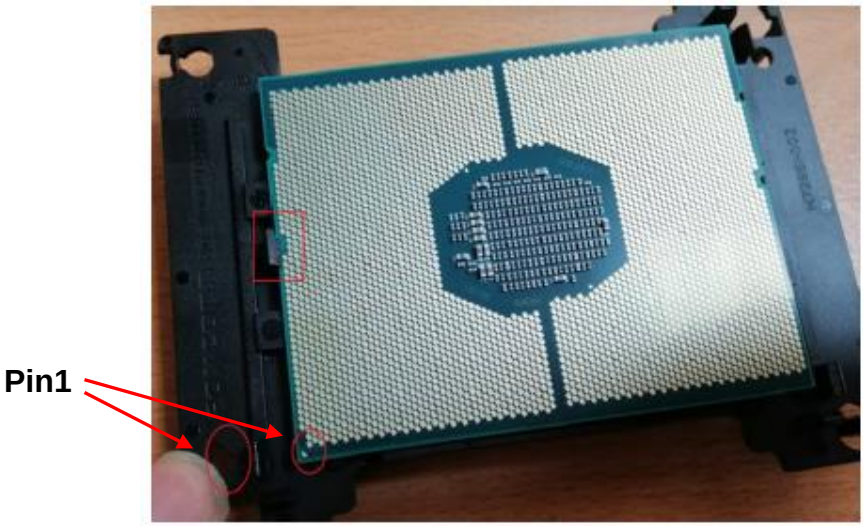
Step1. To remove CPU socket cover and be careful of the latch on diagonal location as the red circle marking above photo.



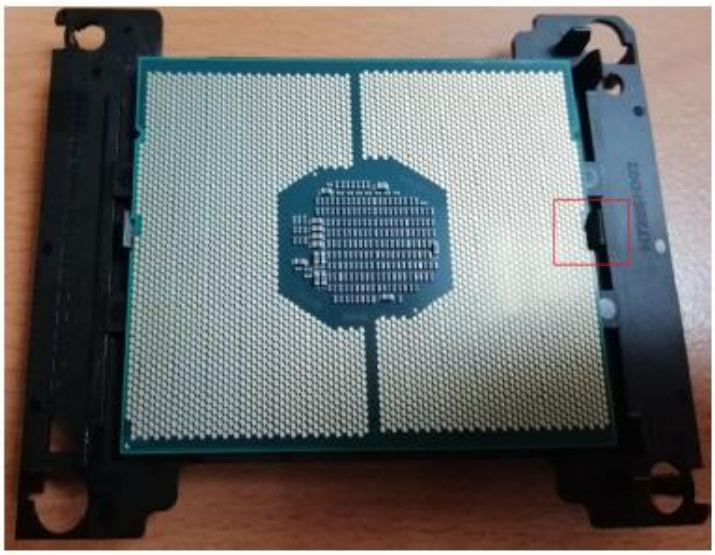
Step2. To be careful of the diagonal location on the socket of Pin1 as above photo on red circle marking.



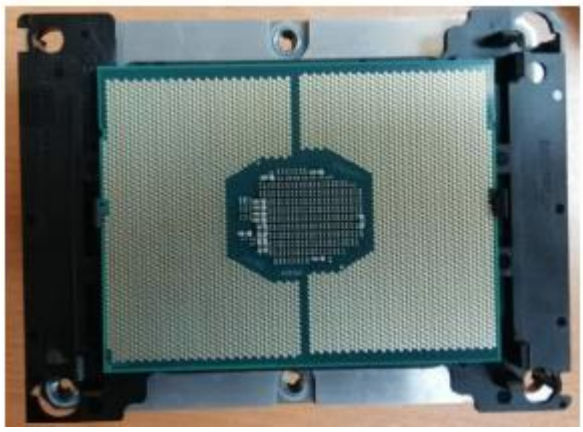
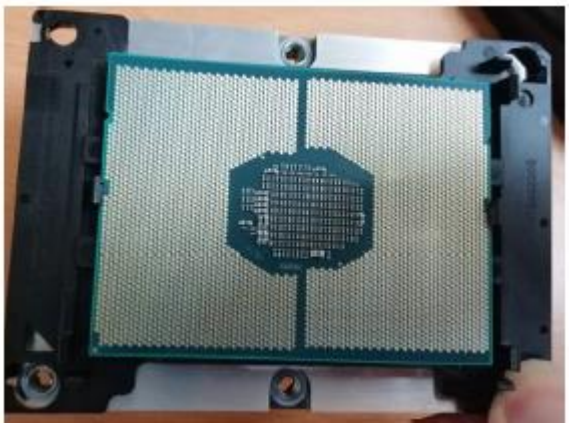
Step3. There is marking of PUSH and LATCH on the Blaster. Heatsink cooler need to be installed on this side.



Step4. To turn upside down of the Blaster and install CPU on this side. To notice the red circle marking of the Pin1, and the red square marking of the latch.

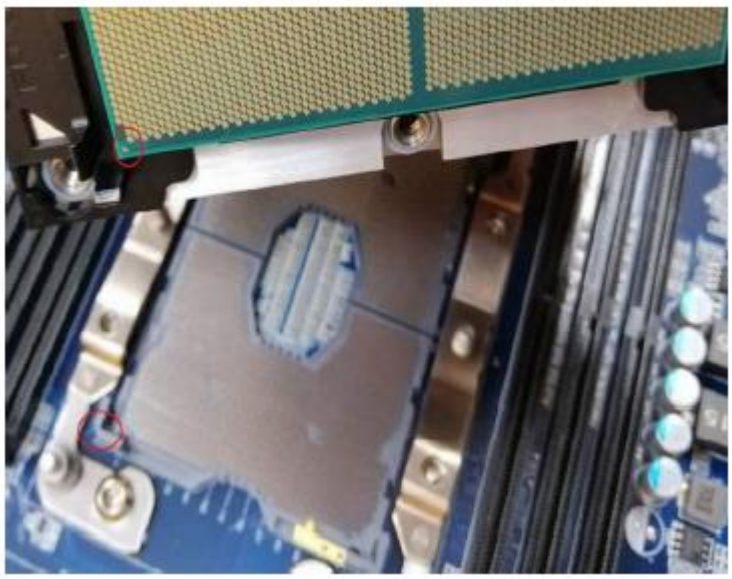


Step5. To install the other side of the latch.

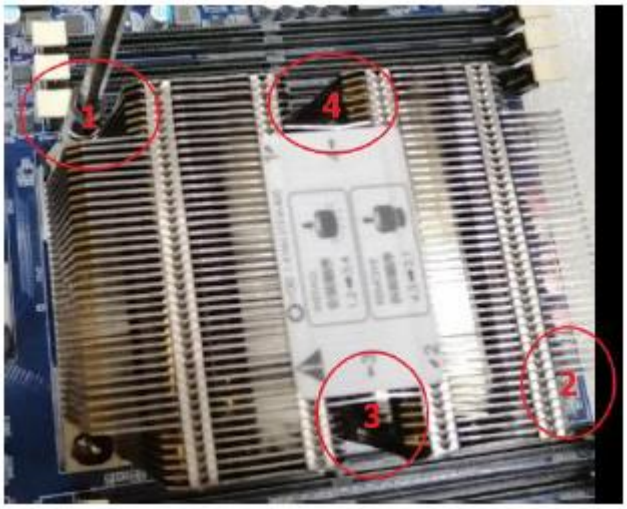
Step6. To install 4 corners of CPU and Blaster to the heatsink.

To notice the orientation of the FAN as the red square marking of photo when installing the CPU heatsink module to the motherboard.



Step7. Please keep Pin1 as red-circled aligned with CPU when installing.

Step8. Put it in along the Leader Pin on the motherboard.



Step9. Fasten screws.
(Fasten screws: 1->2->3->4, Unfasten screws: 4->3->2->1)

Step10. Installing RAM will be supported only in the models with CPU.

3.BIOS Setup

3.1 Introduction

The BIOS setup program allows users to modify the basic system configuration. In this following chapter will describe how to access the BIOS setup program and the configuration options that may be changed.

3.2 Starting Setup

AMI BIOS™ is immediately activated when you first power on the computer. The BIOS reads the system information contained in the NVRAM and begins the process of checking out the system and configuring it. When it finishes, the BIOS will seek an operating system on one of the disks and then launch and turn control over to the operating system.

While the BIOS is in control, the Setup program can be activated in one of two ways:
By pressing <ESC> or <Del> immediately after switching the system on, or
By pressing the < ESC> or <Del> key when the following message appears briefly at the left-top of the screen during the POST (Power On Self Test).

Press <ESC> or <Del> to enter SETUP

If the message disappears before you respond and you still wish to enter Setup, restart the system to try again by turning it OFF then ON or pressing the "RESET" button on the system case. You may also restart by simultaneously pressing <Ctrl>, <Alt>, and <Delete> keys.

3.3 Using Setup

In general, you use the arrow keys to highlight items, press <Enter> to select, use the PageUp and PageDown keys to change entries, press <F1> for help and press <Esc> to quit. The following table provides more detail about how to navigate in the Setup program using the keyboard.

Button	Description
↑	Move to previous item
↓	Move to next item
←	Move to the item in the left hand
→	Move to the item in the right hand
Esc key	Main Menu -- Quit and not save changes into NVRAM Status Page Setup Menu and Option Page Setup Menu -- Exit current page and return to Main Menu
+ key	Increase the numeric value or make changes
- key	Decrease the numeric value or make changes
F1 key	General help, only for Status Page Setup Menu and Option Page Setup Menu
F2 key	Previous Values
F3 key	Optimized defaults
F4 key	Save & Exit Setup

- **Navigating Through The Menu Bar**

  Use the left and right arrow keys to choose the menu you want to be in.

Note: Some of the navigation keys differ from one screen to another.

- **To Display a Sub Menu**

  Use the arrow keys to move the cursor to the sub menu you want. Then press <Enter>. A "➢" pointer marks all sub menus.

3.4 Getting Help

Press F1 to pop up a small help window that describes the appropriate keys to use and the possible selections for the highlighted item. To exit the Help Window press <Esc> or the <Enter> key again.

3.5 In Case of Problems

If, after making and saving system changes with Setup, you discover that your computer no longer is able to boot, the AMI BIOS supports an override to the NVRAM settings which resets your system to its defaults.

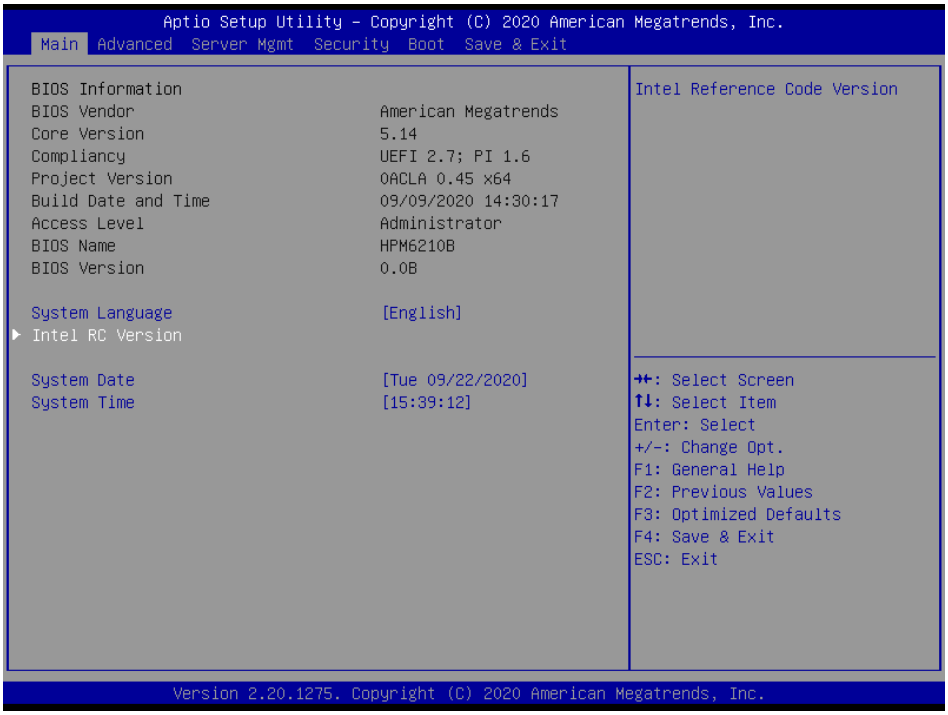
The best advice is to only alter settings which you thoroughly understand. To this end, we strongly recommend that you avoid making any changes to the chipset defaults. These defaults have been carefully chosen by both BIOS Vendor and your systems manufacturer to provide the absolute maximum performance and reliability. Even a seemingly small change to the chipset setup has the potential for causing you to use the override.

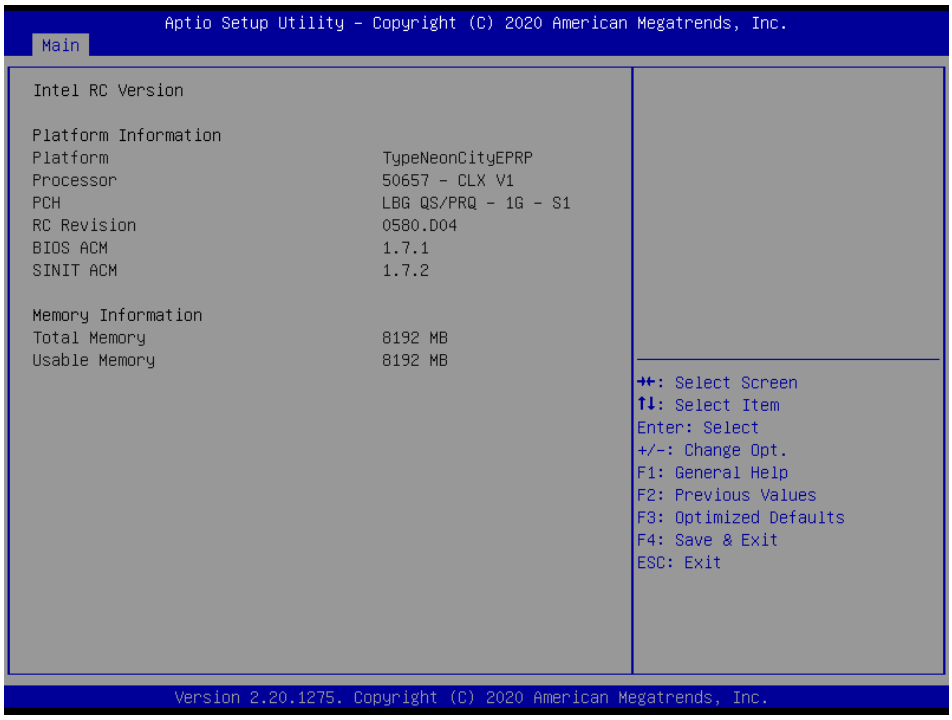
3.6 BIOS setup

Once you enter the Aptio Setup Utility, the Main Menu will appear on the screen. The Main Menu allows you to select from several setup functions and exit choices. Use the arrow keys to select among the items and press <Enter> to accept and enter the sub-menu.

3.6.1 Main Menu

This section allows you to record some basic hardware configurations in your computer and set the system clock.





3.6.1.1 System Language

This option allows choosing the system default language.

3.6.1.2 System Date

Use the system date option to set the system date. Manually enter the day, month and year.

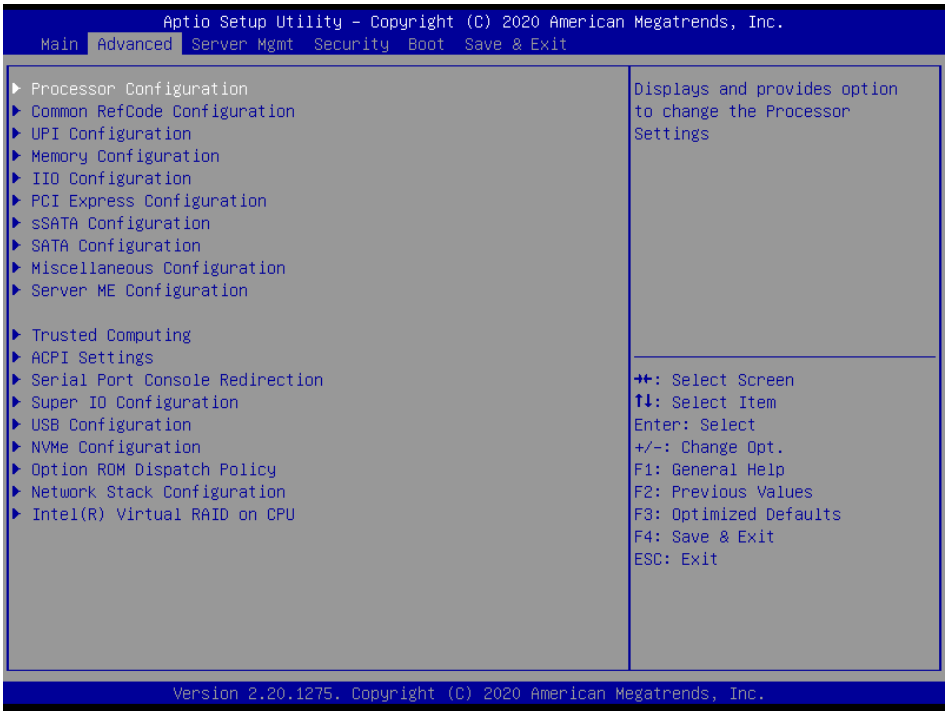
3.6.1.3 System Time

Use the system time option to set the system time. Manually enter the hours, minutes and seconds.

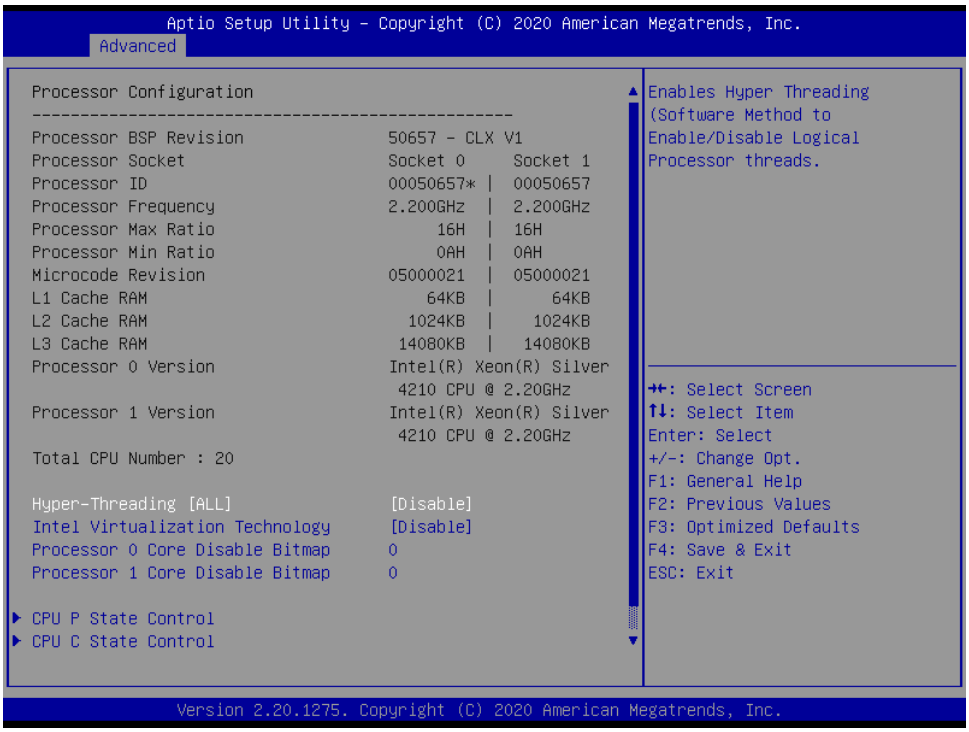
Note: The BIOS setup screens shown in this chapter are for reference purposes only, and may not exactly match what you see on your screen.
Visit the Avalue website (www.avalue.com.tw) to download the latest product and BIOS information.

3.6.2 Advanced Menu

This section allows you to configure your CPU and other system devices for basic operation through the following sub-menus.

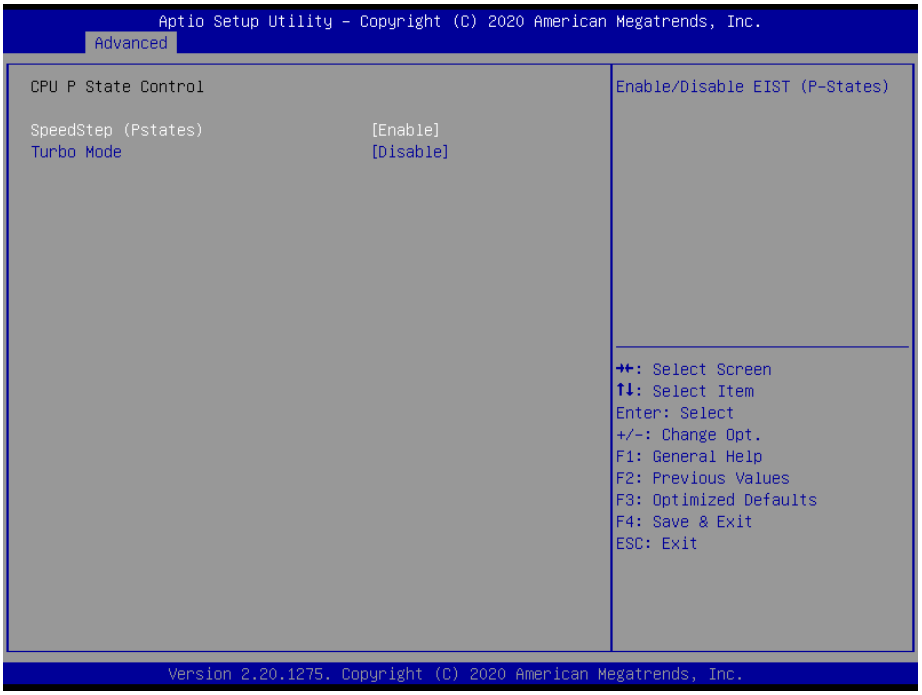


3.6.2.1 Processor Configuration



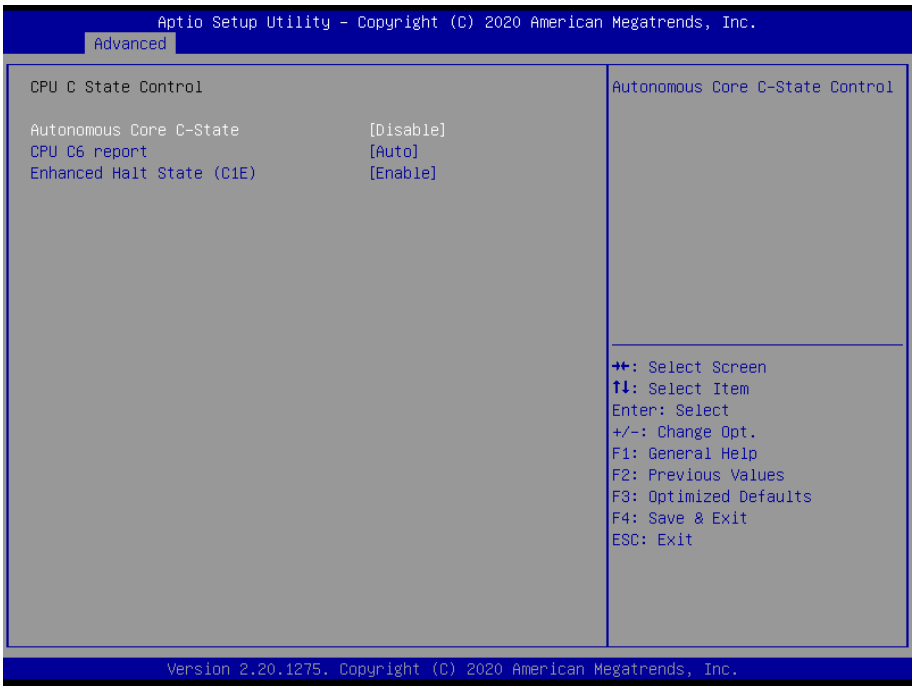
Item	Options	Description
Hyper-Threading (ALL)	Disable**[Default]** Enable	Enables Hyper Threading (Software Method to Enable/Disable Logical Processor threads.
Intel Virtualization Technology	Disable**[Default]** Enable	Enables the Vanderpool Technology, takes effect after reboot.
Processor 0/1 Core Disable Bitmap	0	0: Enable all cores. 3fff: Disable all cores.

3.6.2.1.1 CPU P State Control



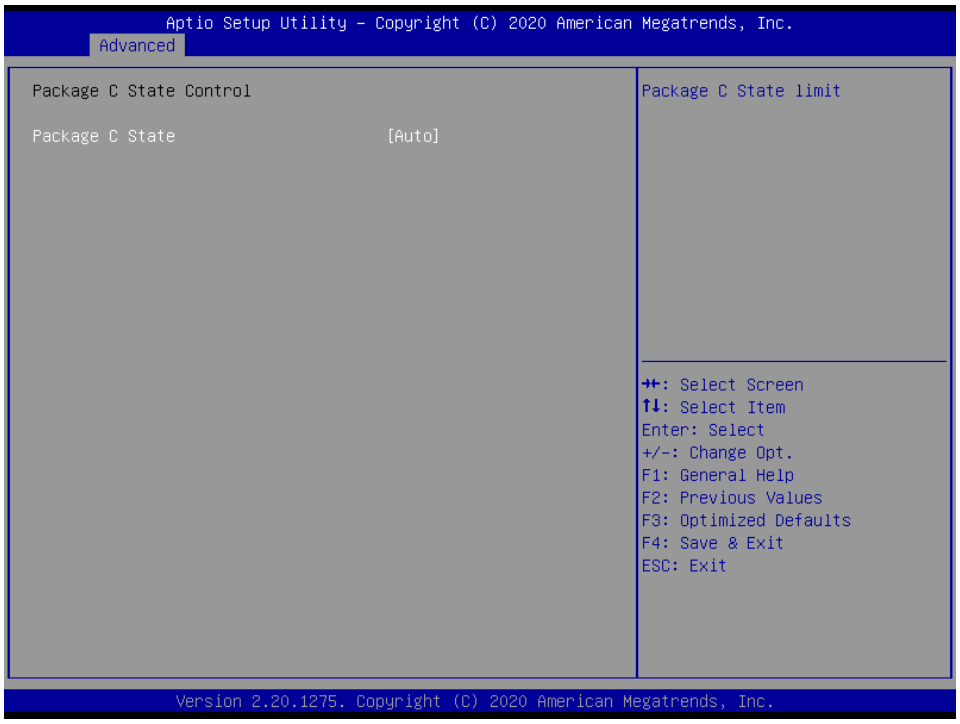
Item	Option	Description
SpeedStep (Pstates)	Enable**[Default]**, Disable	Enable/Disable EIST (P-States)
Turbo Mode	Enable Disable**[Default]**	Enable/Disable processor Turbo Mode (requires EMTTM enabled too).

3.6.2.1.2 CPU C State Control



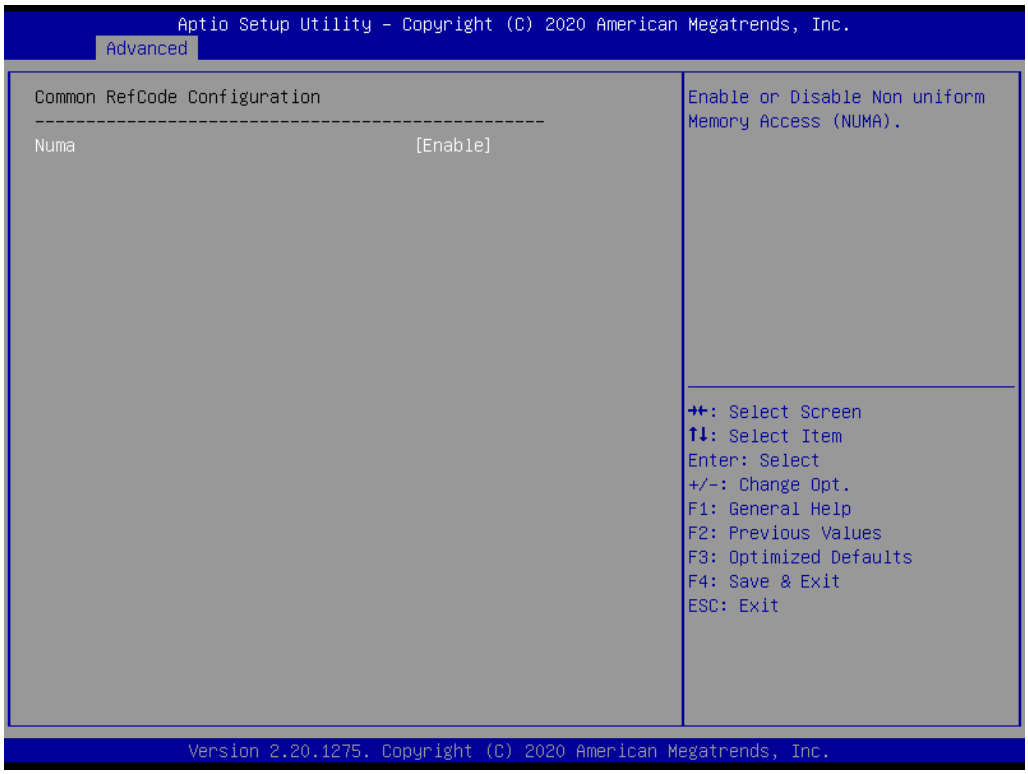
Item	Option	Description
Autonomous Core C-State	Enable Disable**[Default]**,	Autonomous Core C-State Control.
CPU C6 report	Disable Enable Auto**[Default]**	Enable/Disable CPU C6(ACPI C3) report to OS.
Enhanced Halt State (C1E)	Disable**[Default]** Enable	Core C1E auto promotion Control. Takes effect after reboot.

3.6.2.1.3 Package C State Control



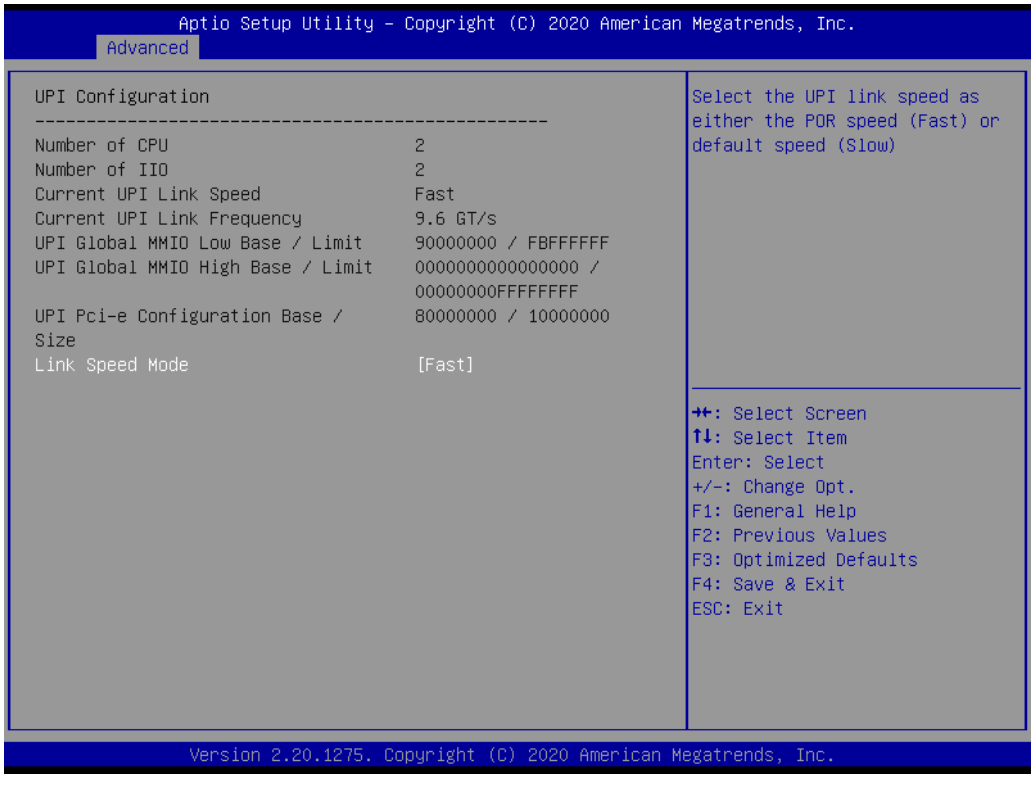
Item	Option	Description
Package C State	C0/C1 state C2 state C6(non Retention)state C6(Retention)state No Limit Auto**[Default]**,	Package C State limit.

3.6.2.2 Common RefCode Configuration



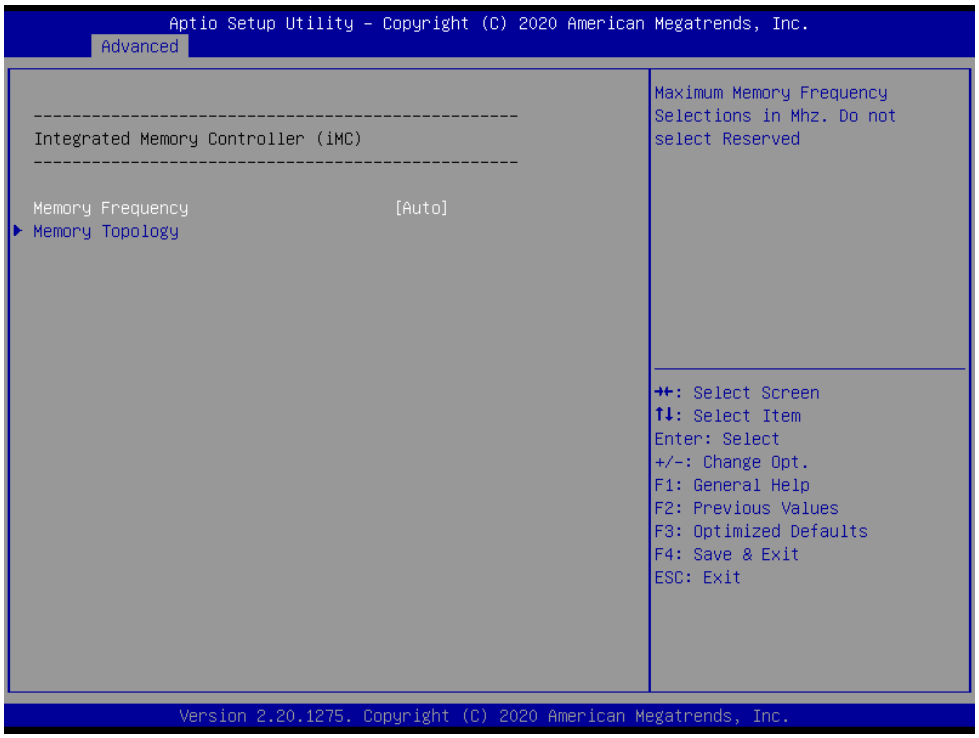
Item	Option	Description
Numa	Disable Enable**[Default]**	Enable or Disable Non uniform Memory Access (NUMA).

3.6.2.3 UPI Configuration



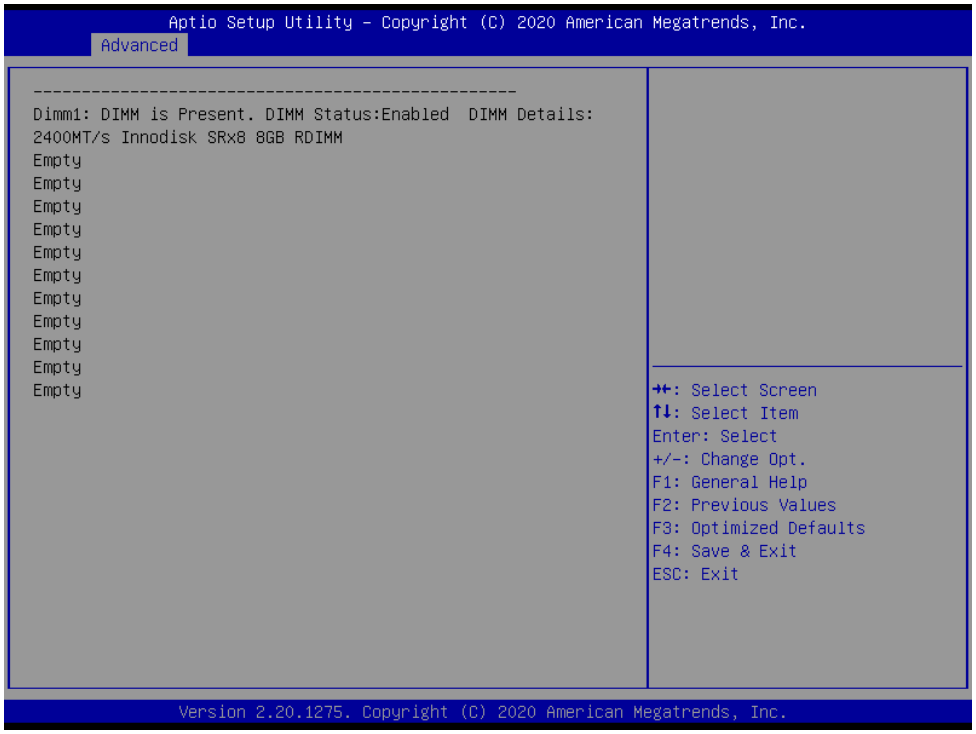
Item	Option	Description
Link Speed Mode	Slow Fast**[Default]**	Select the UPI link speed as either the POR speed (Fast) or default speed (Slow).

3.6.2.4 Memory Configuration

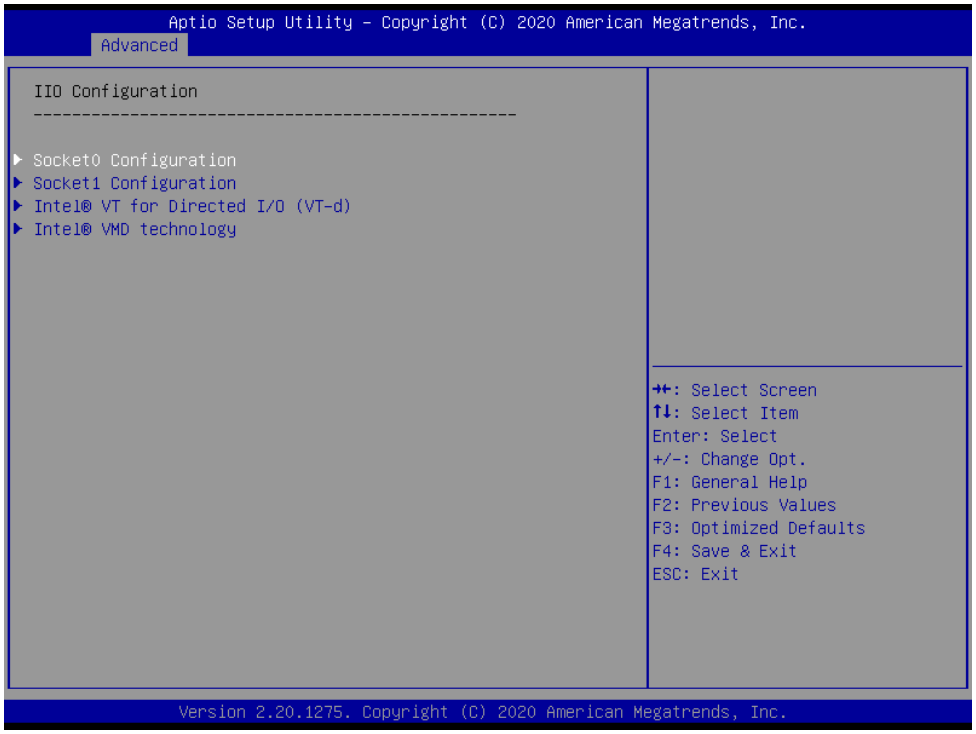


Item	Option	Description
Memory Frequency	Auto**[Default]**/800/1000/1066/1200 /1333/1400/1600/1800/1866 /2000/2133/2200/2400/2600/2666 /2800-OvrClk/2933/3000-OvrClk /3200-OvrClk/3400-OvrClk/3466-OvrClk /3600-OvrClk/3733-OvrClk/3800-OvrClk /4000-OvrClk/4200-OvrClk/4266-OvrClk /4400-OvrClk	Maximum Memory Frequency Selections in Mhz. Do not select Reserved.

3.6.2.4.1 Memory Topology



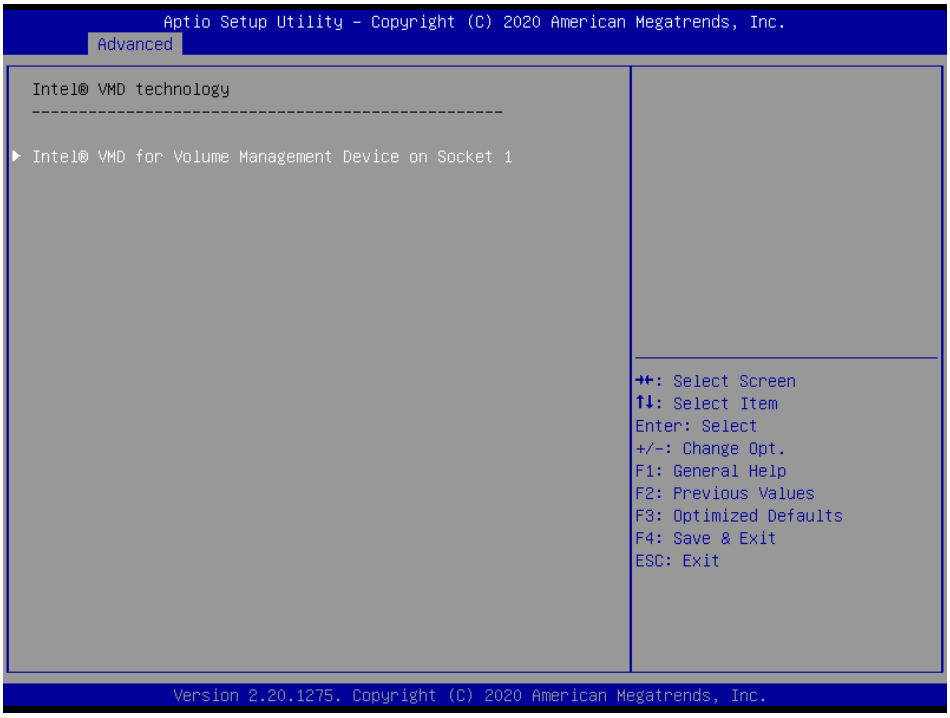
3.6.2.5 IIO Configuration



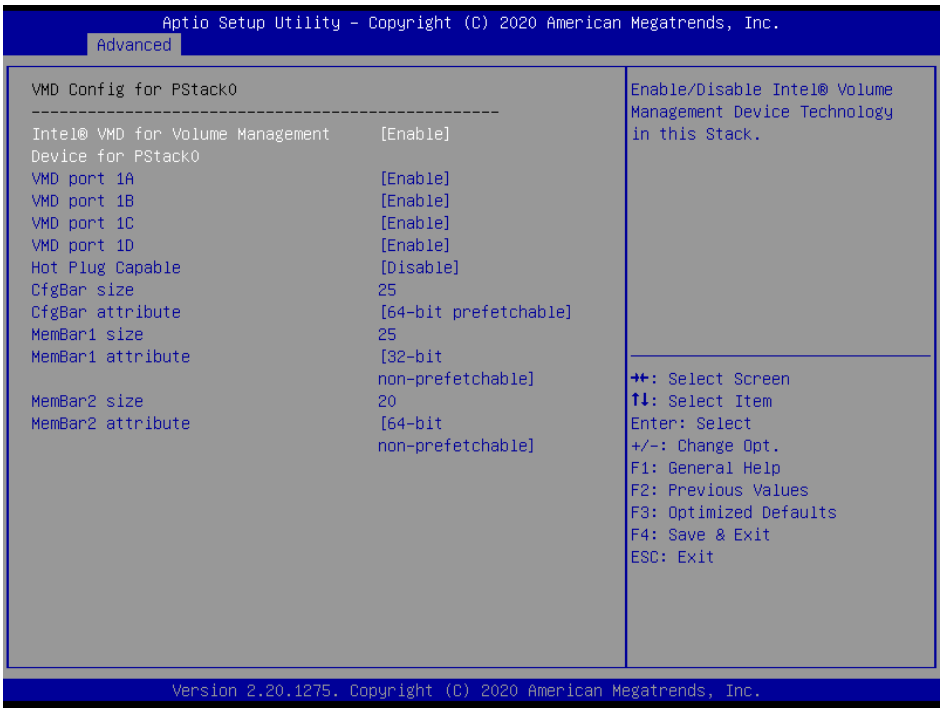
3.6.2.5.1 Intel® VT for Directed I/O (VT-d)

Item	Options	Description
Intel® VT for Directed I/O (VT-d)	Enable**[Default]** Disable	Enable/Disable Intel® Virtualization Technology for Directed I/O (VT-d) by reporting the I/O device assignment to VMM through DMAR ACPI Tables.

3.6.2.5.2 Intel® VMD Technology



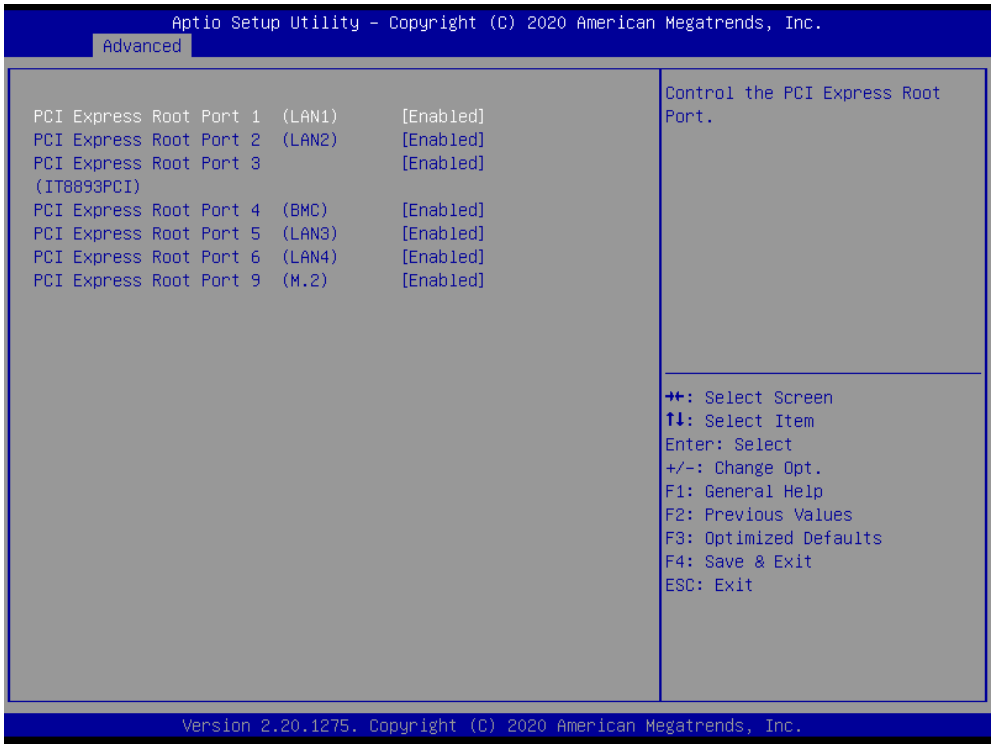
3.6.2.5.2.1 Intel® VMD for Volume Management Device on Socket 1



Item	Option	Description
Intel® VMD for Volume Management Device for PStack0	Disable Enable**[Default]**	Enable/Disable Intel® Volume Management Device Technology in this Stack.
VMD port 1A	Disable Enable**[Default]**	Enable/Disable Intel® Volume Management Device Technology on specific root port.
VMD port 1B	Disable Enable**[Default]**	Enable/Disable Intel® Volume Management Device Technology on specific root port.
VMD port 1C	Disable Enable**[Default]**	Enable/Disable Intel® Volume Management Device Technology on specific root port.
VMD port 1D	Disable Enable**[Default]**	Enable/Disable Intel® Volume Management Device Technology on specific root port.
Hot Plug Capable	Disable**[Default]** Enable	Enable/Disable Hot Plug for PCIe Root Ports 1A-1D.
CfgBar size	25	Setup VMD Config BAR size (in bits Min=20, Max=27), ex: 20bits=1MB, 27bits=128MB.
CfgBar attribute	64-bit prefetchable	Setup VMD Config BAR attribute, like 64-bit or prefetchable.
MemBar1 size	25	Setup VMD Memory BAR1 size (in bits Min=20), ex: 20bits=1MB, 22bits=4MB, 26bits=64MB.
MemBar1 attribute	32-bit non-prefetchable 64-bit non-prefetchable 64-bit prefetchable	Setup VMD Config BAR attribute, like 64-bit or prefetchable.
MemBar2 size	20	Setup VMD Memory BAR2 size (in bits Min=20), ex: 20bits=1MB, 22bits=4MB, 26bits=64MB.

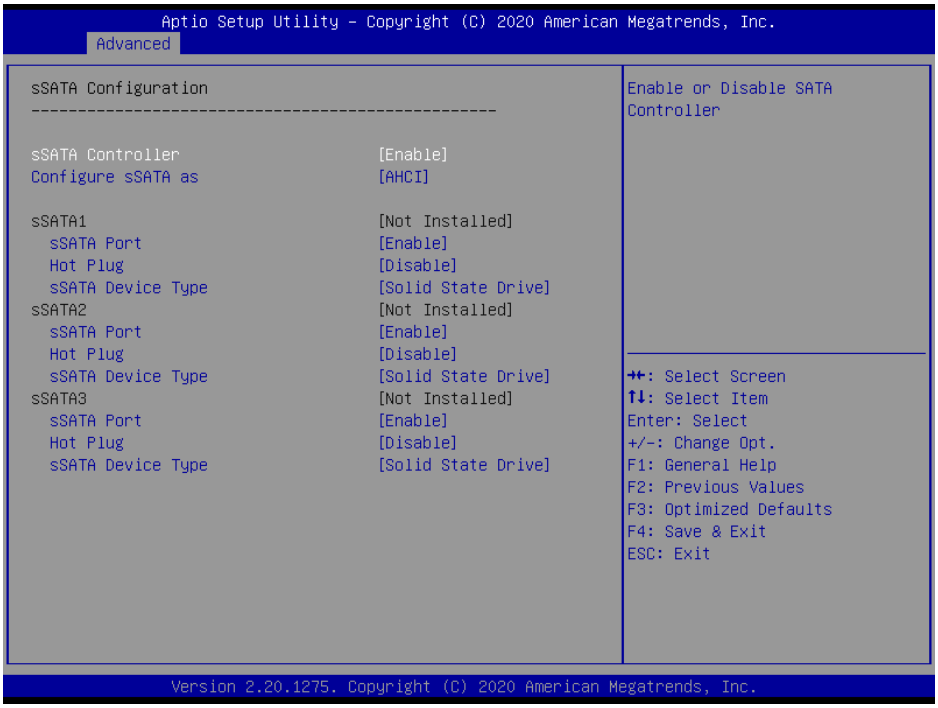
MemBar2 attribute	32-bit non-prefetchable 64-bit non-prefetchable 64-bit prefetchable	Setup VMD Config BAR attribute, like 64-bit or prefetchable.

3.6.2.6 PCI Express Configuration



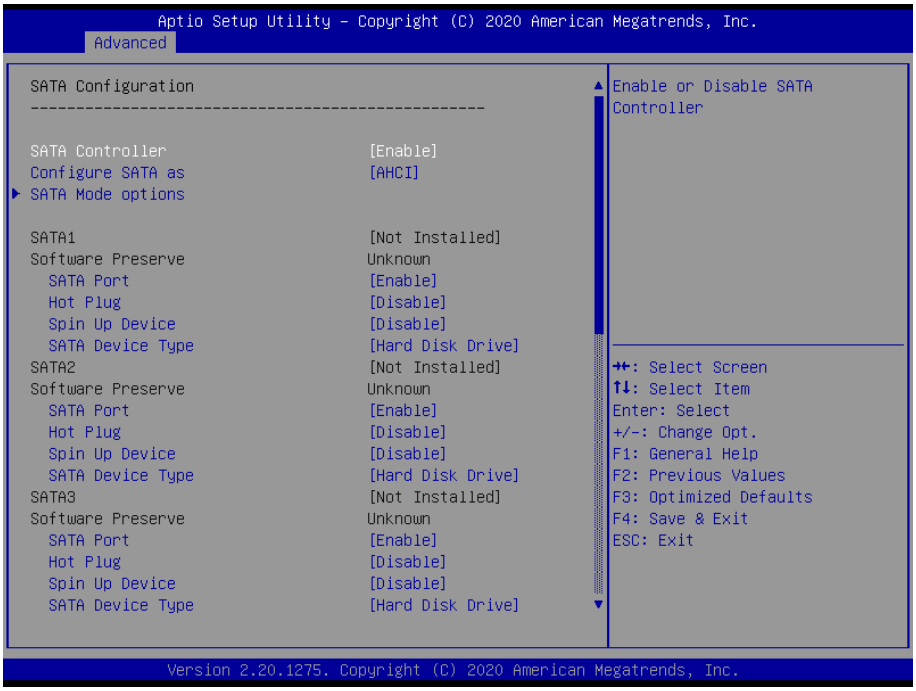
Item	Options	Description
PCI Express Root Port 1(LAN1)	Disabled Enabled**[Default]**	Control the PCI Express Root Port.
PCI Express Root Port 2(LAN2)	Disabled Enabled**[Default]**	Control the PCI Express Root Port.
PCI Express Root Port 3(IT8893PCI)	Disabled Enabled**[Default]**	Control the PCI Express Root Port.
PCI Express Root Port 4(BMC)	Disabled Enabled**[Default]**	Control the PCI Express Root Port.
PCI Express Root Port 5(LAN3)	Disabled Enabled**[Default]**	Control the PCI Express Root Port.
PCI Express Root Port 6(LAN4)	Disabled Enabled**[Default]**	Control the PCI Express Root Port.
PCI Express Root Port 9(M.2)	Disabled Enabled**[Default]**	Control the PCI Express Root Port.

3.6.2.7 sSATA Configuration



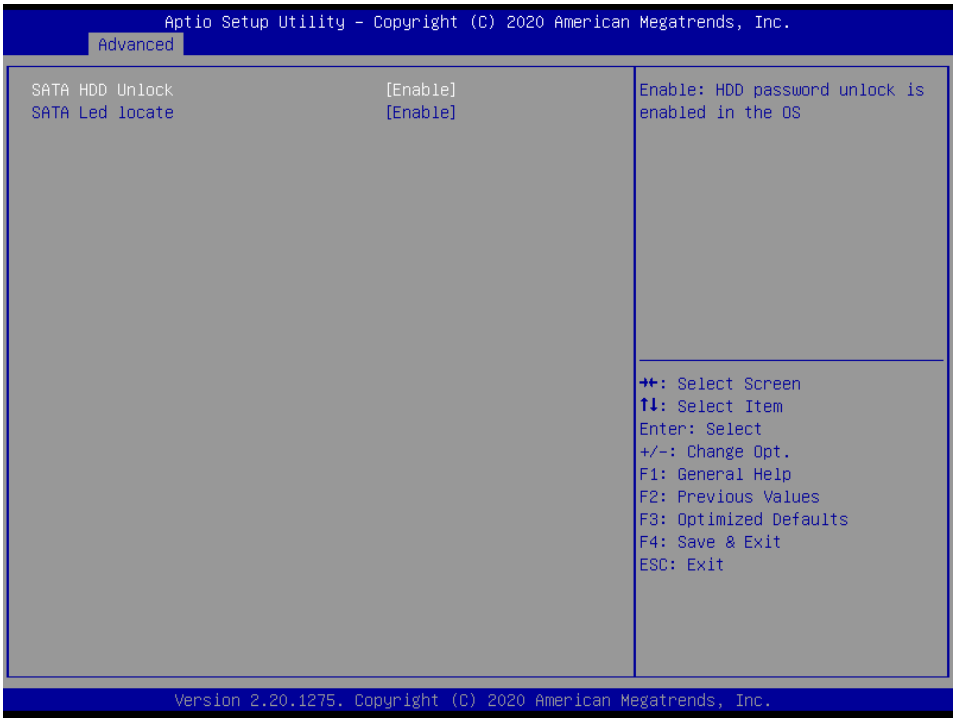
Item	Options	Description
sSATA Controller	Enable**[Default]** Disable	Enable or Disable SATA Controller.
Configure sSATA as	AHCI**[Default]** RAID	This will configure sSATA as RAID or AHCI.
sSATA Port	Disable Enable**[Default]**	Enable or Disable SATA Port.
Hot Plug	Disable**[Default]** Enable	Designates this port as Hot Pluggable.
sSATA Device Type	Hard Disk Drive Solid State Drive**[Default]**	Identify the SATA port is connected to Solid State Drive or Hard Disk Drive.

3.6.2.8 SATA Configuration



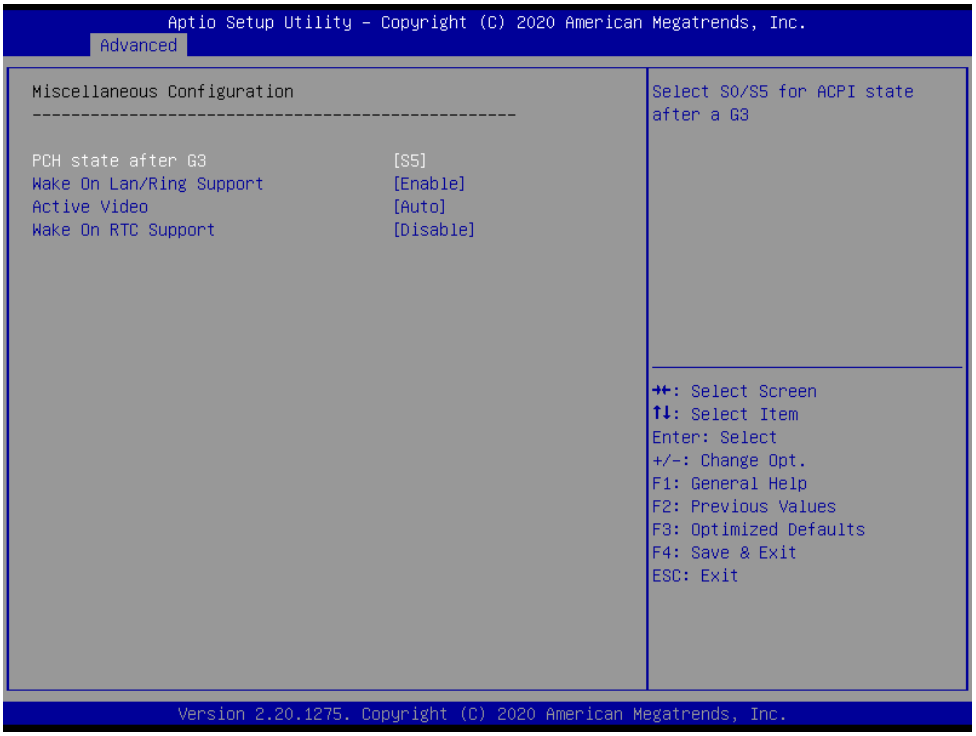
Item	Options	Description
SATA Controller	Enable**[Default]** Disable	Enable or Disable SATA Controller.
Configure SATA as	AHCI**[Default]** RAID	This will configure SATA as RAID or AHCI
SATA Port	Disable Enable**[Default]**	Enable or Disable SATA Port.
Hot Plug	Disable**[Default]** Enable	Designates this port as Hot Pluggable.
Spin Up Device	Disable**[Default]** Enable	If enabled for any of ports Staggerred Spin Up will be performed and only the drives witch have this option enabled will spin up at boot. Otherwise all drives spin up at boot.
SATA Device Type	Hard Disk Drive Solid State Drive**[Default]**	Identify the SATA port is connected to Solid State Drive or Hard Disk Drive.

3.6.2.8.1 SATA Mode options



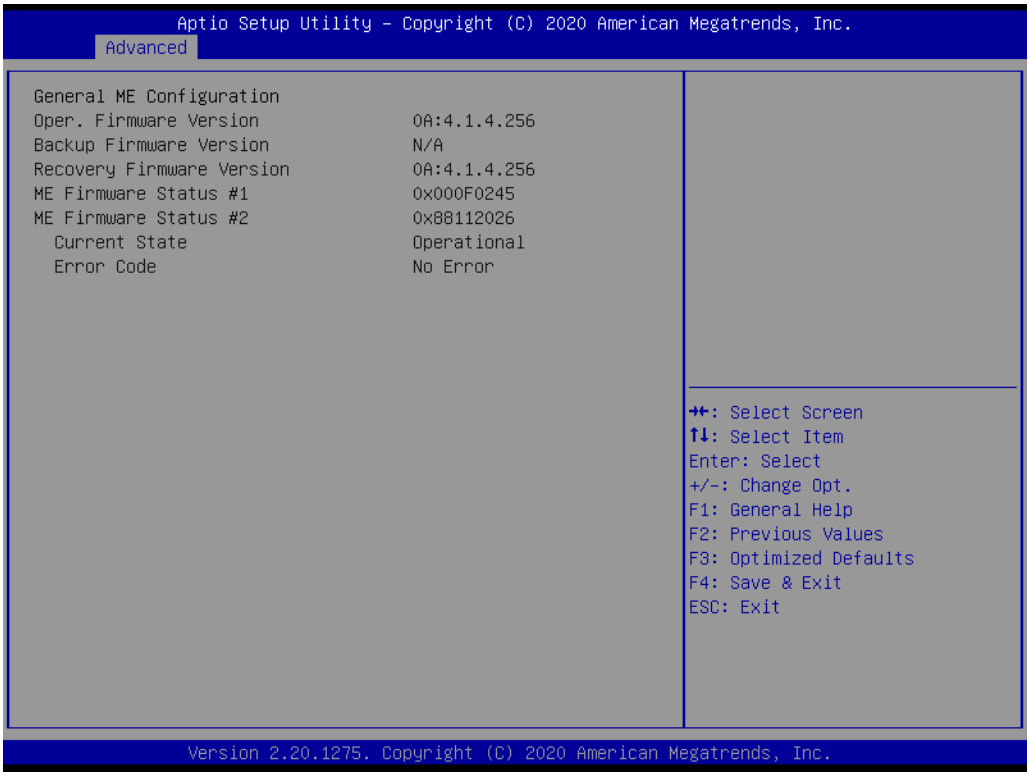
Item	Option	Description
SATA HDD Unlock	Disable Enable**[Default]**	Enable: HDD password unlock is enabled in the OS.
SATA Led locate	Disable Enable**[Default]**	If enabled LED/SGPIO hardware is attached.

3.6.2.9 Miscellaneous Configuration

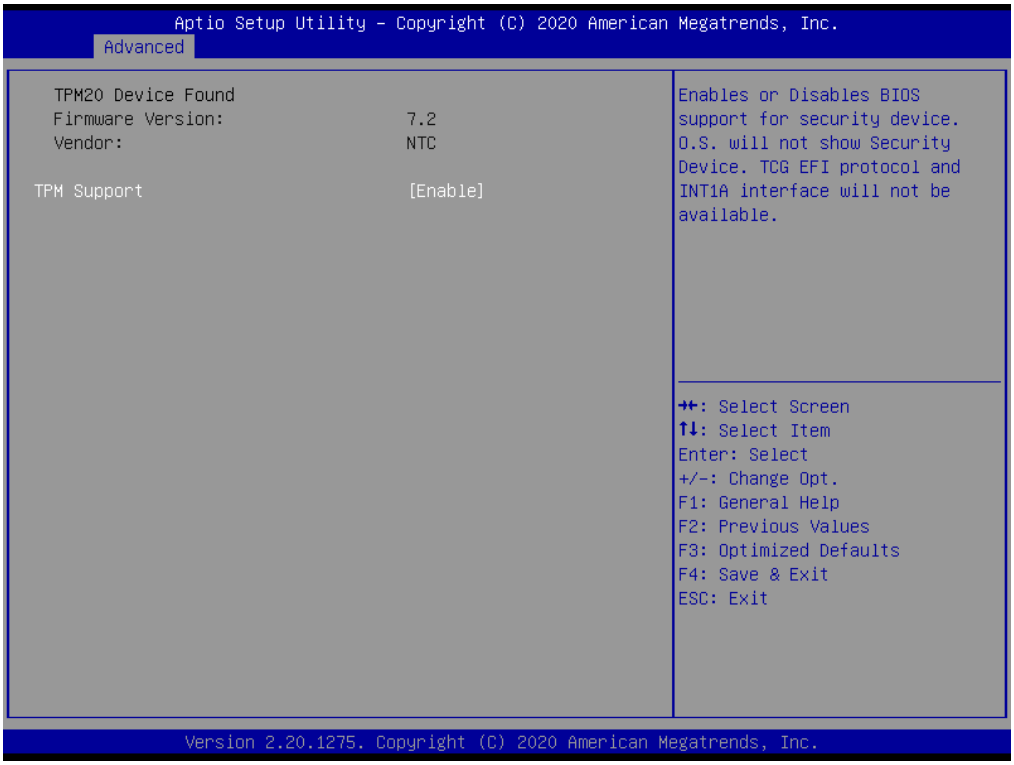


Item	Options	Description
PCH state after G3	S0 S5**[Default]** Leave power state unchanged	Select S0/S5 for ACPI state after a G3.
Wake On Lan/Ring Support	Disable, Enable**[Default]**	Enable or Disable Wake On Lan Support.
Active Video	Auto**[Default]** Onboard Offboard	Select active Video type.
Wake On RTC Support	Disable**[Default]**, Enable	Enable or disable System wake on alarm event. When enabled, System will wake on the day ::hr::min::sec specified.

3.6.2.10 Server ME Configuration

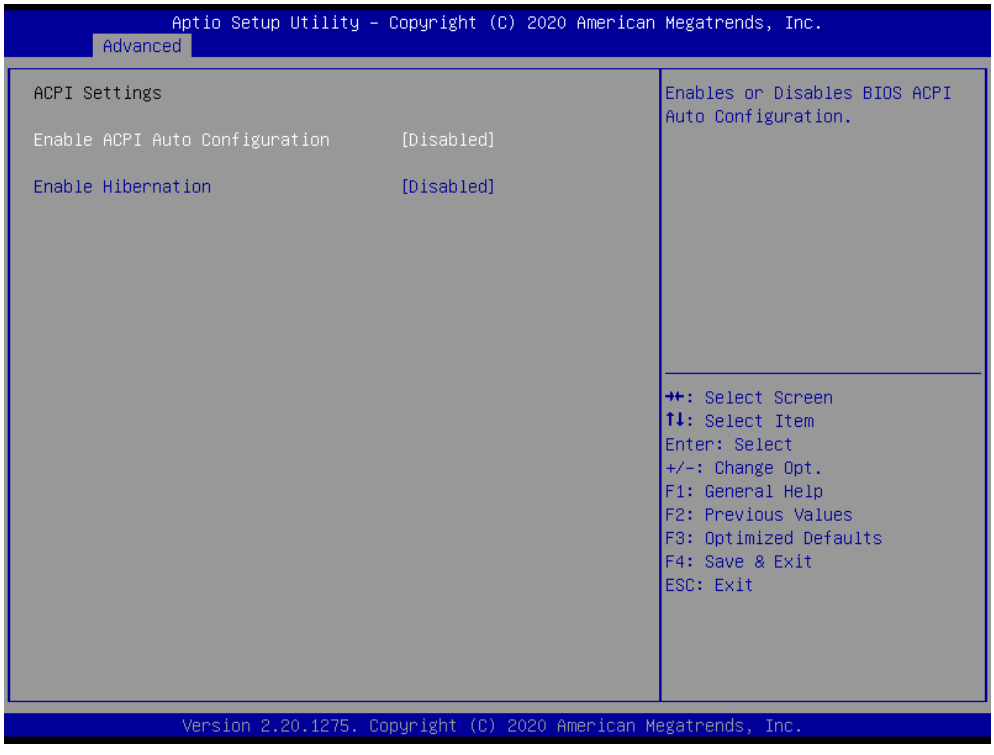


3.6.2.11 Trusted Computing



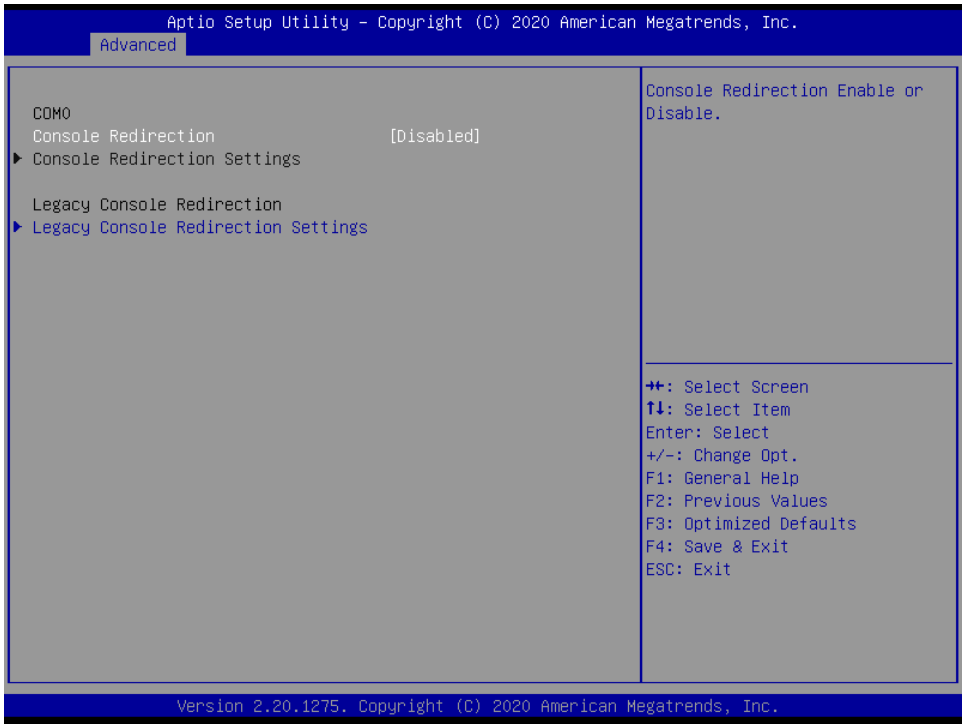
Item	Options	Description
TPM Support	Disable, Enable**[Default]**	Enables or Disables BIOS support for security device. O.S. will not show Security Device. TCG EFI protocol and INT1A interface will not be available.

3.6.2.12 ACPI Settings



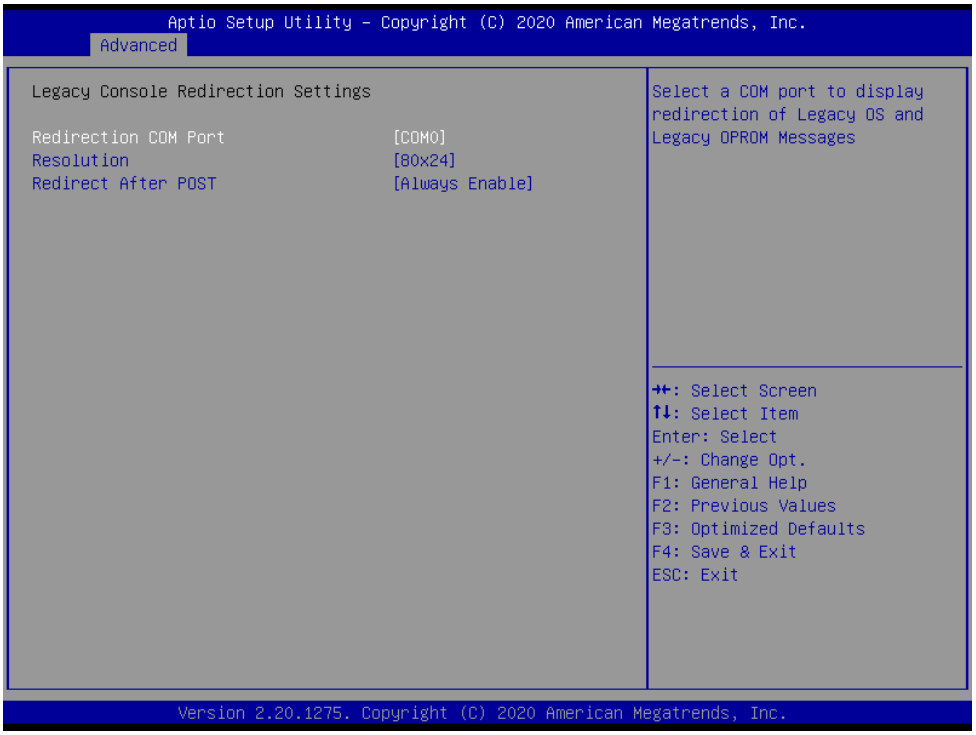
Item	Options	Description
Enable ACPI Auto Configuration	Disabled**[Default]** Enabled	Enables or Disables BIOS ACPI Auto Configuration.
Enable Hibernation	Disabled**[Default]** Enabled	Enables or Disables System ability to Hibernate (OS/S4 Sleep State). This option may not be effective with some operating systems.

3.6.2.13 Serial Port Console Redirection



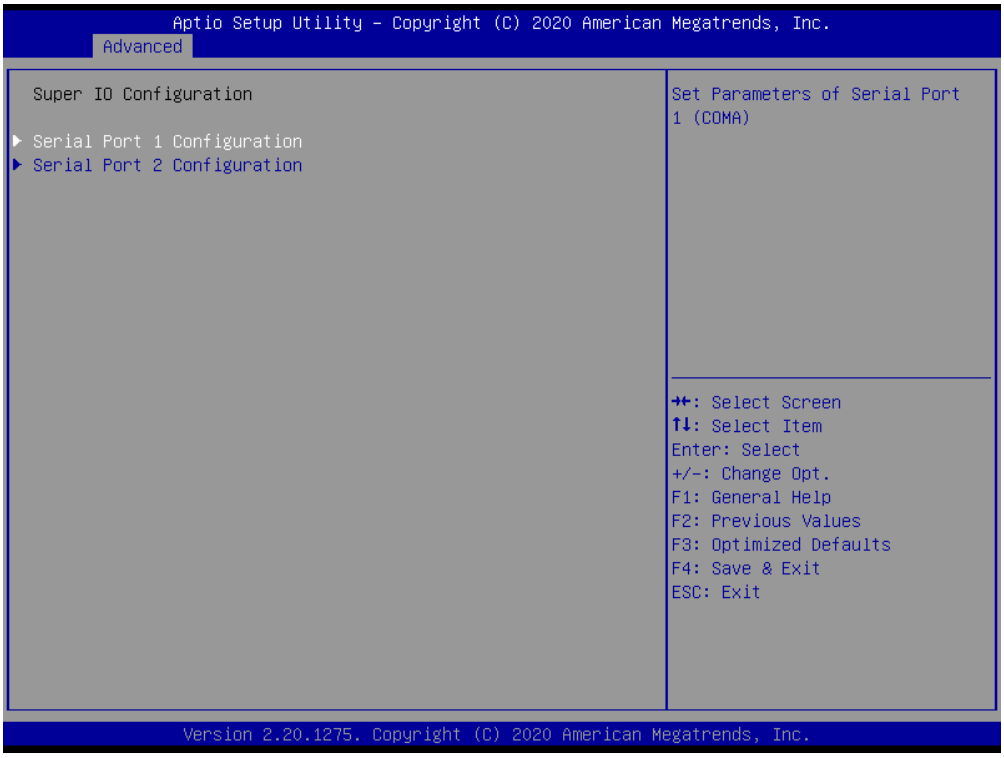
Item	Options	Description
Console Redirection	Disabled**[Default]**, Enabled	Console Redirection Enable or Disable.

3.6.2.13.1 Legacy Console Redirection Settings



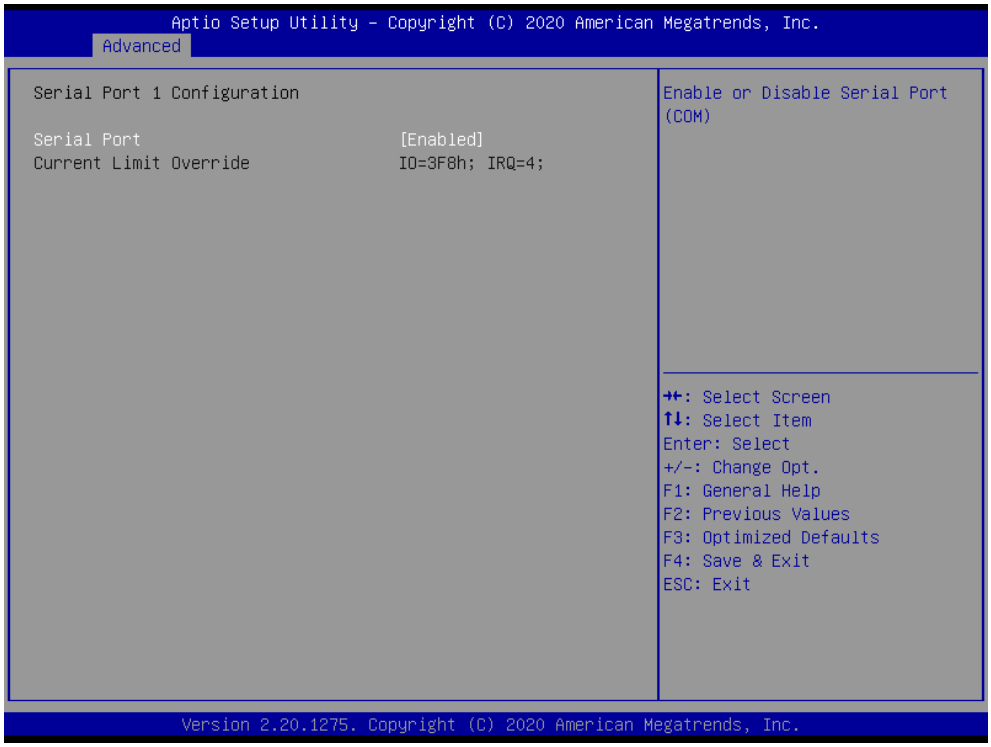
Item	Option	Description
Redirection COM Port	COM0**[Default]**	Select a COM port to display redirection of Legacy OS and Legacy OPROM Messages.
Resolution	80x24**[Default]** 80x25	On Legacy OS, the Number of Wows and Columns supported redirection.
Redirect After POST	Always Enable**[Default]** BootLoader	When Bootloader is selected, then Legacy Console Redirection is disabled before booting to legacy OS. When Always Enable is selected, then Legacy Console Redirection is enabled for legacy OS. Default setting for this option is set to Always Enable.

3.6.2.14 Super IO Configuration



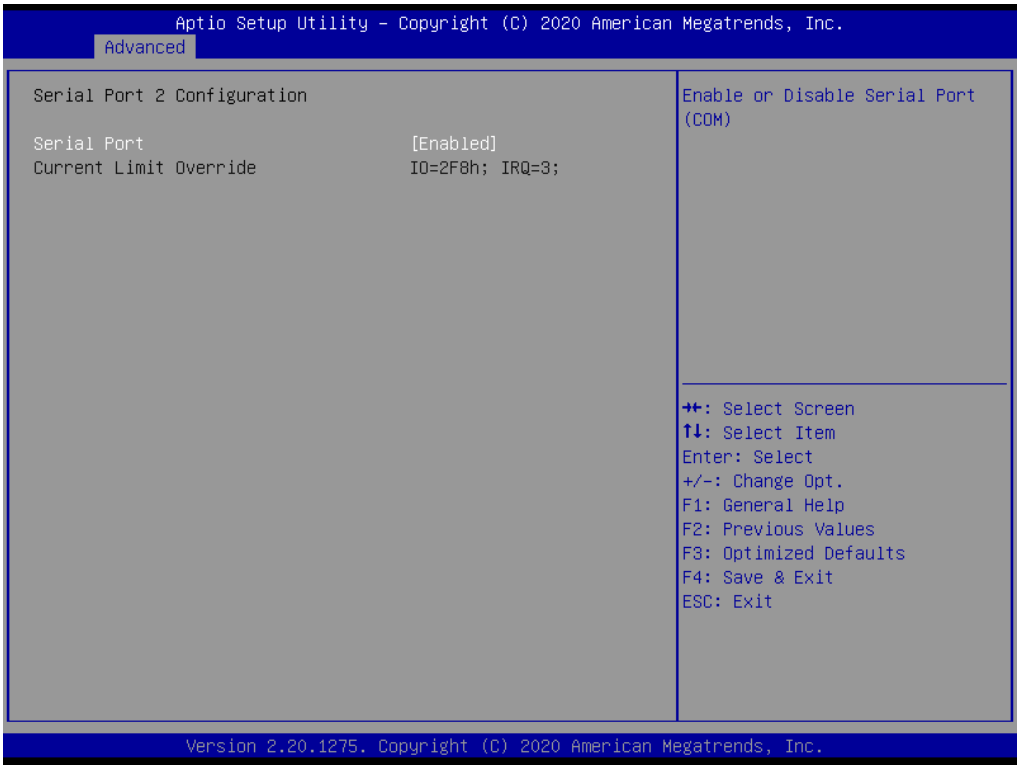
Item	Description
Serial Port 1 Configuration	Set Parameters of Serial Port 1 (COMA).
Serial Port 2 Configuration	Set Parameters of Serial Port 2 (COMB).

3.6.2.14.1 Serial Port 1 Configuration



Item	Option	Description
Serial Port	Enabled**[Default]**, Disabled	Enable or Disable Serial Port (COM).

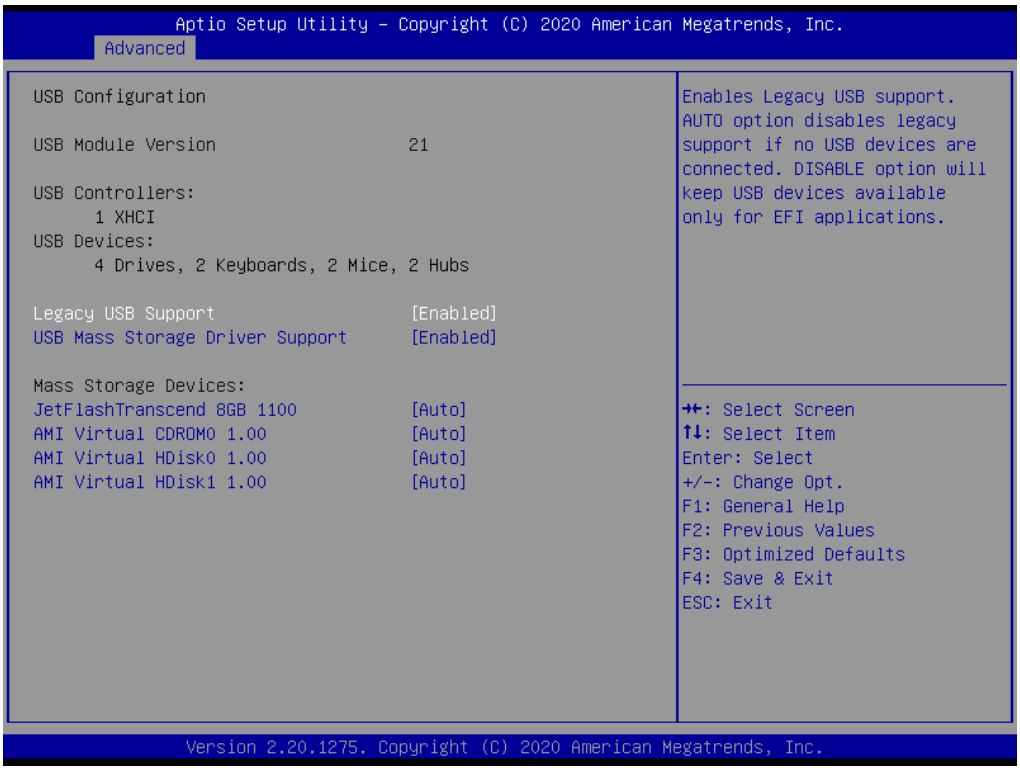
3.6.2.14.2 Serial Port 2 Configuration



Item	Option	Description
Serial Port	Enabled**[Default]**, Disabled	Enable or Disable Serial Port (COM).

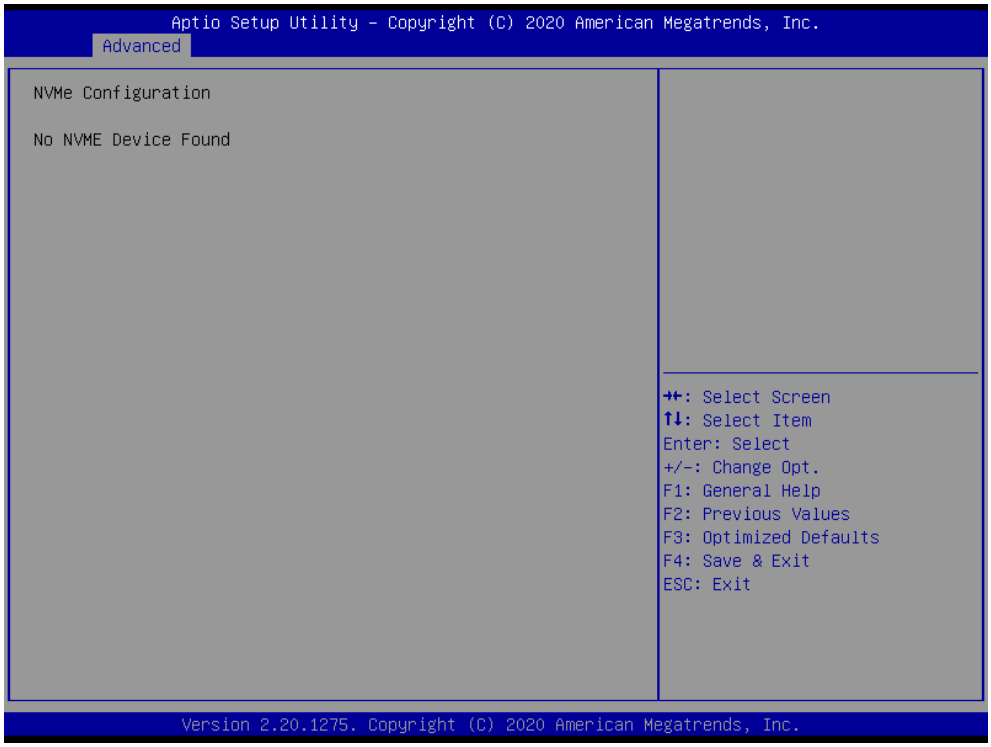
3.6.2.15 USB Configuration

The USB Configuration menu helps read USB information and configures USB settings.

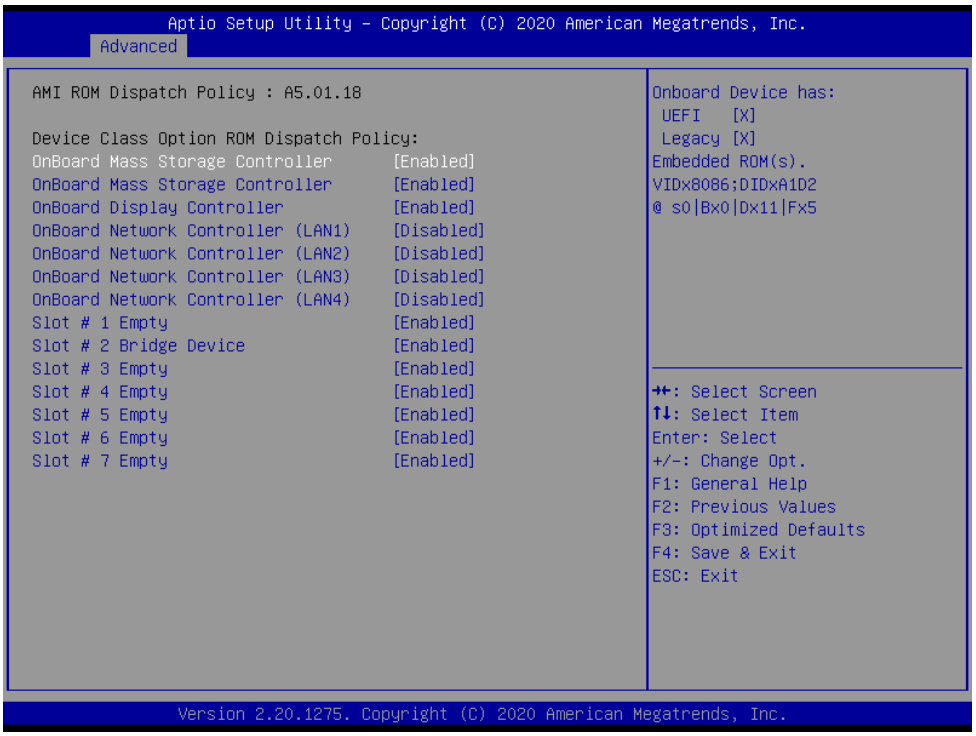


Item	Options	Description
Legacy USB Support	Enabled**[Default]**, Disabled Auto	Enables Legacy USB support. AUTO option disables legacy support if no USB devices are connected. DISABLE option will keep USB devices available only for EFI applications.
USB Mass Storage Driver Support	Disabled Enabled**[Default]**,	Enable/Disable USB Mass Storage Driver Support.
Device power-up delay	Auto**[Default]** Manual	Maximum time the device will take before it properly reports itself to the Host Controller. 'Auto' uses default value: for a Root port it is 100ms, for a Hub port the delay is taken form Hub descriptor.
Mass Storage Devices	Auto**[Default]** Floppy Forced FDD Hard Disk CD-ROM	Mass storage device emulation type. 'AUTO' enumerates devices according to their media format. Optical drives are emulated as 'CDROM', drives with no media will be emulated according to a drive type.

3.6.2.16 NVMe Configuration



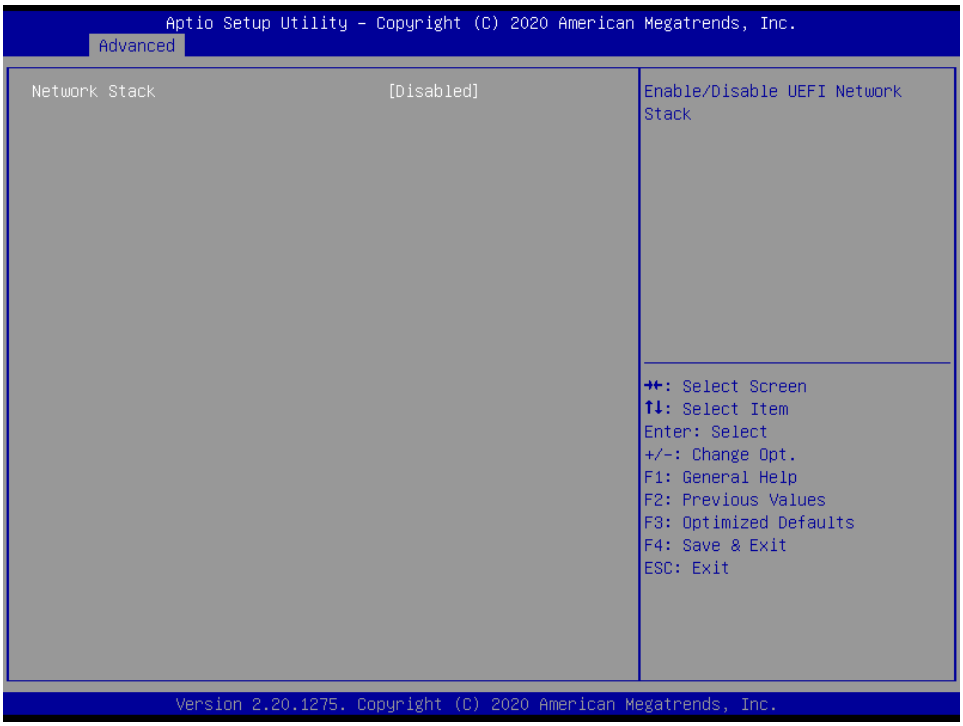
3.6.2.17 Option ROM Dispatch Policy



Item	Options	Description
Onboard Mass Storage Controller	Enabled**[Default]**, Disabled	Onboard Device has: UEFI [X] Legacy [X]

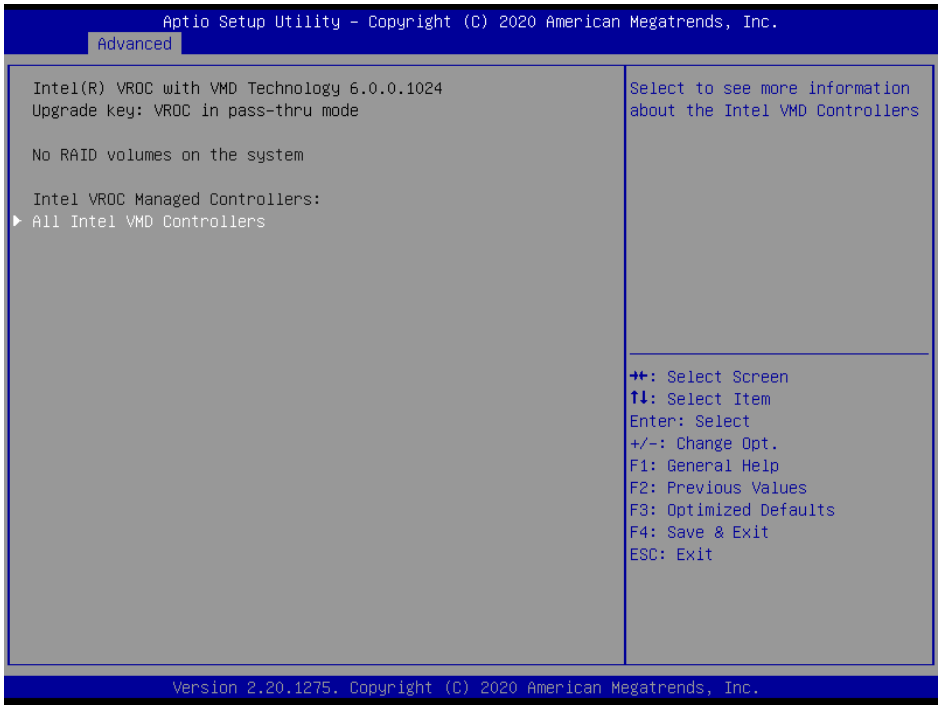
		Embedded ROM(s). VIDx8086; DIDxA1D2 @ s0|Bx0 |Dx11 |Fx5
Onboard Display Controller	Enabled**[Default]**, Disabled	Onboard Device has: UEFI [X] Legacy [X] Embedded ROM(s). VIDx1A03; DIDx2000 @ s0|BxA |Dx0 |Fx0
Onboard Network Controller(LAN1)	Enabled**[Default]**, Disabled	Onboard Device has: UEFI [X] Legacy [X] Embedded ROM(s). VIDx8086; DIDx1533 @ s0|Bx6 |Dx0 |Fx0
Onboard Network Controller(LAN2)	Enabled, Disabled**[Default]**	Onboard Device has: UEFI [X] Legacy [X] Embedded ROM(s). VIDx8086; DIDx1533 @ s0|Bx7 |Dx0 |Fx0
Onboard Network Controller(LAN3)	Enabled, Disabled**[Default]**	Onboard Device has: UEFI [X] Legacy [X] Embedded ROM(s). VIDx8086; DIDx1533 @ s0|Bx1 |Dx0 |Fx0
Onboard Network Controller(LAN4)	Enabled, Disabled**[Default]**	Onboard Device has: UEFI [X] Legacy [X] Embedded ROM(s). VIDx8086; DIDx1533 @ s0|Bx2 |Dx0 |Fx0
Slot#1 Empty	Enabled**[Default]**, Disabled	Enable or Disable Option ROM execution for selected Slot.
Slot#2 Bridge Device	Enabled**[Default]**, Disabled	Enable or Disable Option ROM execution for selected Slot.
Slot#3 Empty	Enabled**[Default]**, Disabled	Enable or Disable Option ROM execution for selected Slot.
Slot#4 Empty	Enabled**[Default]**, Disabled	Enable or Disable Option ROM execution for selected Slot.
Slot#5 Empty	Enabled**[Default]**, Disabled	Enable or Disable Option ROM execution for selected Slot.
Slot#6 Empty	Enabled**[Default]**, Disabled	Enable or Disable Option ROM execution for selected Slot.
Slot#7 Empty	Enabled**[Default]**, Disabled	Enable or Disable Option ROM execution for selected Slot.

3.6.2.18 Network Stack Configuration

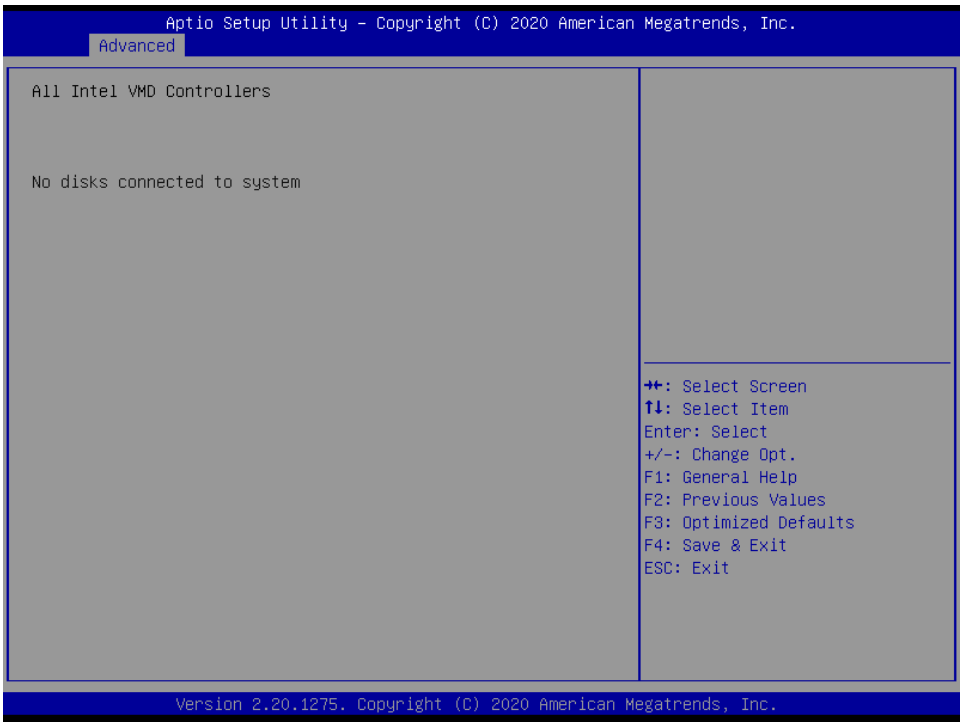


Item	Options	Description
Network Stack	Enabled Disabled**[Default]**	Enable/Disable UEFI Network Stack.

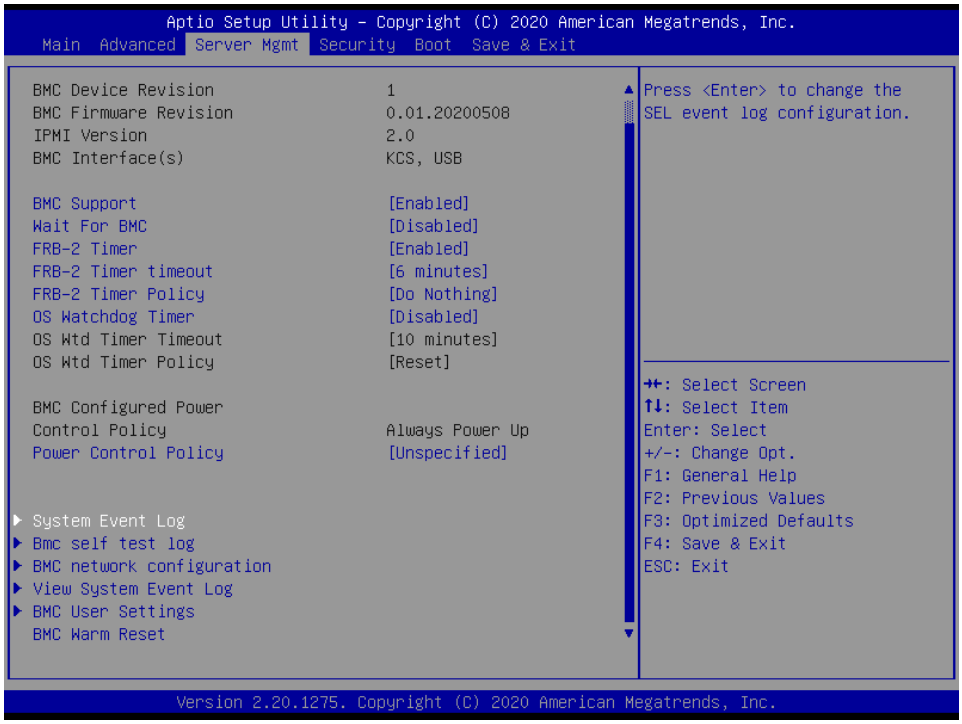
3.6.2.19 Intel® Virtual RAID on CPU



3.6.2.19.1 All Intel VMD Controllers



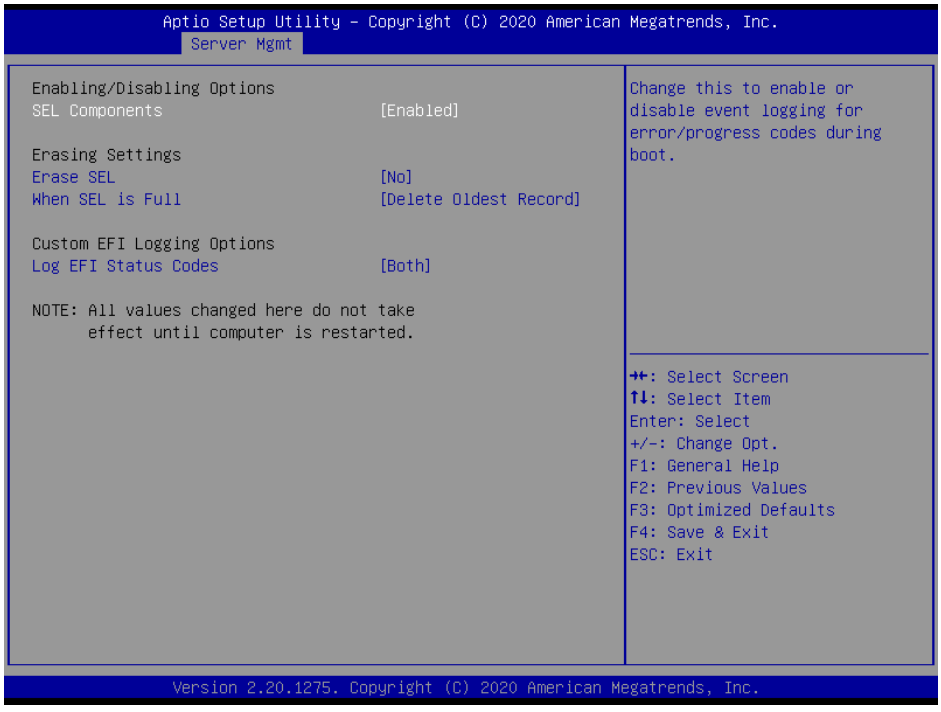
3.6.3 Server Mgmt



Item	Options	Description
BMC Support	Enabled**[Default]** Disabled	Enable/Disable interfaces to communicate with BMC.
Wait For BMC	Enabled Disabled**[Default]**	Wait For BMC response for specified time out. BMC

		starts at the same time when BIOS starts during AC power ON. It takes around 30 seconds to initialize Host to BMC interfaces.
FRB-2 Timer	Enabled**[Default]** Disabled	Enable or Disable FRB-2 time (POST timer).
FRB-2 Timer timeout	3 minutes 4 minutes 5 minutes 6 minutes**[Default]**	Enter value Between 3 to 6 min for FRB-2 Timer Expiration value.
FRB-2 Timer Policy	Do Nothing**[Default]** Reset Power Down Power Cycle	Configure how the system should respond if the FRB-2 Timer expires. Not available if FRB-2 Timer is disabled.
OS Watchdog Timer	Enabled Disabled**[Default]**	If enabled, starts a BIOS timer which can only be shut off by Management Software after the OS loads. Helps determine that the OS successfully loaded or follows the OS Boot Watchdog Timer policy.
Power Control Policy	Do Not PowerUp Last Power State Power Restore Unspecified**[Default]**	Configure how the system should respond if AC Power is lost, Reset not required as selected Power policy will be set in BMC when policy is saved.

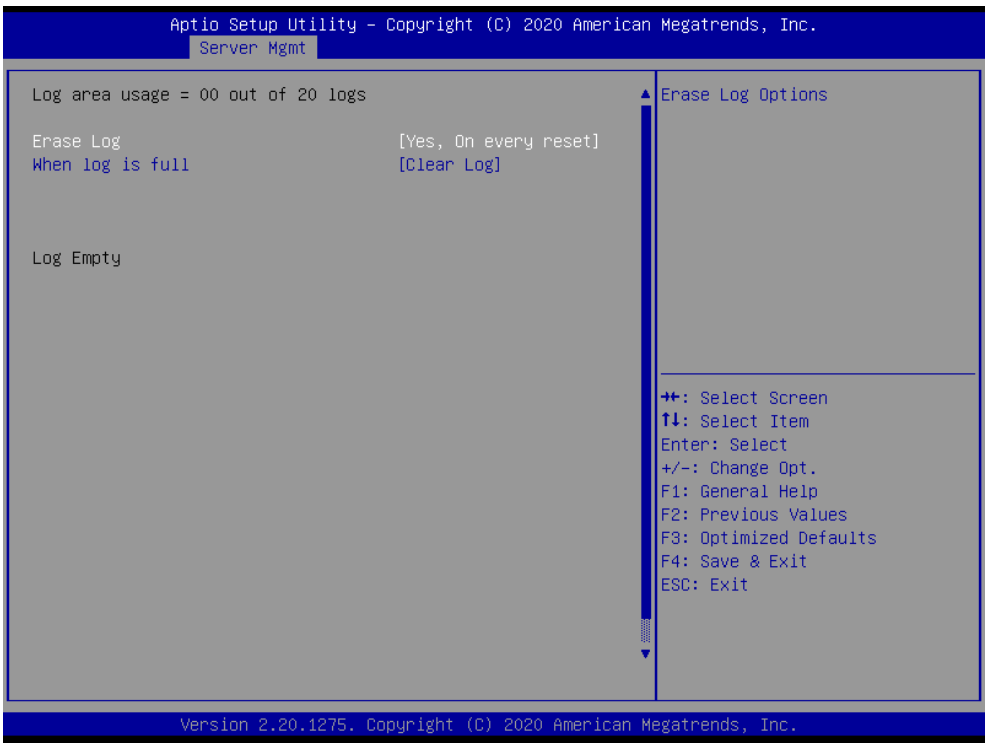
3.6.3.1 System Event Log



Item	Option	Description
SEL Components	Enabled**[Default]** Disabled	Change this to enable or disable event logging for error/progress codes during boot.
Erase SEL	No**[Default]** Yes, On next reset	Choose options for erasing SEL.

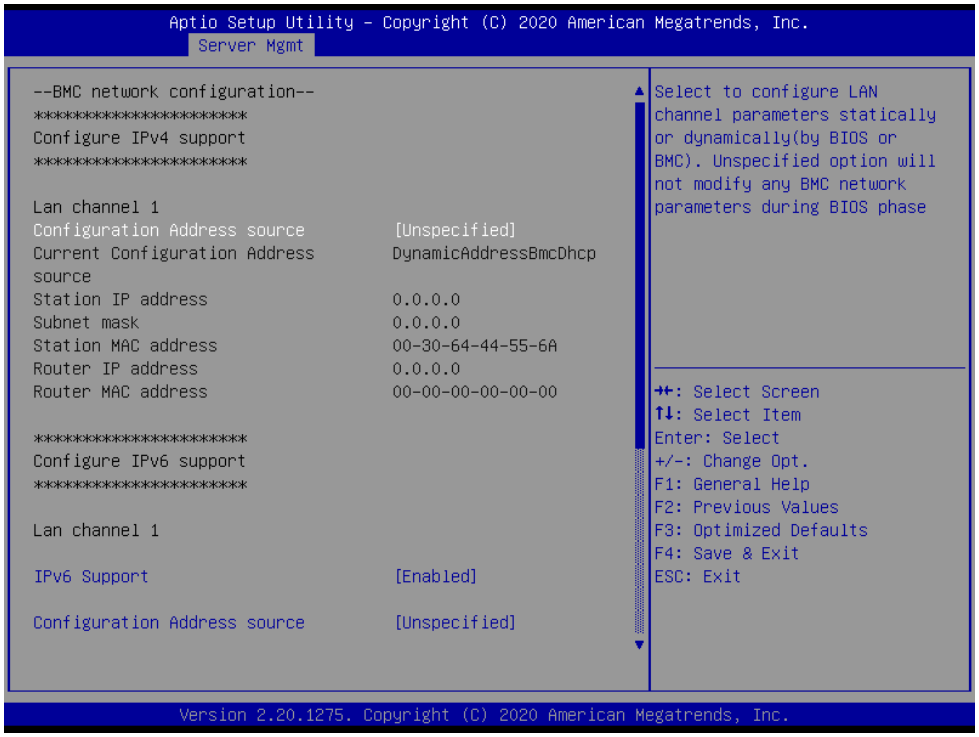
	Yes, On every reset	
When SEL is Full	Do Nothing Erase Immediately Delete Oldest Record**[Default]**	Choose options for reactions to a full SEL.
Log EFI Status Codes	Disabled Both**[Default]** Error code Progress code	Disable the logging of EFI Status Codes or log only error code or only progress code or both.

3.6.3.2 Bmc self test log



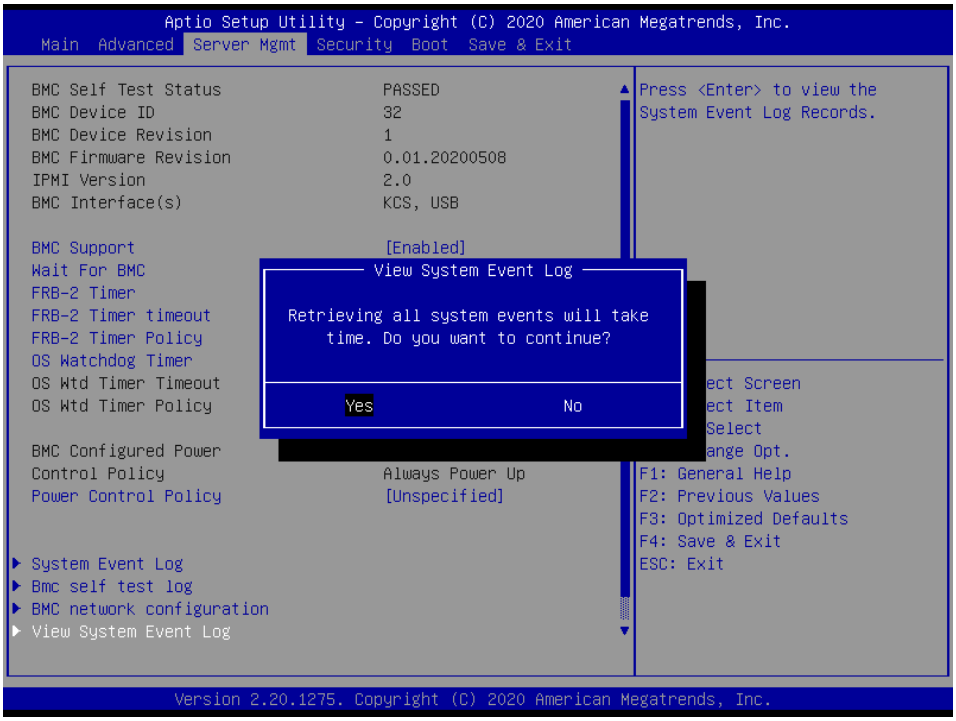
Item	Option	Description
Erase Log	Yes, On every reset**[Default]** No	Erase Log Options.
When log is full	Clear Log**[Default]** Do not log any more	Select the action to be taken when log is full.

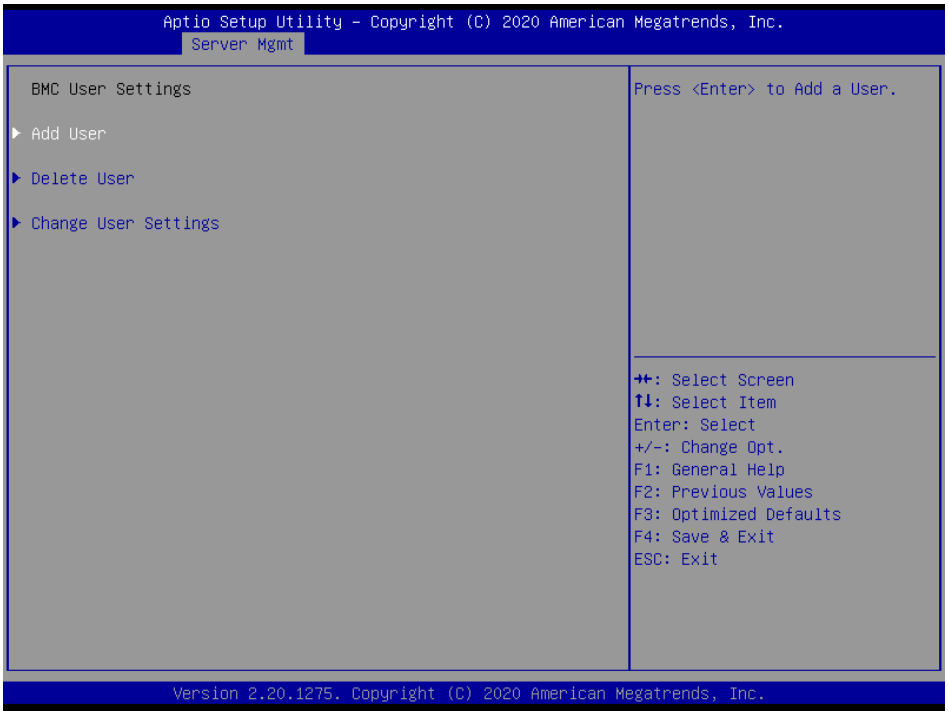
3.6.3.3 BMC network configuration



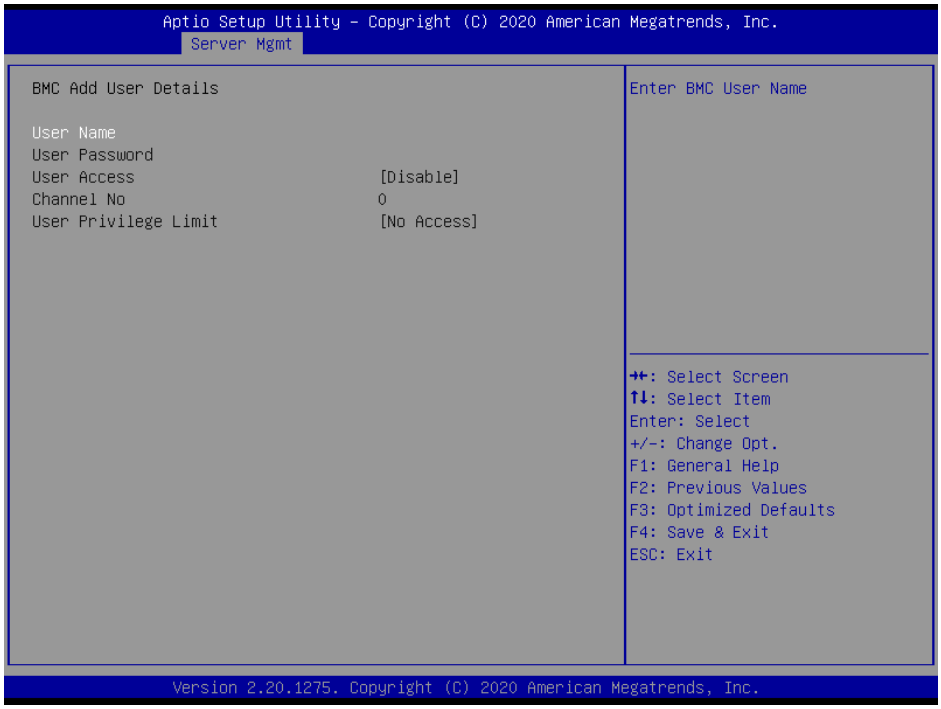
Item	Option	Description
Configuration Address source	Unspecified**[Default]** Static DynamicBmcDhcp DynamicBmcNonDhcp	Select configure LAN channel parameters statically or dynamically(by BIOS or BMC). Unspecified option will not modify any BMC network parameters during BIOS phase.
IPV6 Support	Enabled**[Default]** Disabled	Enable or Disable LAN1 IPv6 Support.
Configuration Address source	Unspecified**[Default]** Static DynamicBmcDhcp	Select to configure LAN channel parameters statically or dynamically(by BIOS or BMC). Unspecified option will not modify any BMC network parameters during BIOS phase.

3.6.3.4 BMC User Settings



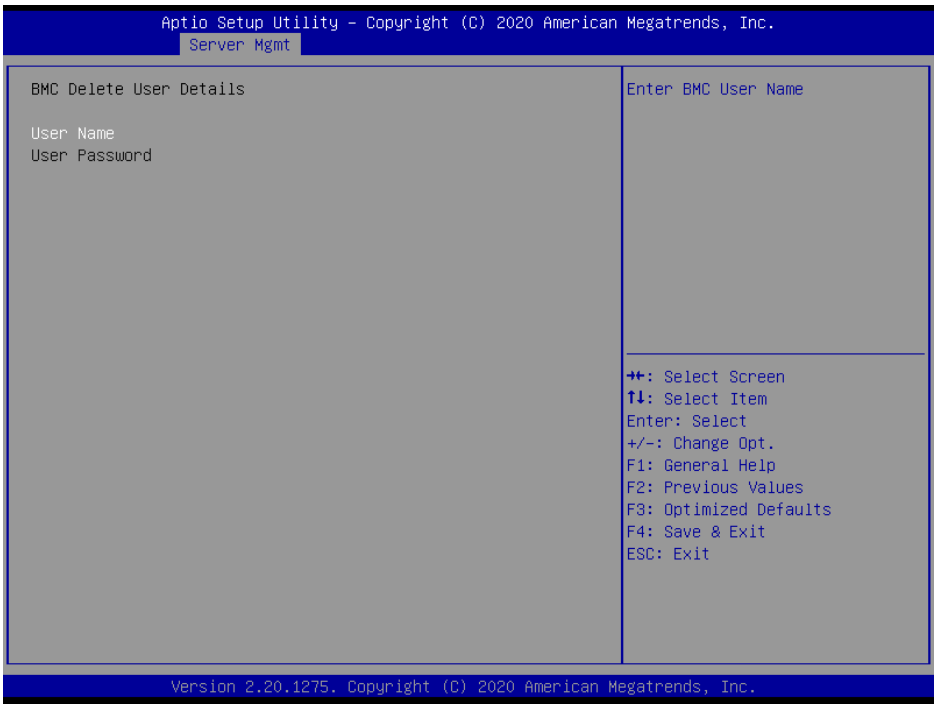


3.6.3.4.1 BMC Add User Details



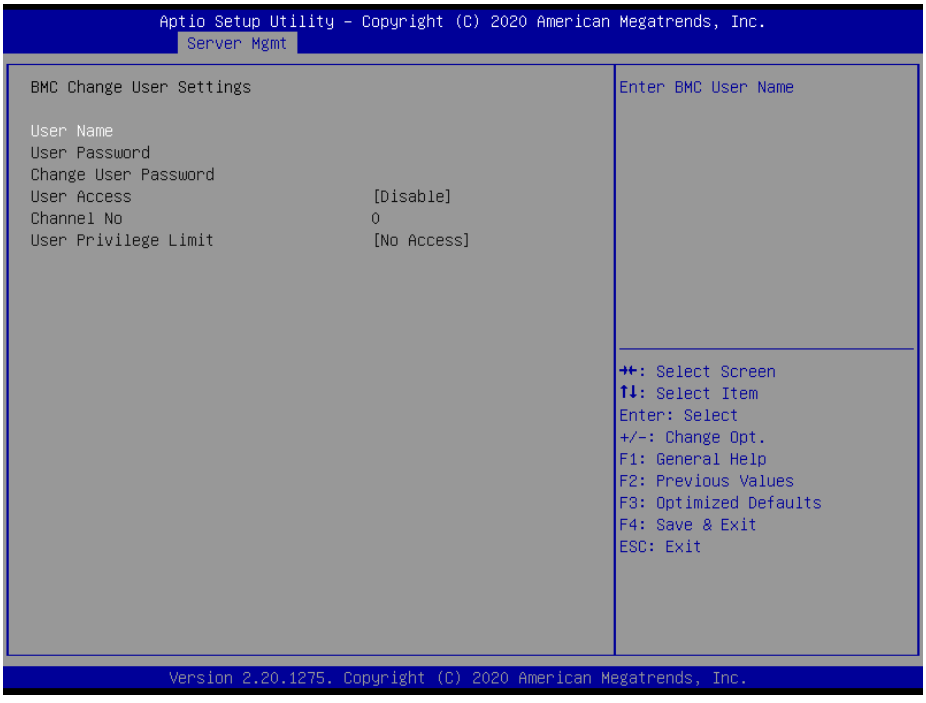
Item	Description
User Name	Enter BMC User Name.

3.6.3.4.2 BMC Delete User Details



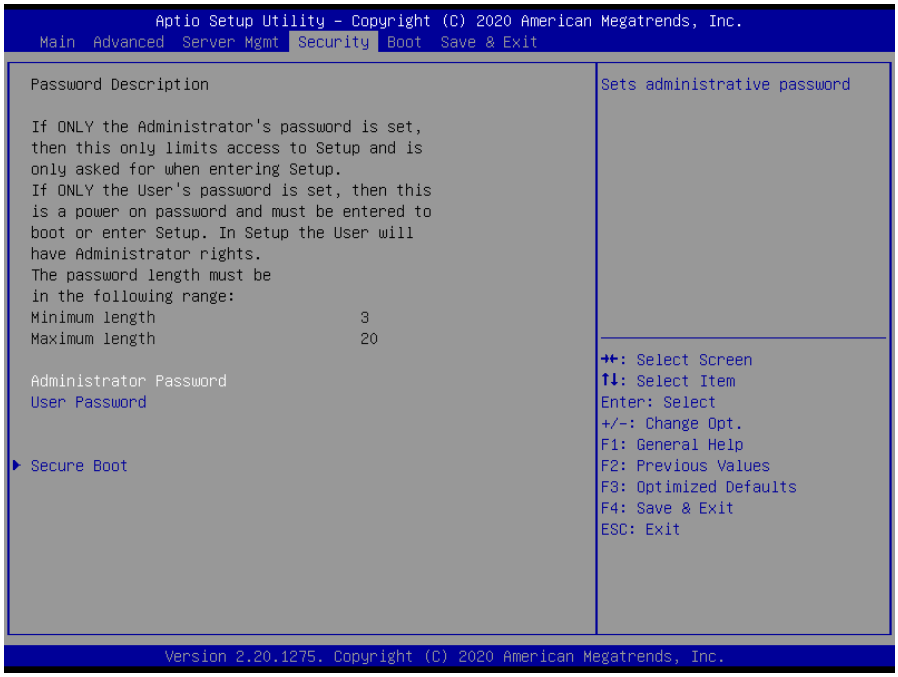
Item	Description
User Name	Enter BMC User Name.

3.6.3.4.3 BMC Change User Settings



Item	Description
User Name	Enter BMC User Name.

3.6.4 Security



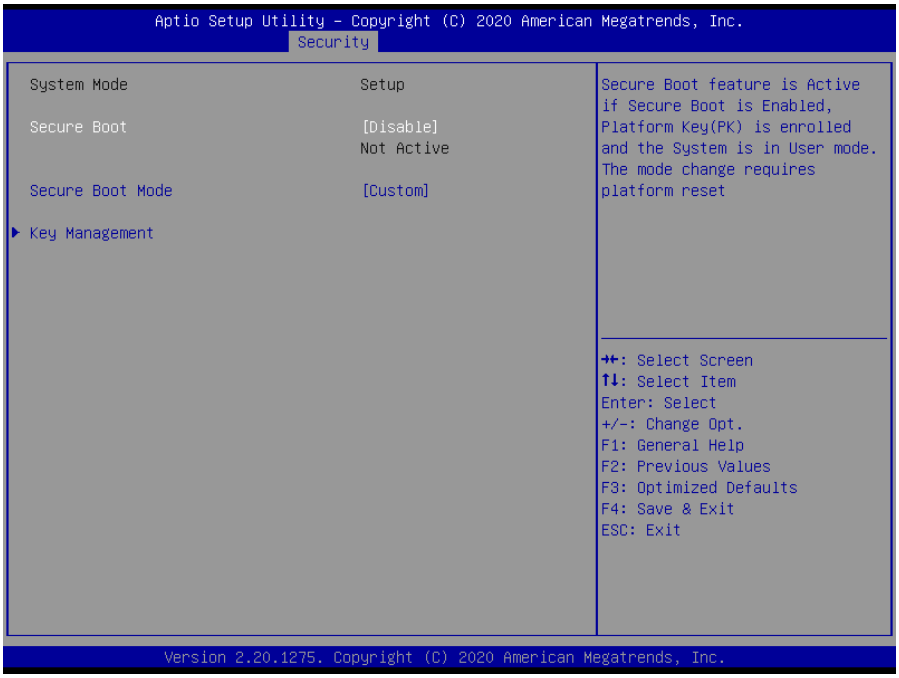
- **Administrator Password**

Set setup Administrator Password

- **User Password**

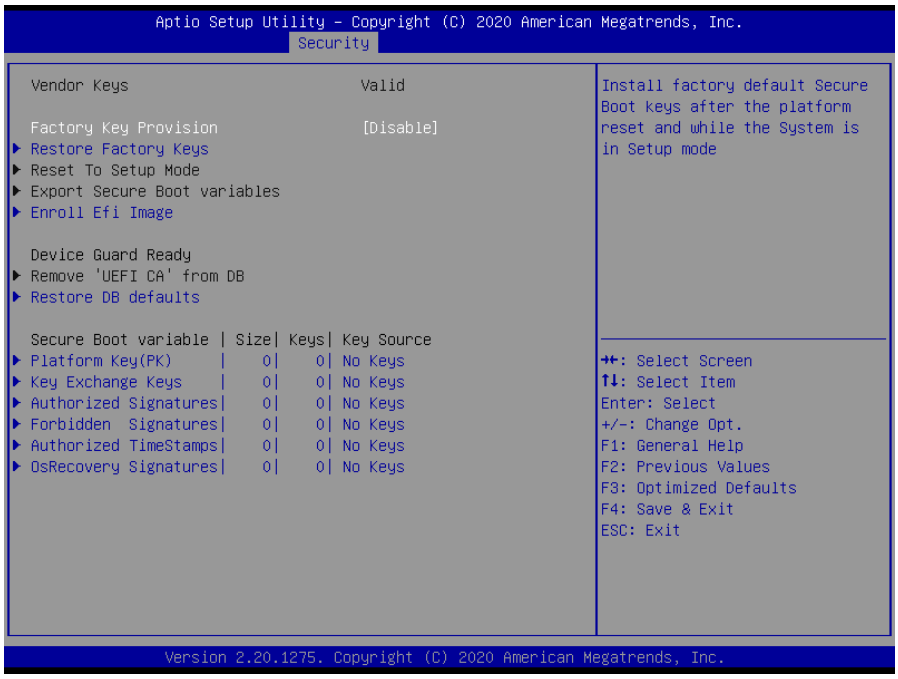
Set User Password

3.6.4.1 Secure Boot



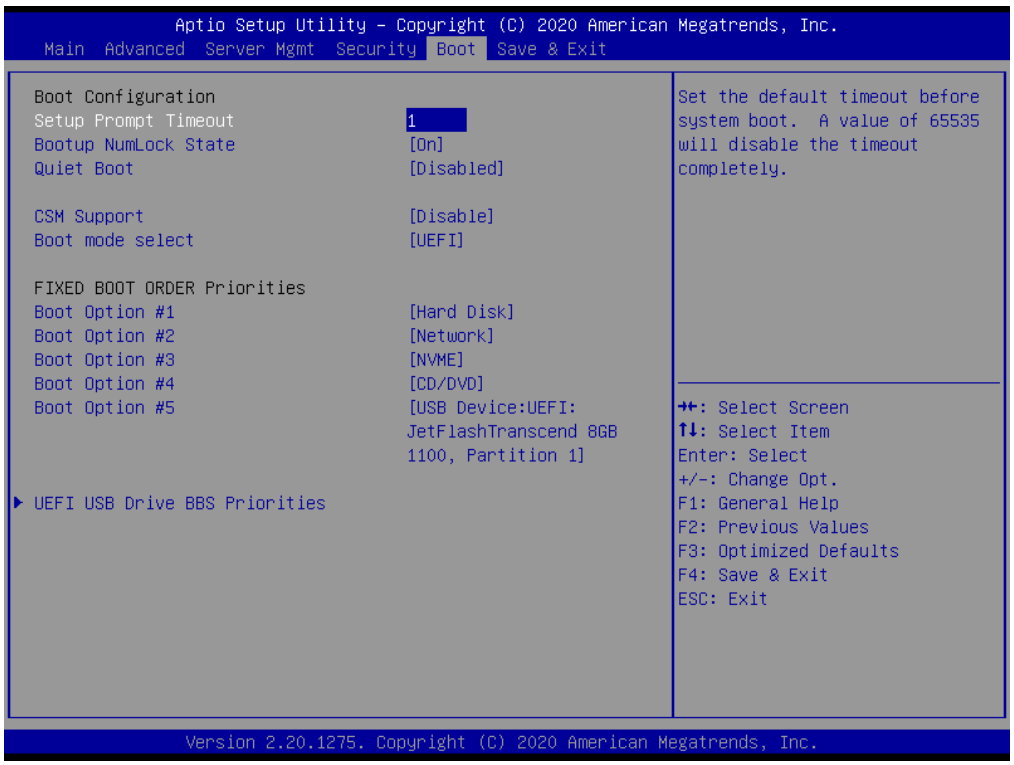
Item	Option	Description
Secure Boot	Disabled Enabled**[Default]**	Secure Boot feature is Active if Secure Boot is Enable, Platform Key(PK) is enrolled and the System is in User mode. The mode change requires platform reset.
Secure Boot Mode	Standard Custom**[Default]**	Secure Boot mode selector: Standard/Custom. In Custom mode Secure Boot Variables can be configured without authentication.

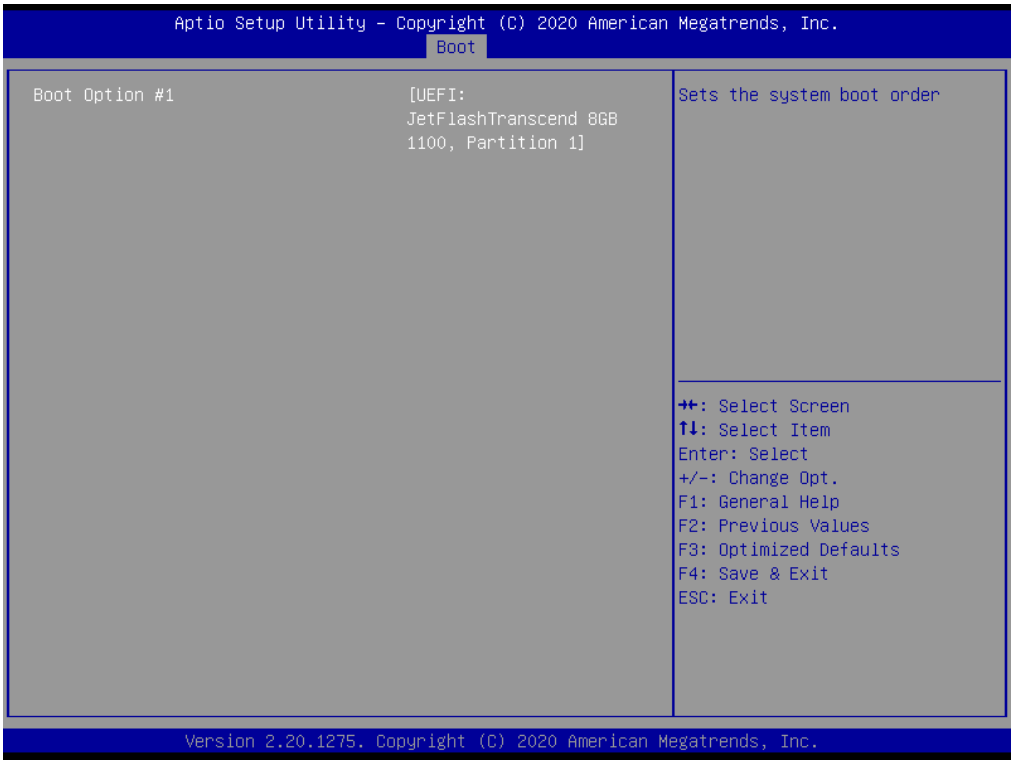
3.6.4.1.1 Key Management



Item	Option	Description
Factory Key Provision	Disabled**[Default]** Enabled	Install factory default Secure Boot keys after the platform reset and while the System is in Setup mode.

3.6.5 Boot

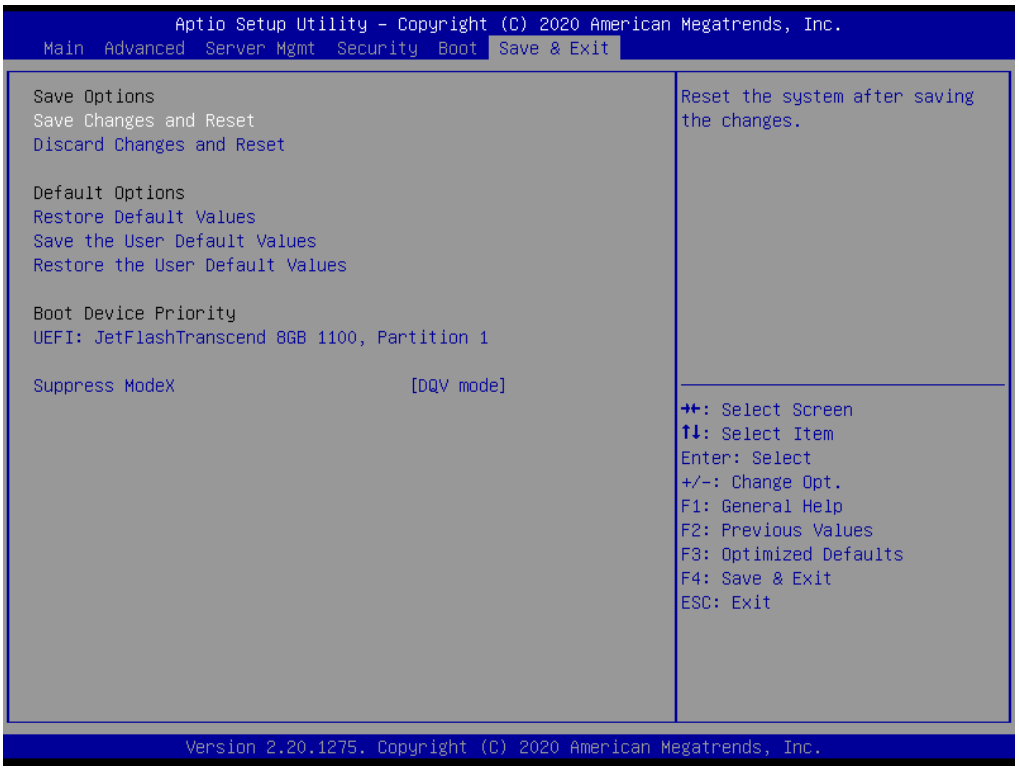


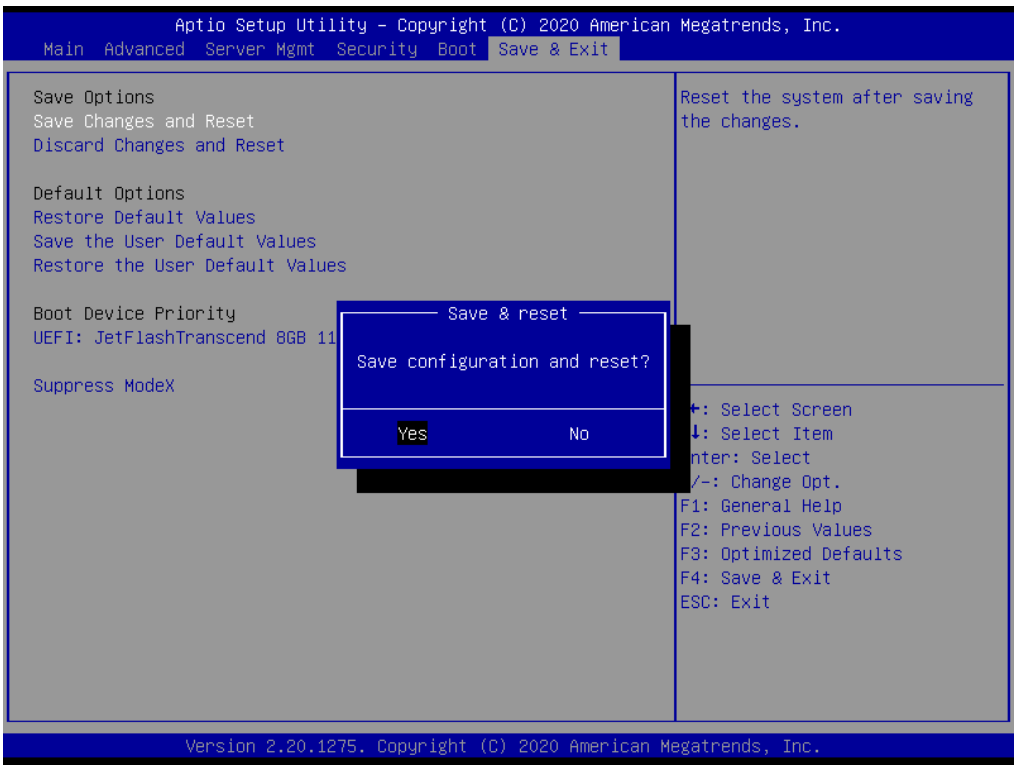


Item	Option	Description
Setup Prompt Timeout	1~ 65535	Set the default timeout before system boot. A value of 65535 will disable the timeout completely.
Bootup NumLock State	On**[Default]** Off	Select the keyboard NumLock state

Quiet Boot	Disabled**[Default]** Enabled	Enables or disables Quiet Boot option
CSM Support	Disabled**[Default]** Enabled	Enable/Disable CSM Support.
Boot mode select	LEGACY UEFI**[Default]**	Select boot mode LEGACY/UEFI.
Boot Option #1/#2/#3/#4/#5	Set the system boot order.	

3.6.6 Save and exit





3.6.6.1 Save Changes and Reset

Reset the system after saving the changes.

3.6.6.2 Discard Changes and Reset

Reset system setup without saving any changes.

3.6.6.3 Restore Default Values

This option restores all BIOS settings to the factory default. This option is useful if the controller exhibits unpredictable behavior due to an incorrect or inappropriate BIOS setting.

3.6.6.4 Save the User Default Values

Restore/Load Default values for all the setup options.

3.6.6.5 Restore the User Default Values

Restore the User Defaults to all the setup options.

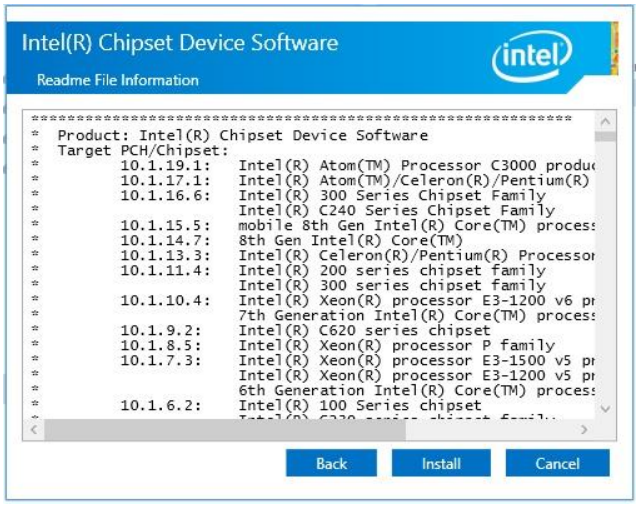
4. Drivers Installation

Note: Installation procedures and screen shots in this section are for your reference and may not be exactly the same as shown on your screen.

4.1 Install Chipset Driver

All drivers can be found on the Avalue Official Website: http://www.avalue.com.tw.

Note: The installation procedures and screen shots in this section are based on Windows 10 operation system. If the warning message appears while the installation process, click Continue to go on.



Step 3. Click **Install**.

Step1. Click **Next**.

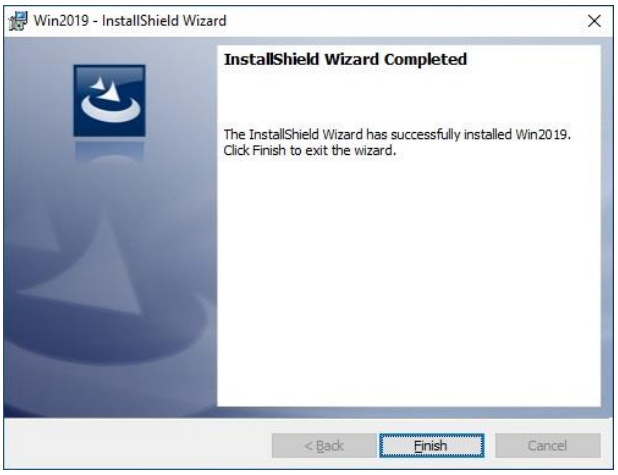
Step 4. Setup completed.

Step 2. Click **Accept**.

4.2 Install VGA Driver

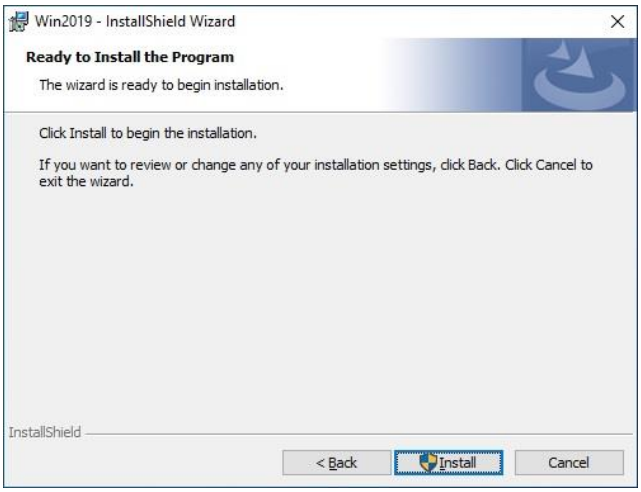
All drivers can be found on the Avalue Official Website: http://www.avalue.com.tw.

Note: The installation procedures and screen shots in this section are based on Windows 10 operation system.



Step 3. Click **Finish** to complete setup.

Step 1. Click **Next** to continue installation.

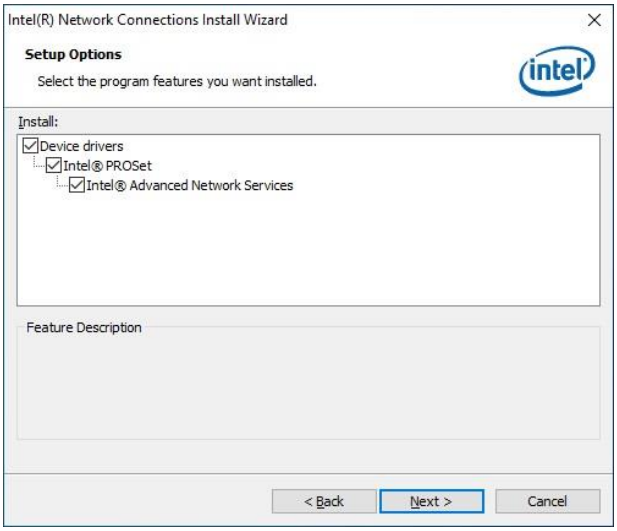


Step 2. Click **Install**.

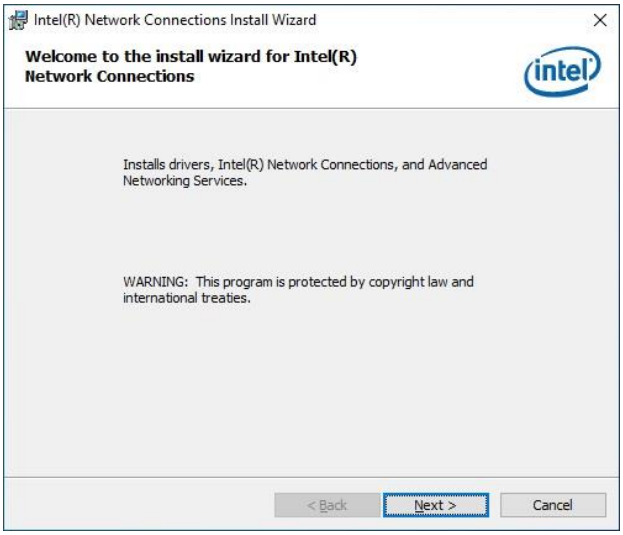
4.3 Install Ethernet Driver

All drivers can be found on the Avalue Official Website: **http://www.avalue.com.tw**.

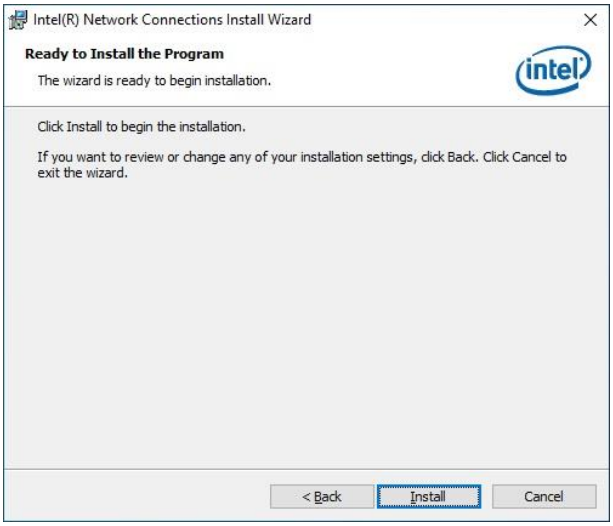
Note: The installation procedures and screen shots in this section are based on Windows 10 operation system.



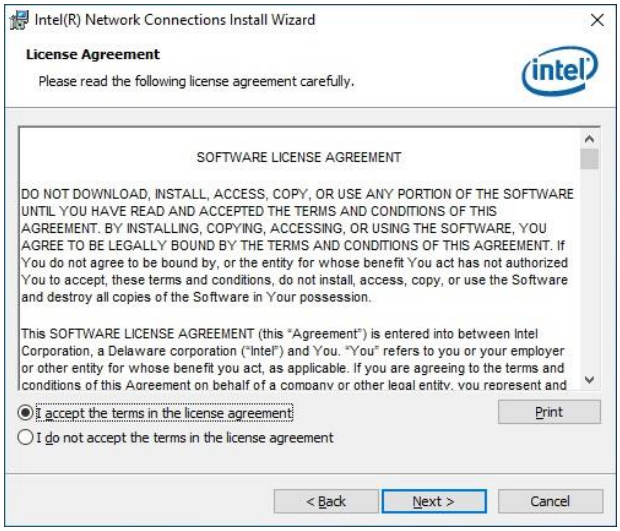
Step 3. Click **Next.**



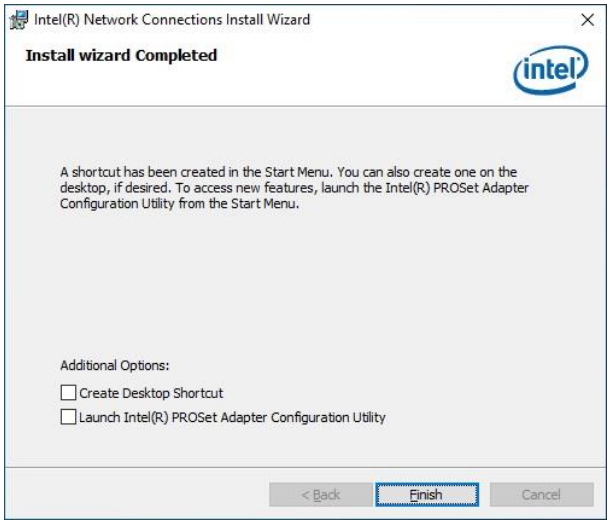
Step 1. Click **Next** to continue installation.



Step 4. Click **Install**.



Step 2. Click **Next**.

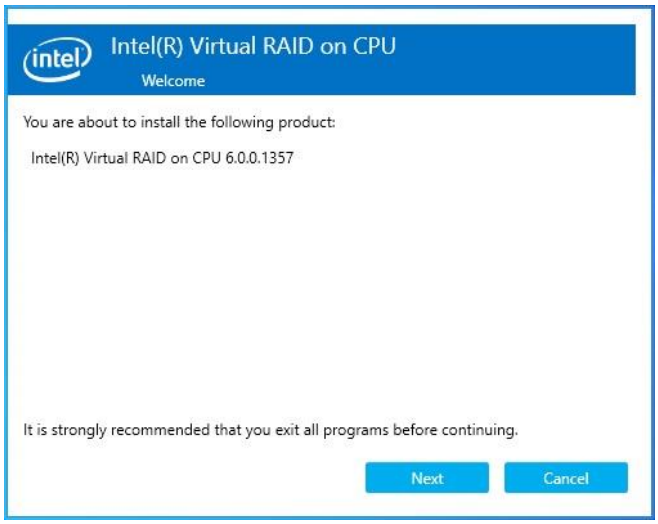


Step 5. Click **Finish** to complete setup.

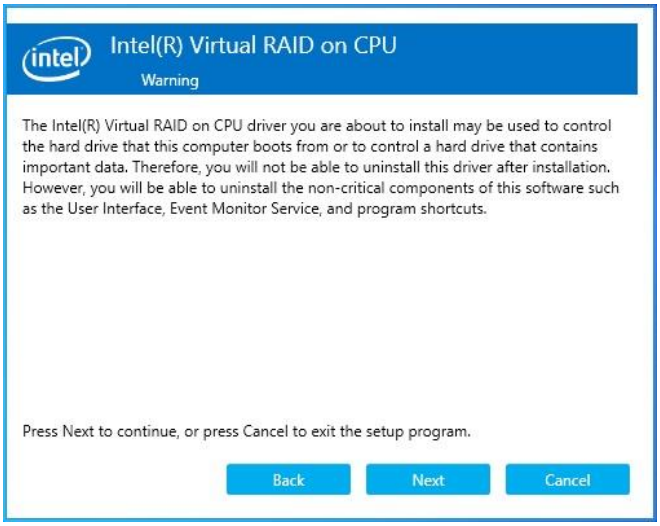
4.4 Install VROC Driver

All drivers can be found on the Avalue Official Website:
http://www.avalue.com.tw.

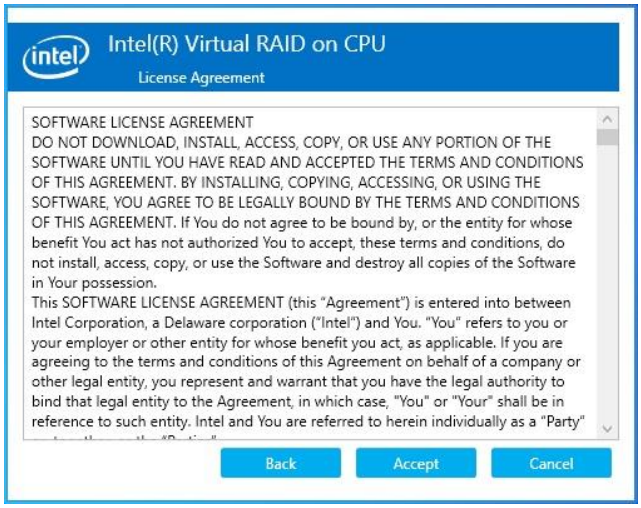
Note: The installation procedures and screen shots in this section are based on Windows 10 operation system.



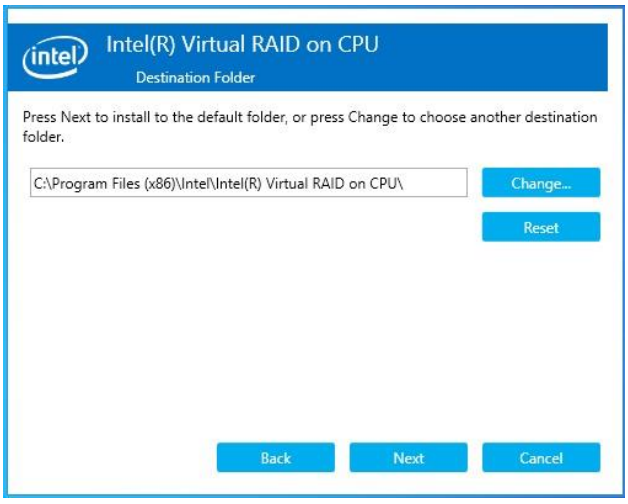
Step 1. Click **Next** to continue installation.



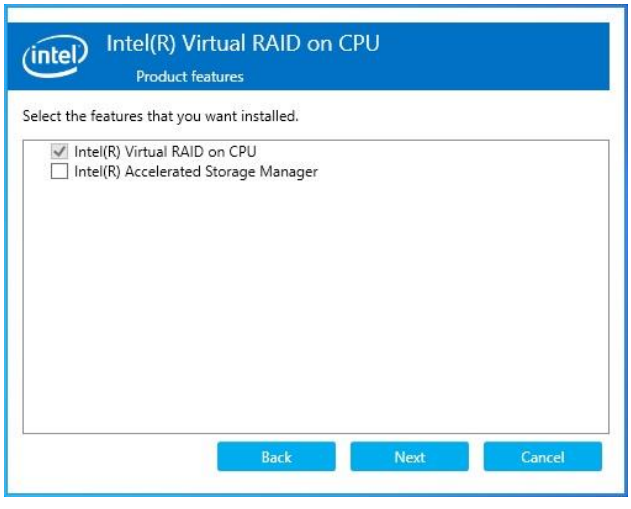
Step 2. Click **Next**.



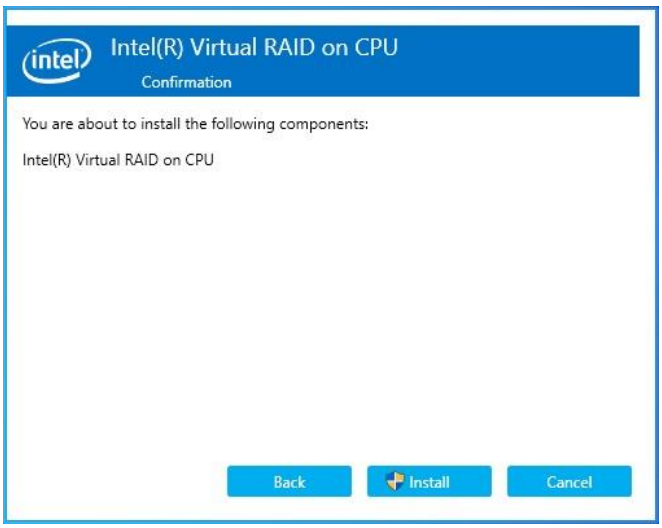
Step 3. Click **Accept.**



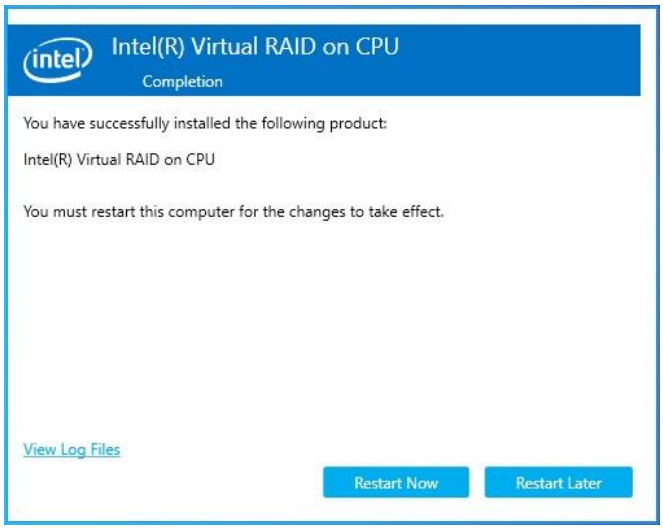
Step 4. Click **Next**.



Step 5. Click **Next**.

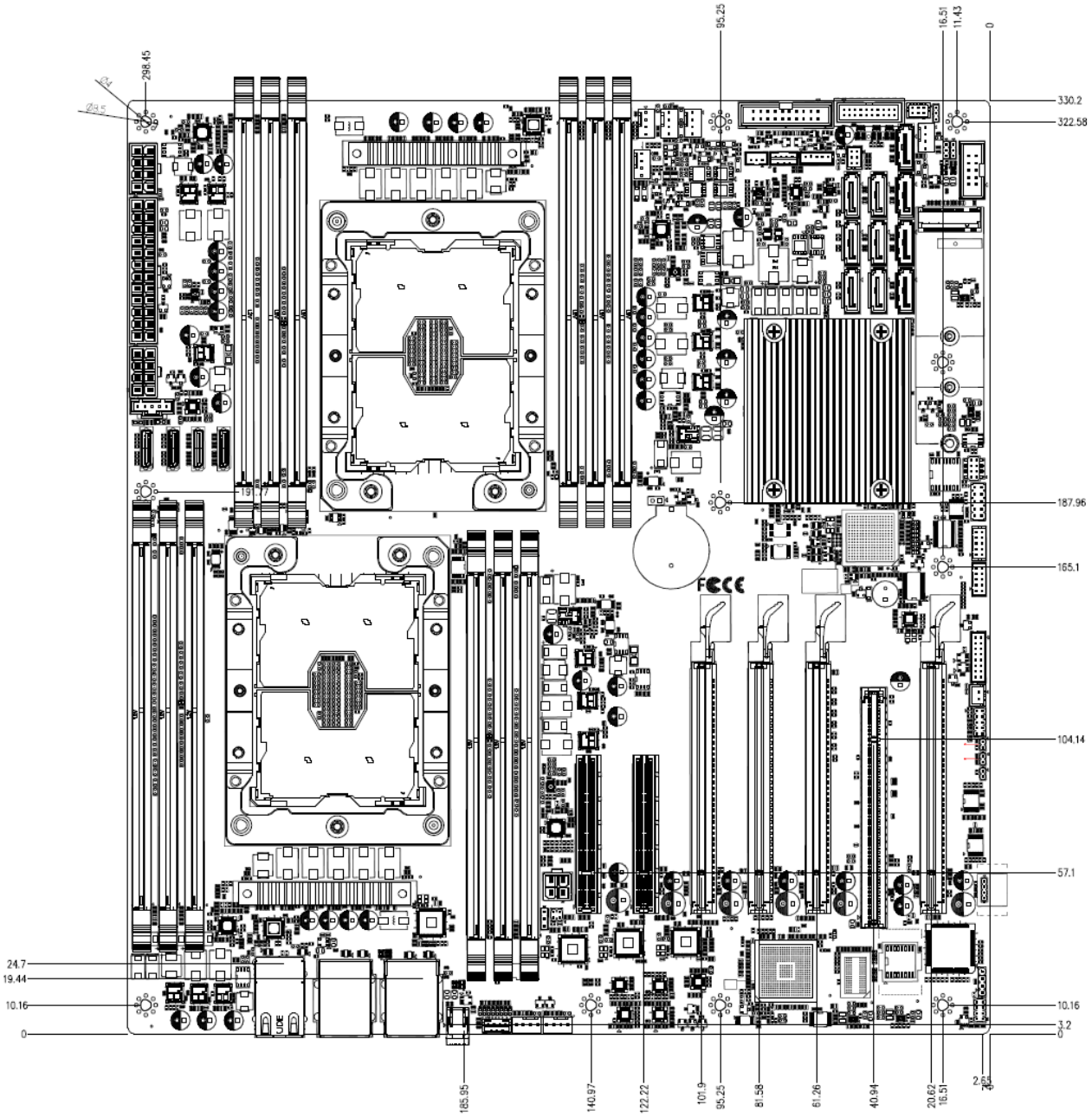


Step 6. Click **Install** to complete setup.



Step 7. Setup completed.

5. Mechanical Drawing


298.45
95.25
16.51
11.43
0
330.2
322.58
187.96
165.1
104.14
57.1
24.7
19.44
10.16
0
10.16
3.2
0
185.95
140.97
122.22
101.9
95.25
81.58
61.26
40.94
20.62
16.51
2

Unit: mm