HPM-621UA

Supports single 2nd Gen. Intel® Xeon® Scalable Processors / Intel® Xeon® Scalable Processors up to 150W TDP

User's Manual

6th Ed –16 February 2023

Part No: E2047A2S005R

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.

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2. Call your dealer and describe the problem. Please have your manual, product, and any helpful information available.
3. If your product is diagnosed as defective, obtain an RMA (return material authorization) number from your dealer. This allows us to process your good return more quickly.
4. Carefully pack the defective product, a complete Repair and Replacement Order Card and a photocopy proof of purchase date (such as your sales receipt) in a shippable container. A product returned without proof of the purchase date is not eligible for warranty service.
5. Write the RMA number visibly on the outside of the package and ship it prepaid to your dealer.

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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-621UA 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	March 2021	Avalue	Initial Release
2nd	July 2021	Avalue	Update 2.3 Setting Jumpers & Connectors
3rd	October 2021	Avalue	Update 2.3 Setting Jumpers & Connectors
4th	December 2021	Avalue	Update 1.5 System Specifications
5th	March 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-621UA 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-621UA 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.

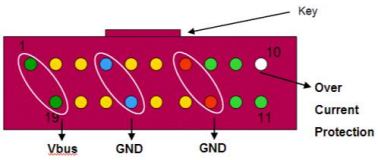
1.5 System Specifications

System	
CPU	Supports single 2nd Gen. Intel® Xeon® Scalable Processors / Intel® Xeon® Scalable Processors up to 150W TDP
BIOS	AMI UEFI BIOS
System Chipset	Intel C621 Chipset
System Memory	6 x DDR4 2933/2666/2400/2133 RDIMM/LRDIMM up to 768GB

Type	Ranks Per DIMM and Data Width	DIMM Capacity (GB)			Speed (MT/s); Voltage (V); Slots per Channel (SPC) & DIMMs per Channel (DPC)		
					1 Slot per Channel	2 Slots per Channel	
		DRAM Density			1DPC	1DPC	2DPC
		4Gb[2]	8Gb	16Gb[1]	1.2V	1.2V	1.2V
RDIMM	SRx8	4GB	8GB	16GB	2933[3]	2933[3]	2666
RDIMM	SRx4	8GB	16GB	32GB			
RDIMM	DRx8	8GB	16GB	32GB			
RDIMM	DRx4	16GB	32GB	64GB			
RDIMM 3DS	QRx4	N/A	2H-64GB	2H-128GB			
	8Rx4	N/A	4H-128GB	4H-256GB			
LRDIMM	QRx4	32GB	64GB	128GB			
LRDIMM 3DS	QRx4	N/A	2H-64GB	2H-128GB			
	8Rx4	N/A	4H-128GB	4H-256GB			

[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

Watchdog Timer	System reset event 0~6553 second.
H/W Status Monitor	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.
RAID	Intel C621 software RAID 0,1,5,10
TPM	TPM 2.0 onboard
Other	IPMI 2.0 with AST 2500 BMC controller onboard.
Expansion Slot	
PCIe	3 x PCIe x16 slots or 6 x PCIe x8 slots Slot 1, NA (This is for PCI 3.0 slot) Slot 2, PCIe 3.0 x8 Slot 3, PCIe 3.0 x16 (x16 will switch to x8 automatically when Slot 2 is used) Slot 4, PCIe 3.0 x8 Slot 5, PCIe 3.0 x16 (x16 will switch to x8 automatically when Slot 4 is used) Slot 6, PCIe 3.0 x8 Slot 7, PCIe 3.0 x16 (Slot 7 is the slot closest to CPU, x16 will switch to x8 automatically when Slot 6 is used)

<table>
<tr><td>PCI</td><td>1 x PCI 3.0 slot
Slot 1, PCI 3.0</td></tr>
<tr><td>Storage</td><td></td></tr>
<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>9 x SATA III Supports up to 6.0 Gb/s</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 3.1</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)
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 USB 3.2 Gen1 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>
</table>

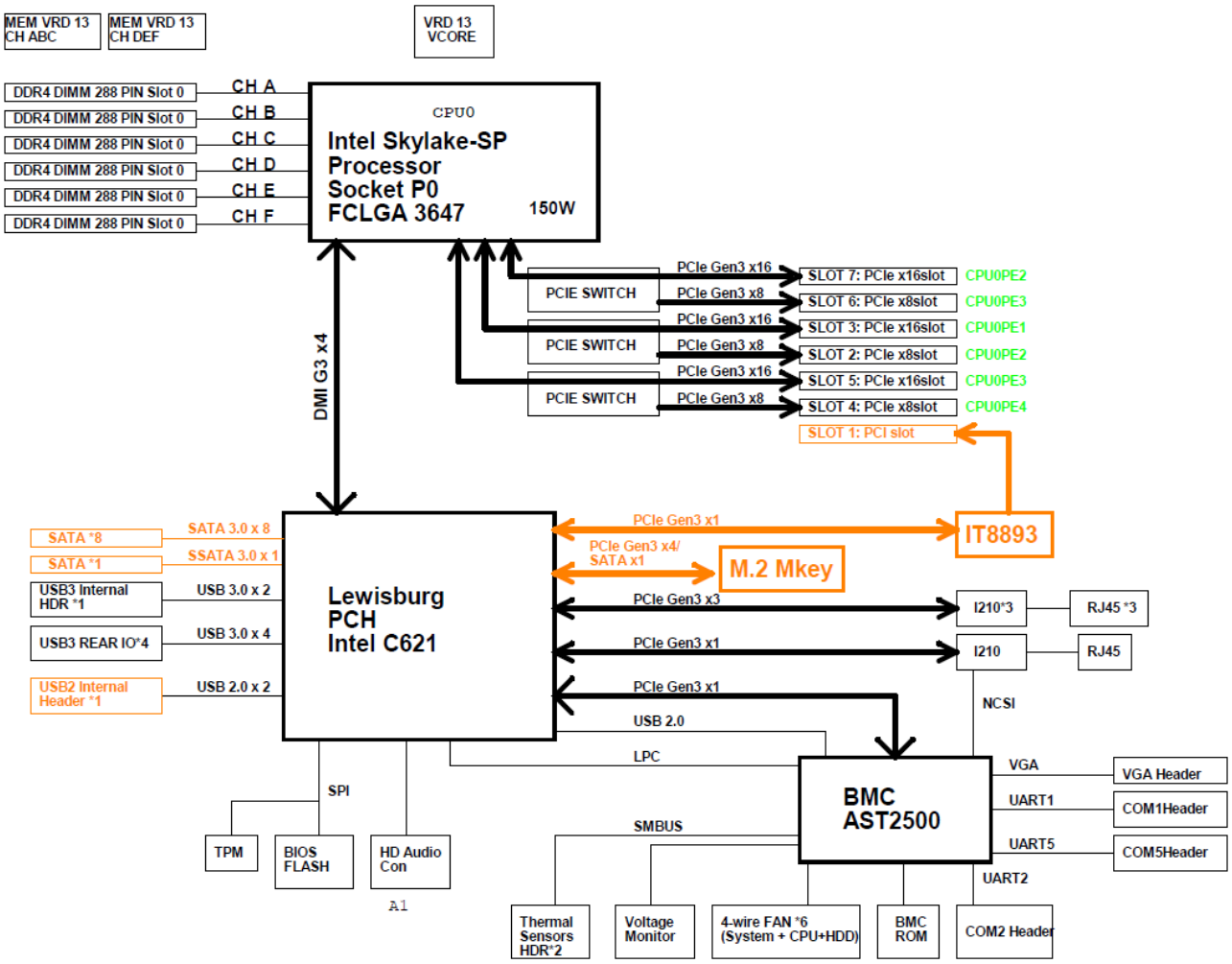
<table>
<tr><td>CPU/System FAN</td><td>1 x 4 Pin CPU Fan Header (4 Pin PWM)
7 x 4 Pin Chassis Fan Header (4 Pin PWM)</td></tr>
<tr><td>Buzzer</td><td>1 x onboard buzzer</td></tr>
<tr><td>Front Panel</td><td>1 x front panel connector (2.54 mm Pitch)
<table>
<tr><td>Pin</td><td>Function</td><td>Pin</td><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>
Notes: LAN2-X ACT LED, “X” means the max number of Ethernet ports.</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 2.0mm 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)
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
1 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</td><td>ATX form factor
12” x 9.6” (304.8mm x 243.84mm)</td></tr>
</table>

than 80x70mm)	
Weight	0.97kg
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 16.04 and 18.04

Note: Specifications are subject to change without notice.

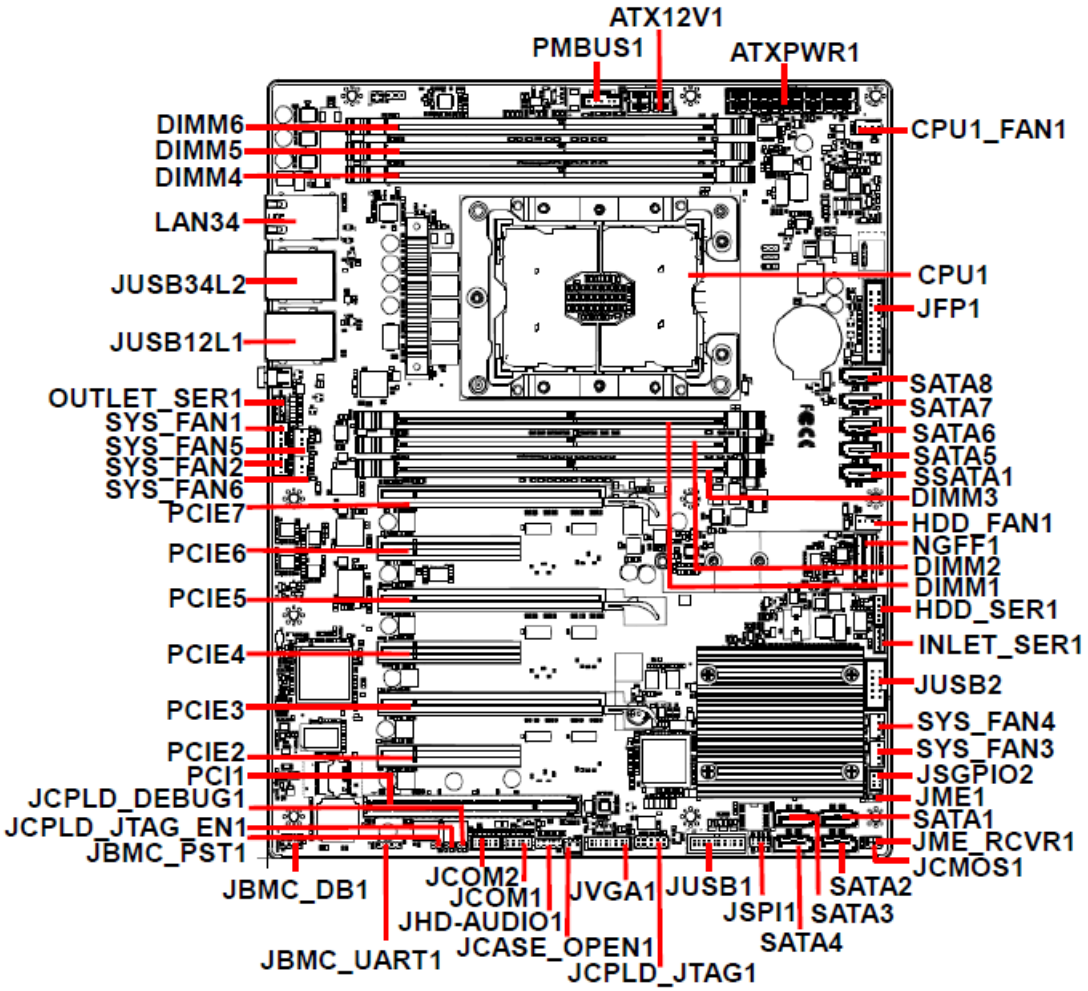
1.6 Architecture Overview—Block Diagram

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



2. Hardware Configuration

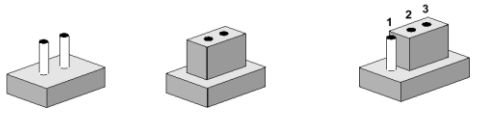
2.1 Product Overview



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
JCPLD_JTAG_EN1	CPLD JTAG setting	2 x 1 header, pitch 2.00mm
JCPLD_DEBUG1	CPLD DEBUG header	2 x 1 header, pitch 2.00mm

Connectors

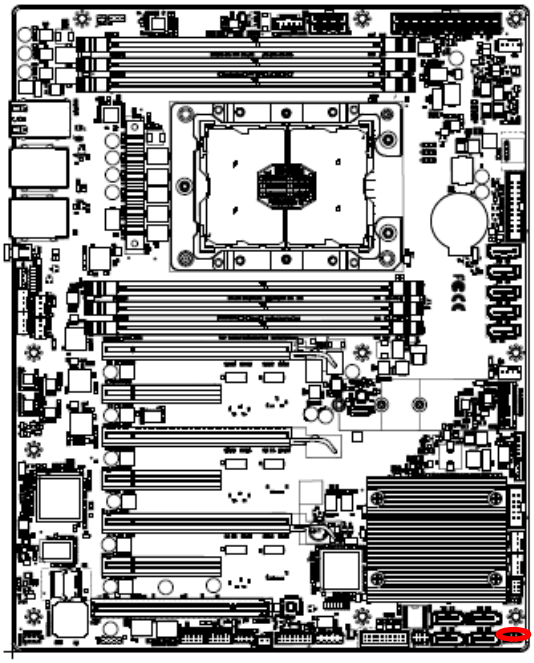
Label	Function	Note
SYS_FAN1	System fan connector 1	4 x 1 wafer, pitch 2.54mm

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
SYS_FAN5	System fan connector 5	4 x 1 wafer, pitch 2.54mm
SYS_FAN6	System fan connector 6	4 x 1 wafer, pitch 2.54mm
CPU1_FAN1	CPU fan connector	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
JSGPIO2	Serial General Purpose I/O connector 2	3 x 2 wafer, pitch 2.00mm
PCIE2	PCIe 3.0 x8	
PCIE3	PCIe 3.0 x16	
PCIE4	PCIe 3.0 x8	
PCIE5	PCIe 3.0 x16	
PCIE6	PCIe 3.0 x8	
PCIE7	PCIe 3.0 x16 (Slot 7 is the slot closest to CPU)	
PCI1	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	Second Serial ATA connector	
DIMM1-6	6 x DDR4 DIMM socket	
JBMC_UART1	For BMC debug message read	4 x 1 header, pitch 2.54mm
JCASE_OPEN1	CASE OPEN connector	2 x 1 wafer, pitch 2.50mm
ATX12V1	ATX 12V power connector	4 x 2 wafer, pitch 4.20mm
ATXPWR1	ATX power connector	12 x 2 wafer, pitch 4.20mm

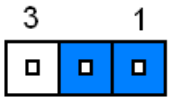
PMBUS1	Power supply PMBus connector	5 x 1 wafer, pitch 2.54mm
INLET_SER1	Inlet Thermal Sensors connector	4 x 1 wafer, pitch 2.00mm
OUTLET_SER1	Outlet Thermal Sensors connector	4 x 1 wafer, pitch 2.00mm
HDD_SER1	HDD Backplane thermal Sensors connector	5 x 1 wafer, pitch 2.00mm
NGFF1	M.2 M-Key PCIe 3.0 x4 NVMe SSD	
CPU1	CPU1 socket	
JVGA1	VGA connector	8 x 2 wafer, pitch 2.00mm
JCPLD_JTAG1	CPLD JTAG header	5 x 2 header, pitch 2.54mm

2.3 Setting Jumpers & Connectors

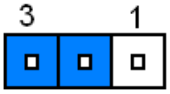
2.3.1 ME Firmware Recovery (JME_RCVR1)



Normal*

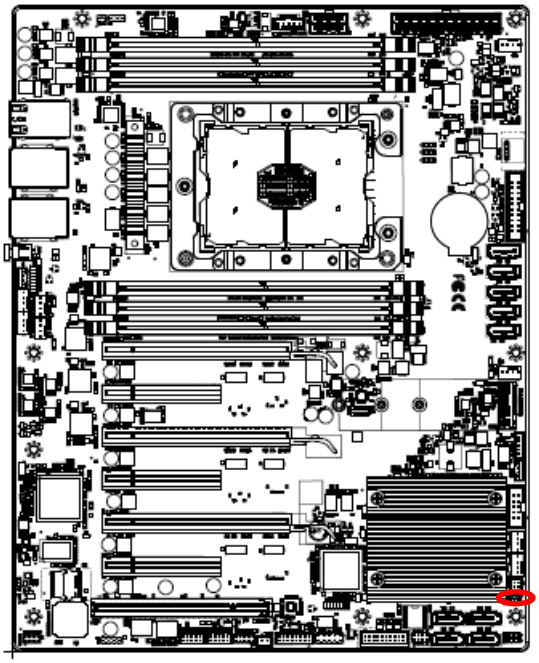


ME FORCE UPDATE

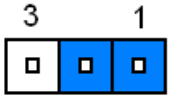


*** Default**

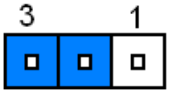
2.3.2 Flash Descriptor Security override (JME1)



Override disable*

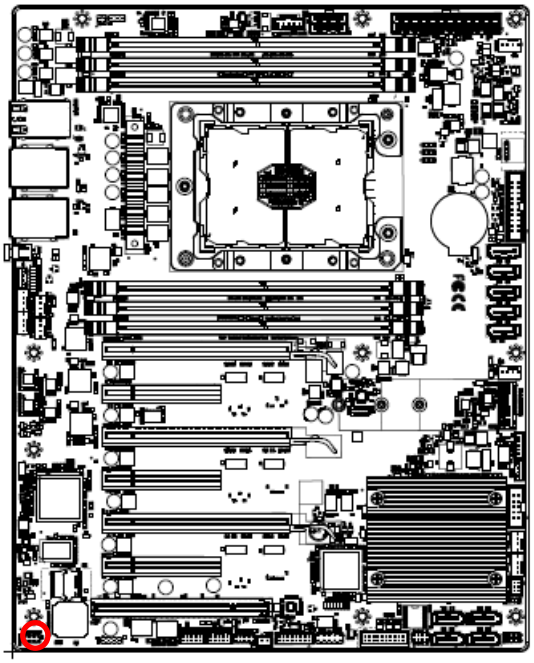


Override enable



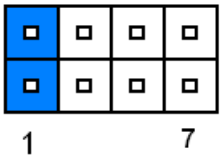
*** Default**

2.3.3 BMC strap setting (JBMC_DB1)

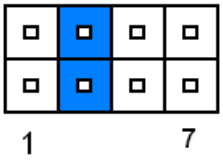


*** Default**

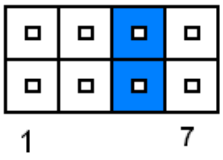
ENABLE PASS-THRU AT POWER ON*



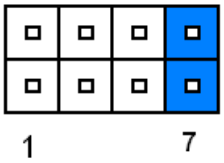
ENABLE DEDICATED VGA BIOS ROM



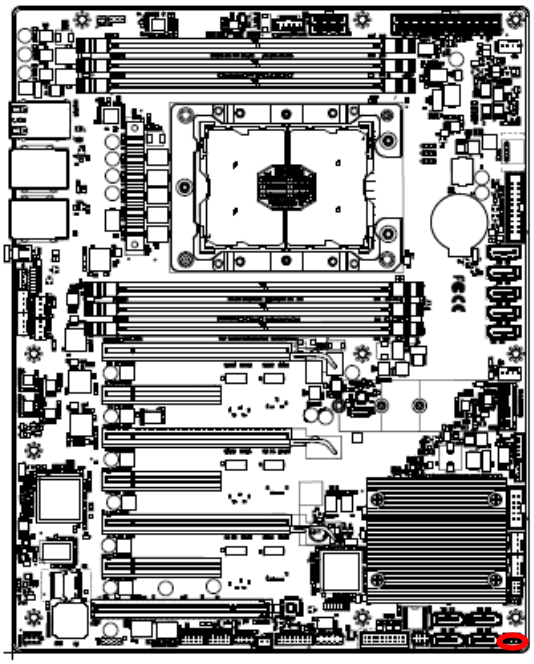
BMC SOC Level reset



BMC Chip Level reset

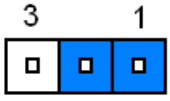


2.3.4 Clear CMOS (JCMOS1)

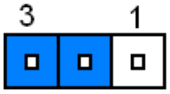


*** Default**

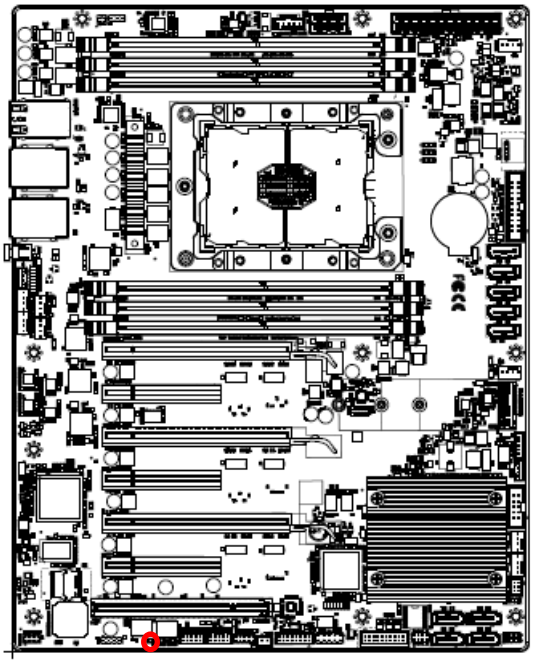
Normal RTC RESET*



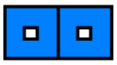
Clear RTC REGISTERS



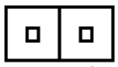
2.3.5 CPLD strap setting for BMC Present or not (JBMC_PST1)



BMC Present*

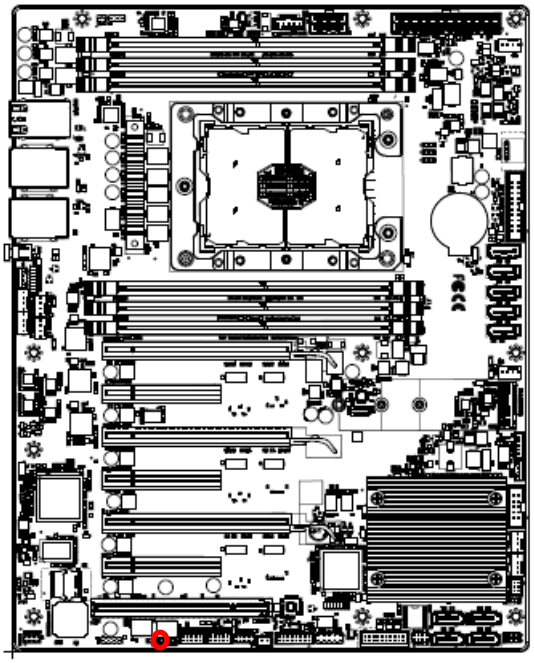


Non BMC

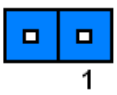


*** Default**

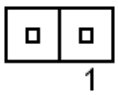
2.3.6 CPLD JTAG setting (JCPLD_JTAG_EN1)



CPLD JTAG as JTAG*

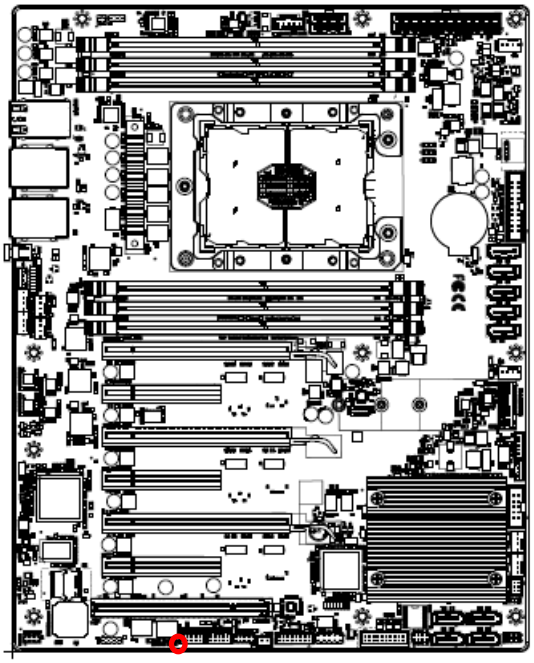


CPLD JTAG as GPIO

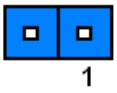


*** Default**

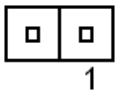
2.3.7 CPLD DEBUG header (JCPLD_DEBUG1)



Force Power on

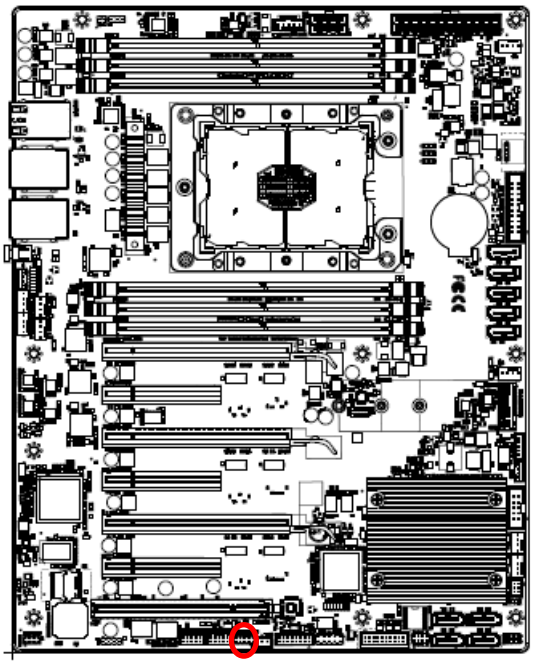


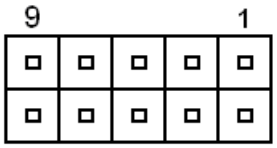
Normal mode*



*** Default**

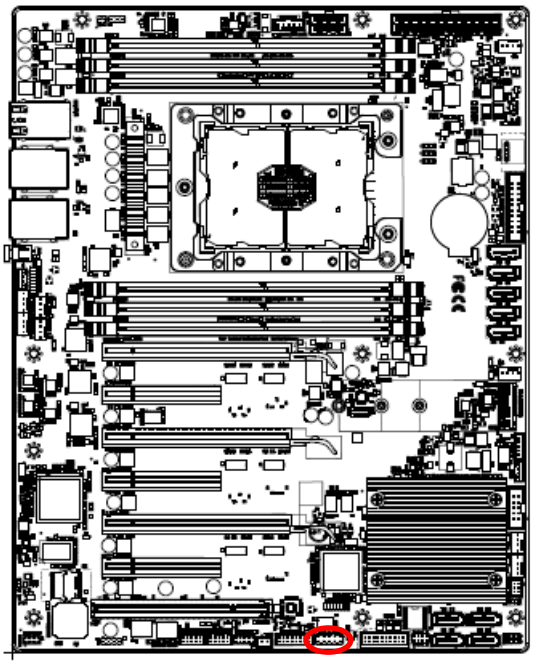
2.3.8 Audio connector (JHD-AUDIO1)

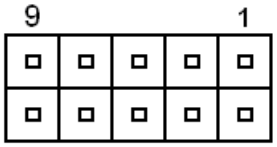




Signal	PIN	PIN	Signal
+3.3V	1	2	GND
AUD_AZA_SYNC_R	3	4	AUD_AZA_BCLK_R
AUD_AZA_SDO_R	5	6	AUD_AZA_SDI0
AUD_AZA_SDI1	7	8	AUD_AZA_RST_R_N
+5VSB	9	10	GND

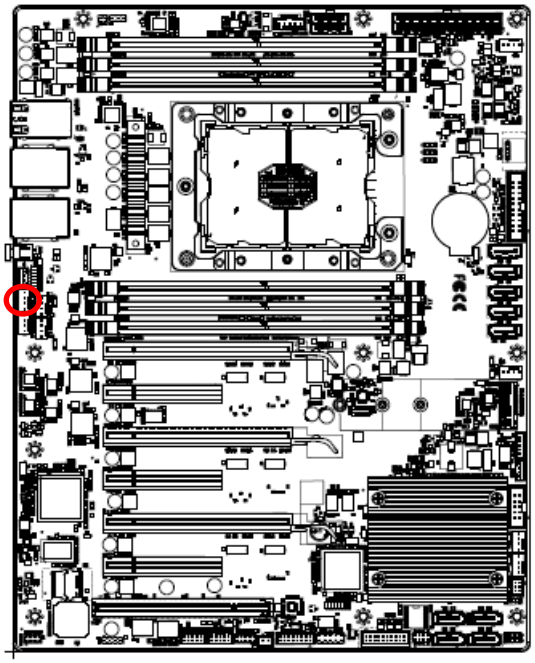
2.3.9 CPLD JTAG header (JCPLD_JTAG1)





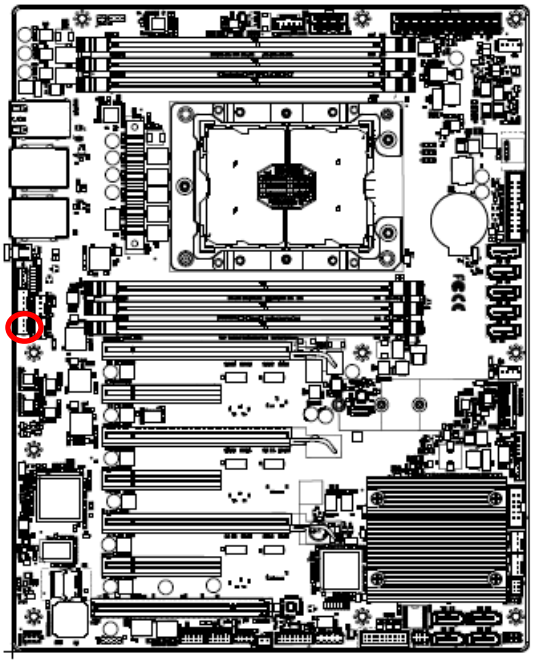
Signal	PIN	PIN	Signal
JTAG_TCK_CONN	1	2	CPLD_JTAG_MUX_CTL
JTAG_TDO_CONN	3	4	+3.3VSB
JTAG_TMS_CONN	5	6	NC
NC	7	8	NC
JTAG_TDI_CONN	9	10	GND

2.3.10 System fan connector 1 (SYS_FAN1)



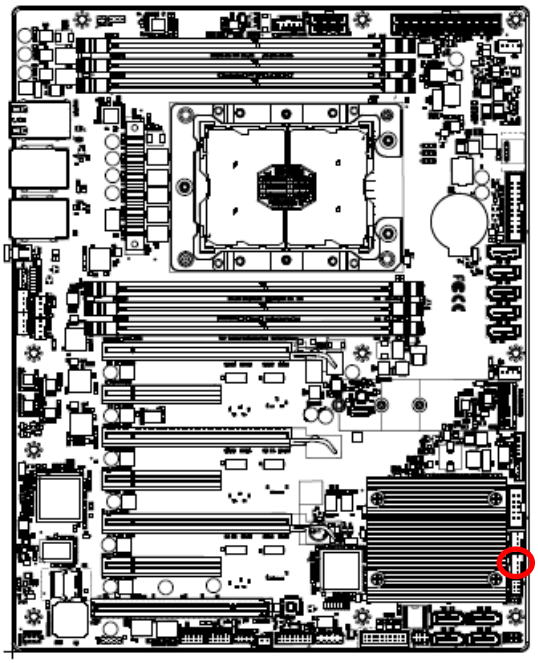
Signal	PIN
SYS_PWM1	4
FAN_TACH2	3
+12V	2
GND	1

2.3.11 System fan connector 2 (SYS_FAN2)



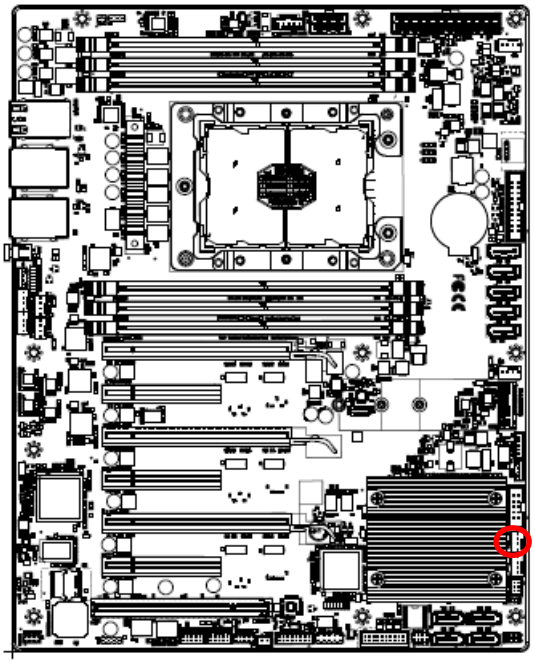
Signal	PIN
SYS_PWM2	4
FAN_TACH3	3
+12V	2
GND	1

2.3.12 System fan connector 3 (SYS_FAN3)



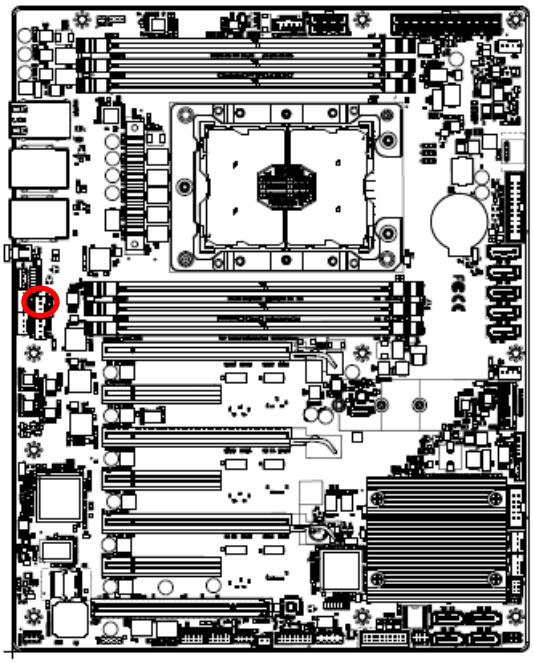
Signal	PIN
SYS_PWM3	4
FAN_TACH4	3
+12V	2
GND	1

2.3.13 System fan connector 4 (SYS_FAN4)



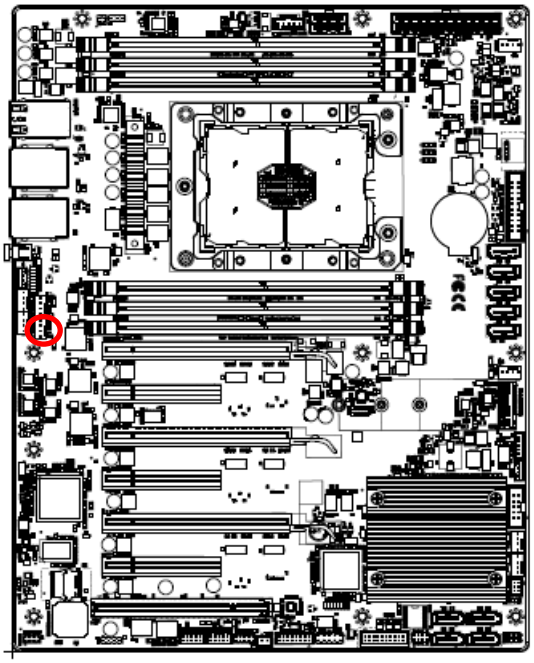
Signal	PIN
SYS_PWM4	4
FAN_TACH6	3
+12V	2
GND	1

2.3.14 System fan connector 5 (SYS_FAN5)



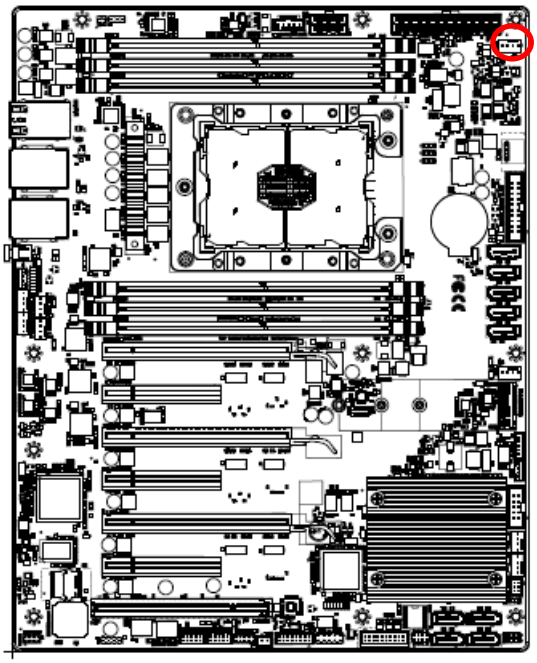
Signal	PIN
SYS_PWM5	4
FAN_TACH1	3
+12V	2
GND	1

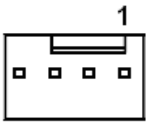
2.3.15 System fan connector 6 (SYS_FAN6)



Signal	PIN
SYS_PWM6	4
FAN_TACH7	3
+12V	2
GND	1

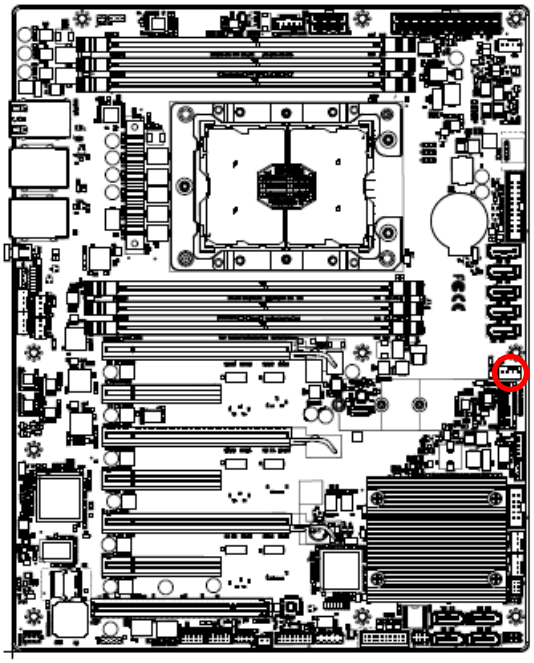
2.3.16 CPU fan connector (CPU1_FAN1)

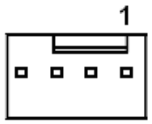




Signal	PIN
GND	1
+12V	2
FAN_TACH0	3
CPU0_PWM0	4

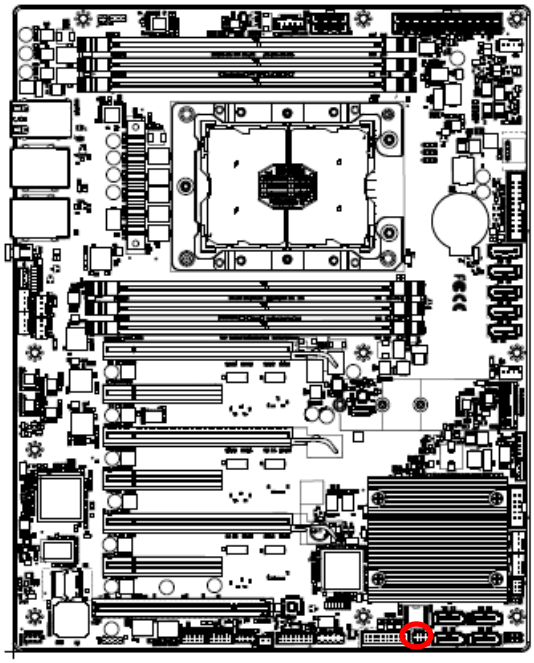
2.3.17 HDD fan connector (HDD_FAN1)

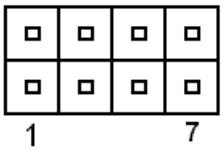




Signal	PIN
GND	1
+12V	2
FAN_TACH5	3
HDD_PWM1	4

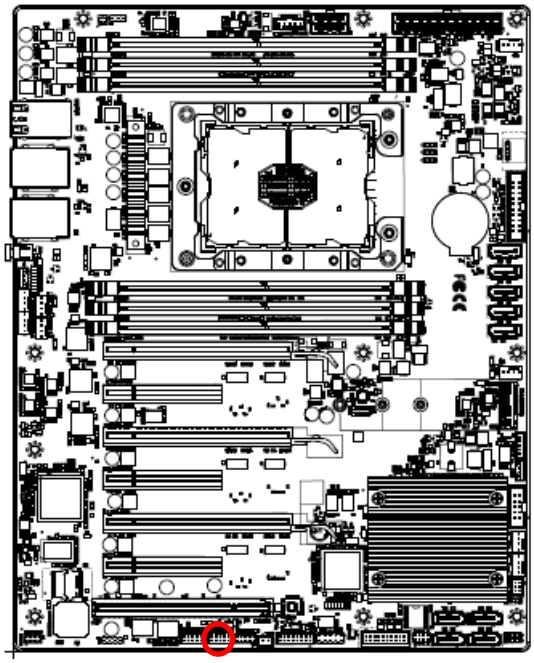
2.3.18 SPI connector (JSPI1)

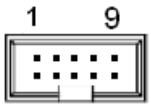




Signal	PIN	PIN	Signal
+3.3VSB	1	2	GND
SPI_BIOS_CS0_N_R	3	4	SPI_BIOS_FLASH_CLK
SPI_BIOS_MISO_FLASH	5	6	SPI_BIOS_CS0_N_R
SPI_PCH_FLASH_IO3	7	8	SPI_PCH_FLASH_IO2

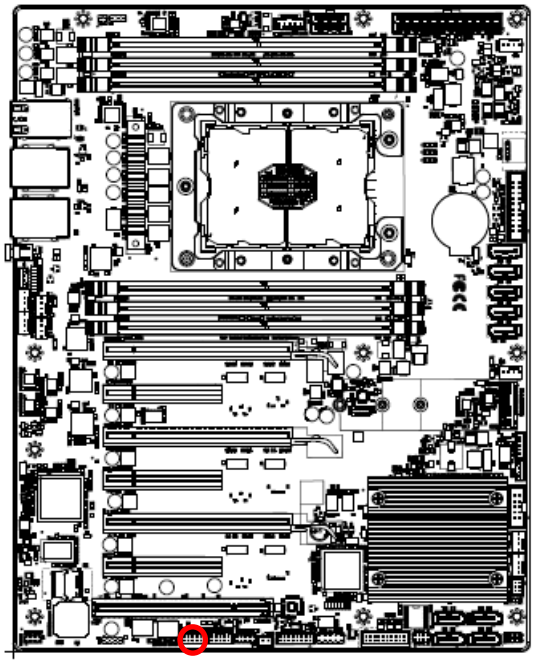
2.3.19 Serial port 1 connector (JCOM1)

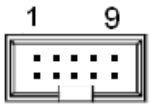




Signal	PIN	PIN	Signal
COM_DCD#1	1	2	COM_RXD1
COM_TXD1	3	4	COM_DTR#1
GND	5	6	COM_DSR#1
COM_RTS#1	7	8	COM_CTS#1
COM_RI#1	9	10	NC

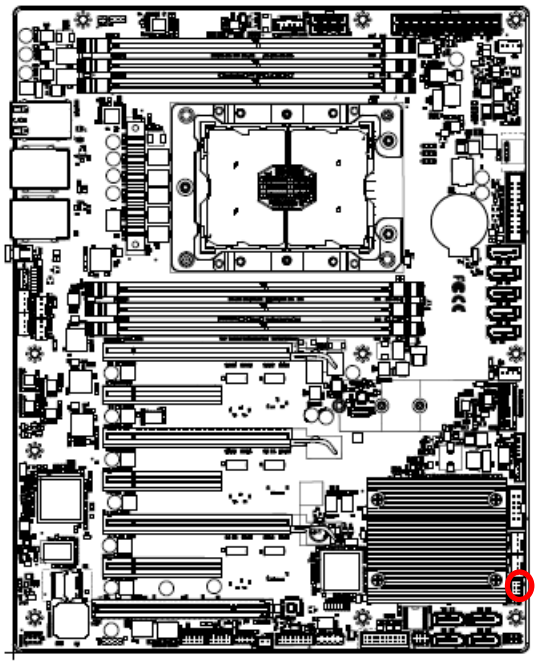
2.3.20 Serial port 2 connector (JCOM2)

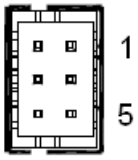




Signal	PIN	PIN	Signal
COM_DCD#2	1	2	COM_RXD2
COM_TXD2	3	4	COM_DTR#2
GND	5	6	COM_DSR#2
COM_RTS#2	7	8	COM_CTS#2
COM_RI#2	9	10	NC

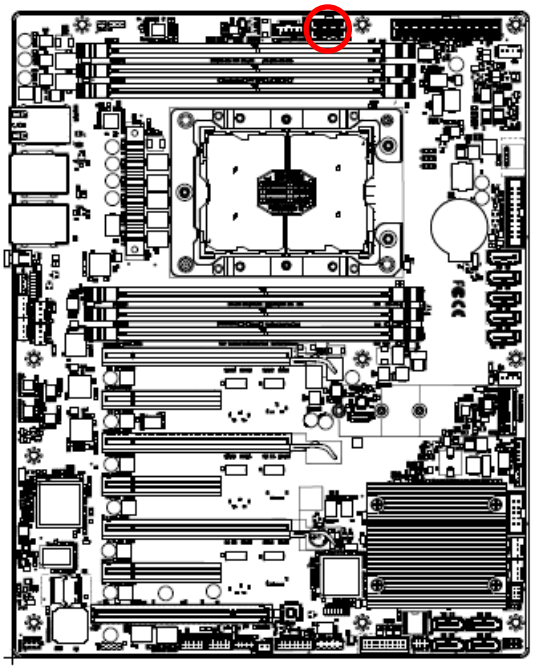
2.3.21 Serial General Purpose I/O connector (JSGPIO2)

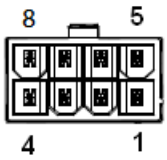




Signal	PIN	PIN	Signal
GND	2	1	GND
SGPIO_SATA_DATA0_R	4	3	SGPIO_SATA_LOAD_R
SGPIO_SATA_DATA1_R	6	5	SGPIO_SATA_CLOCK_R

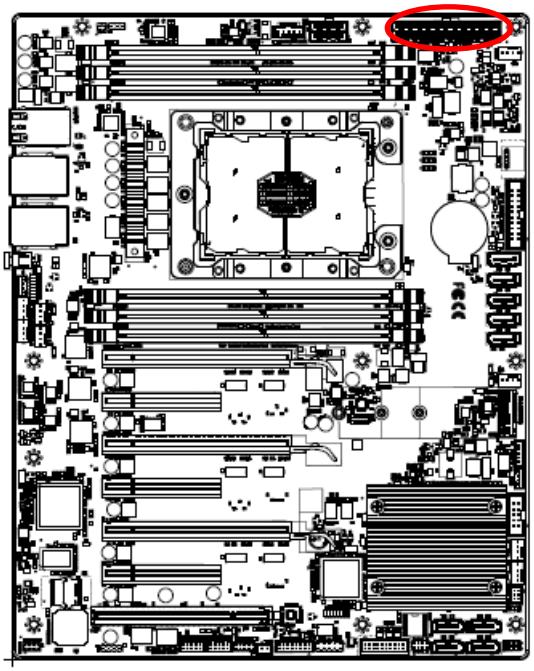
2.3.22 ATX 12V power connector (ATX12V1)

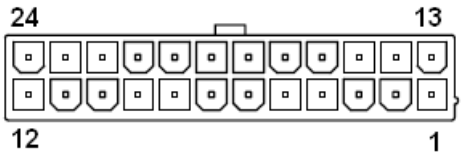




Signal	PIN	PIN	Signal
GND	1	5	+12V
GND	2	6	+12V
GND	3	7	+12V
GND	4	8	+12V

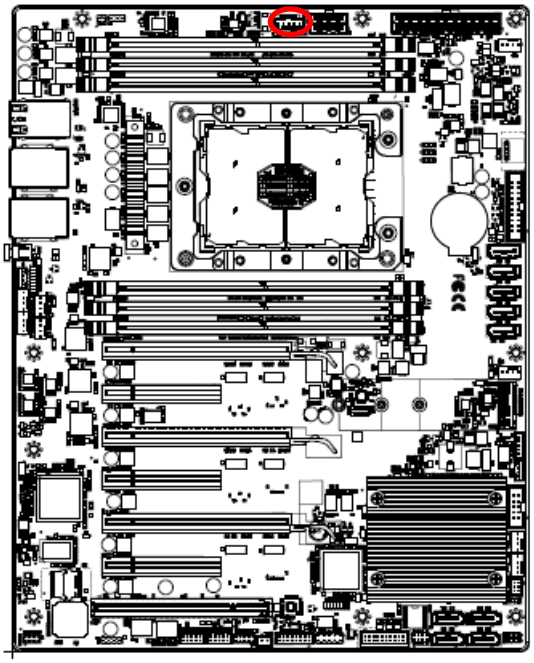
2.3.23 ATX power connector (ATXPWR1)

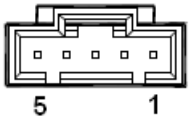




Signal	PIN	PIN	Signal
+3.3V	1	13	+3.3V
+3.3V	2	14	-12V
GND	3	15	GND
+5V	4	16	FM_PS_EN_PSU_N
GND	5	17	GND
+5V	6	18	GND
GND	7	19	GND
PWRGD_PS_PWROK_R	8	20	NC
+V5SB	9	21	+5V
+12V	10	22	+5V
+12V	11	23	+5V
+3.3V	12	24	GND

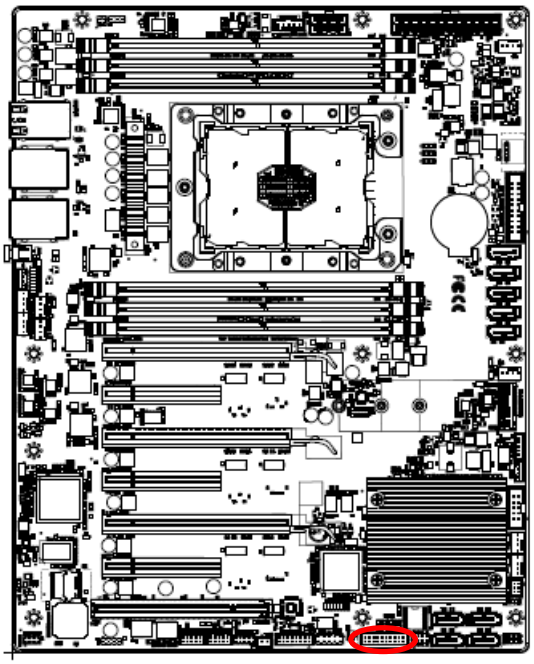
2.3.24 Power supply PMBus connector (PMBUS1)

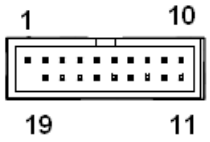




Signal	PIN
PSU_z_SCL	1
PSU_z_SDA	2
PSU1_ALERT_z_N	3
GND	4
NC	5

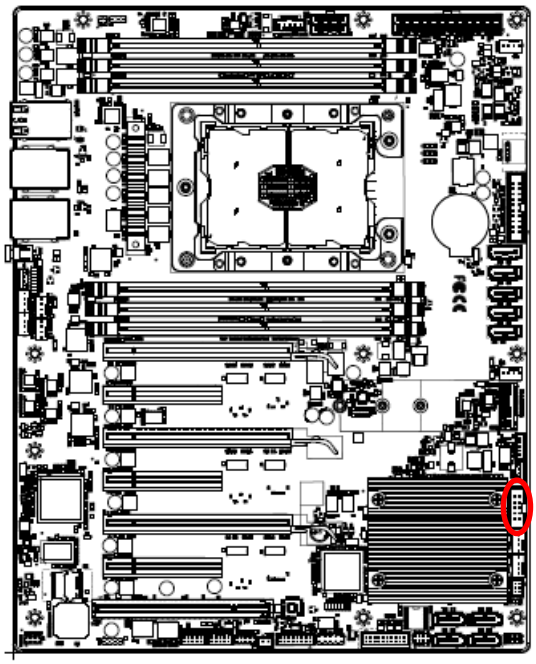
2.3.25 USB3.2 Gen1 connector (JUSB1)

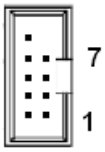




Signal	PIN	PIN	Signal
		1	+5VSB
+5VSB	19	2	USB3_z_RN5
USB3_z_RN6	18	3	USB3_z_RP5
USB3_z_RP6	17	4	GND
GND	16	5	USB3_z_TN5
USB3_z_TN6	15	6	USB3_z_TP5
USB3_z_TP6	14	7	GND
GND	13	8	USB3_z_PN5
USB3_z_PN6	12	9	USB3_z_PP5
USB3_z_PP6	11	10	USB_a_OC2#

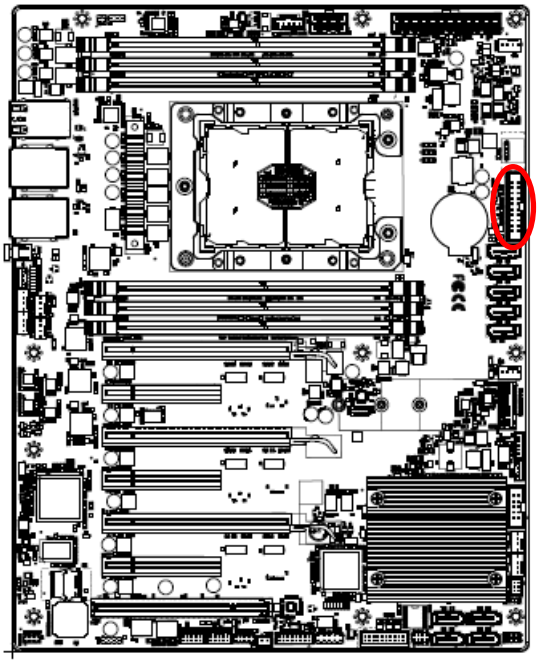
2.3.26 USB2.0 connector (JUSB2)

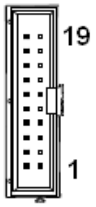




Signal	PIN	PIN	Signal
NC	10		
GND	8	7	GND
USB_z_PP8	6	5	USB_z_PP7
USB_z_PN8	4	3	USB_z_PN7
+5VSB	2	1	+5VSB

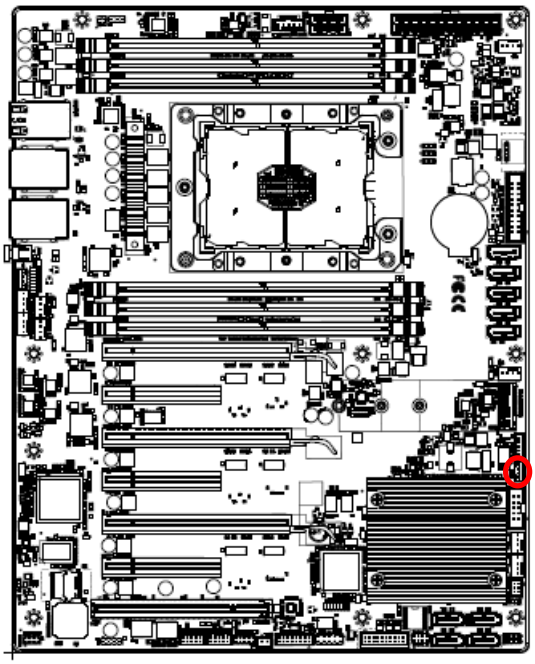
2.3.27 Front Panel connector (JFP1)





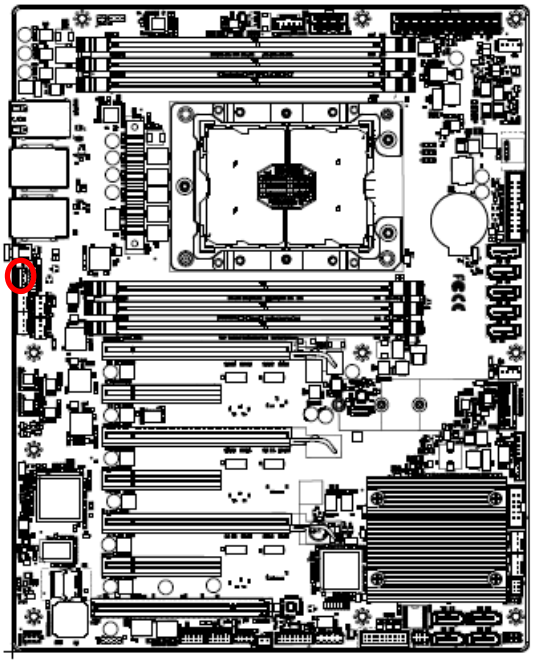
Signal	PIN	PIN	Signal
LAN_LED_ACT#	20	19	GND
+3.3VSB	18	17	FP_UID_BTN_N_R
GND	16	15	FRONT_UID_LED_P
SBPWRLED_P	14	13	FRONT_UID_LED_N
LAN1_LED_ACT_n	12	11	STATUS_LED_N
LAN1_FRONT_LED_ACT_p	10	9	STATUS_LED_P
GND	8	7	GND
FP_PWR_BTN_N_R	6	5	FP_RST_BTN_N
PWRLED_N	4	3	HDD_LED_N
+3.3VSB	2	1	HDD_LED_P

2.3.28 Inlet Thermal Sensors connector (INLET_SER1)



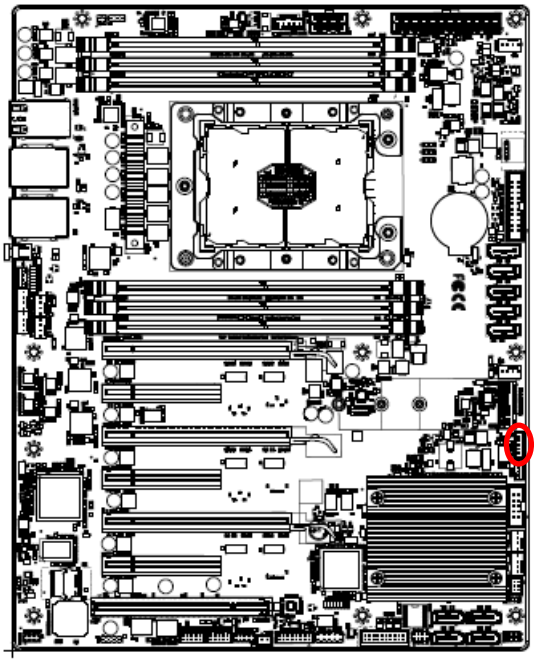
Signal	PIN
GND	4
SMB1_TEMPSENSOR_STBY_LVC3_SCL	3
SMB1_TEMPSENSOR_STBY_LVC3_SDA	2
+3.3VSB	1

2.3.29 Outlet Thermal Sensors connector (OUTLET_SER1)



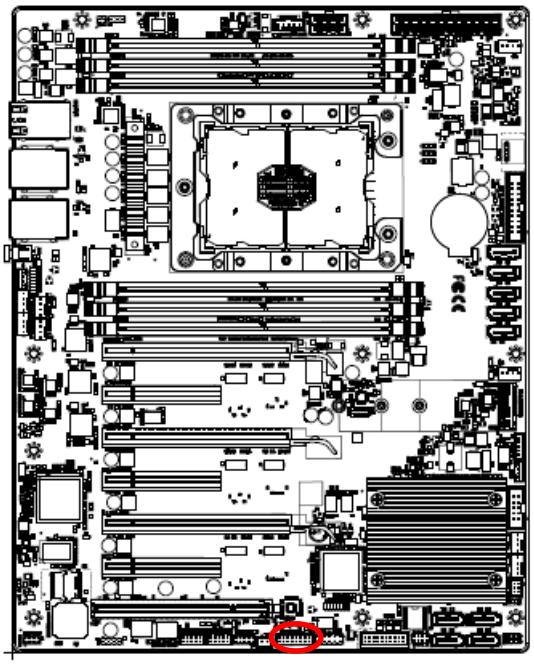
Signal	PIN
+3.3VSB	1
SMB_TEMPSENSOR_STBY_LVC3_SDA	2
SMB_TEMPSENSOR_STBY_LVC3_SCL	3
GND	4

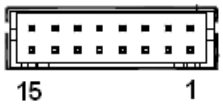
2.3.30 HDD Backplane thermal Sensors connector (HDD_SER1)



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

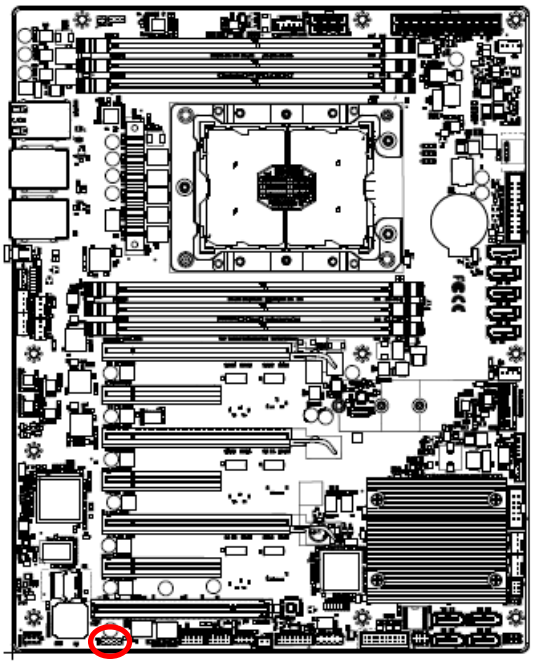
2.3.31 VGA connector (JVGA1)

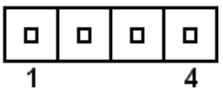




Signal	PIN	PIN	Signal
CRT_z_RED	2	1	+5V
CRT_z_GREEN	4	3	GND
CRT_z_BLUE	6	5	NC
NC	8	7	CRT_DDC_z_DATA
GND	10	9	CRT_z_HSYNC
GND	12	11	CRT_z_VSYNC
GND	14	13	CRT_DDC_z_CLK
GND	16	15	GND

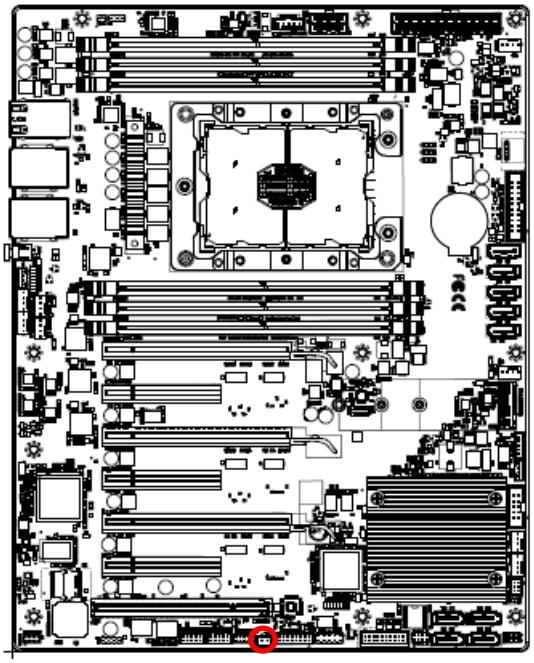
2.3.32 For BMC debug message read (JBMC_UART1)

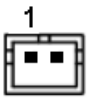




Signal	PIN
UART5_TX	1
UART5_RX	2
GND	3
+3.3VSB	4

2.3.33 CASE OPEN connector (JCASE_OPEN1)





Signal	PIN
FP_CHASSIS_INTRUSION	1
GND	2

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.

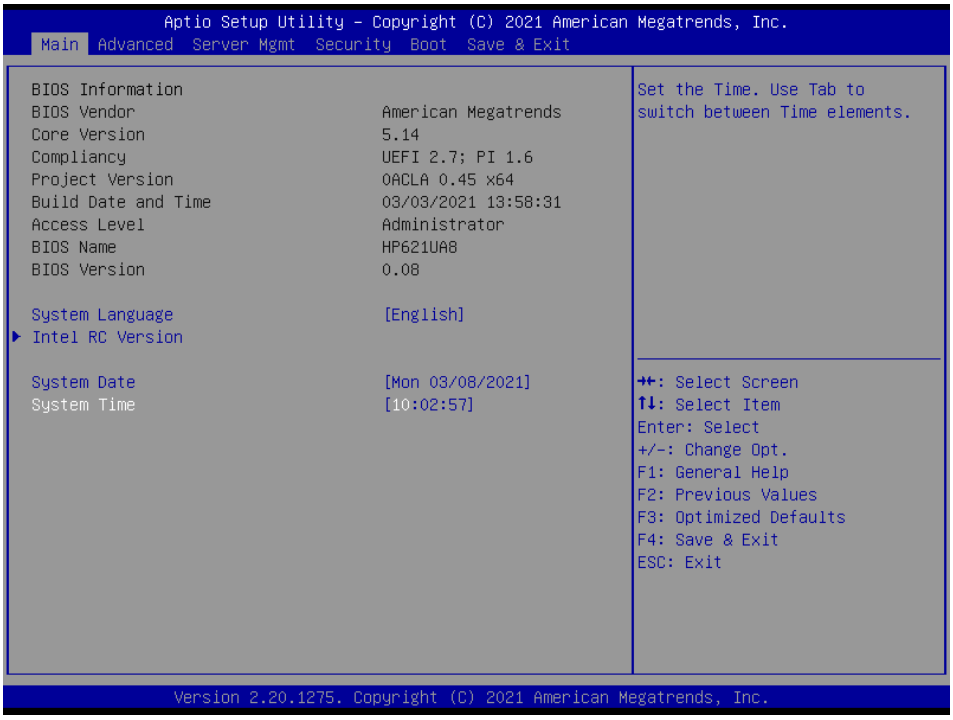
The best advice is to only alter settings which you thoroughly understand. To this end, we strongly recommend that you avoid making any changes to the chipset defaults. These defaults have been carefully chosen by both BIOS Vendor and your systems manufacturer to provide the absolute maximum performance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

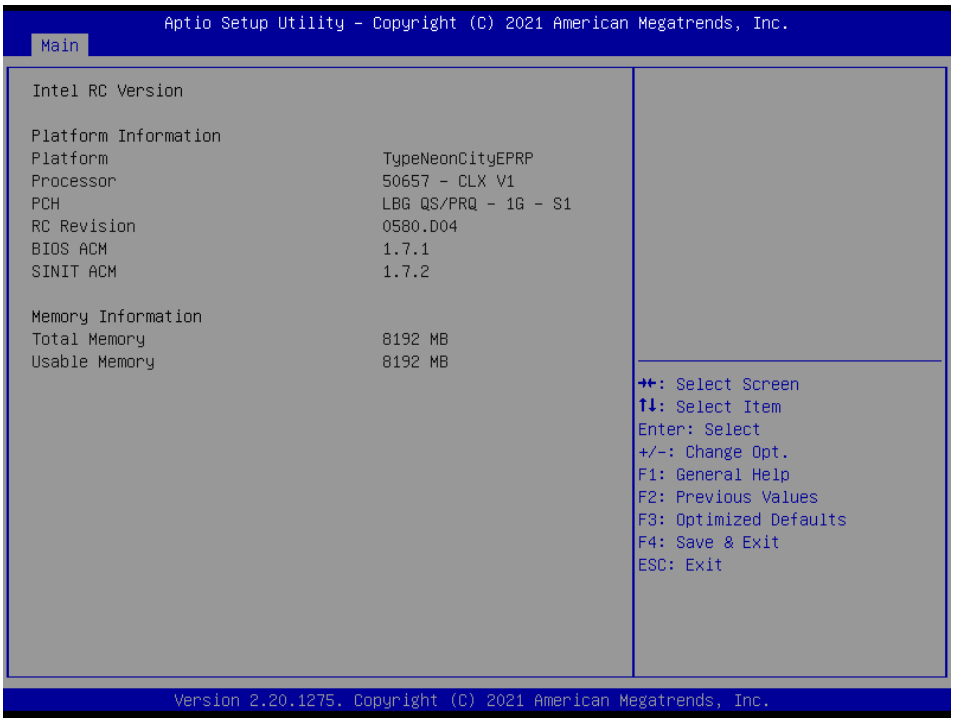
3.6 BIOS setup

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.

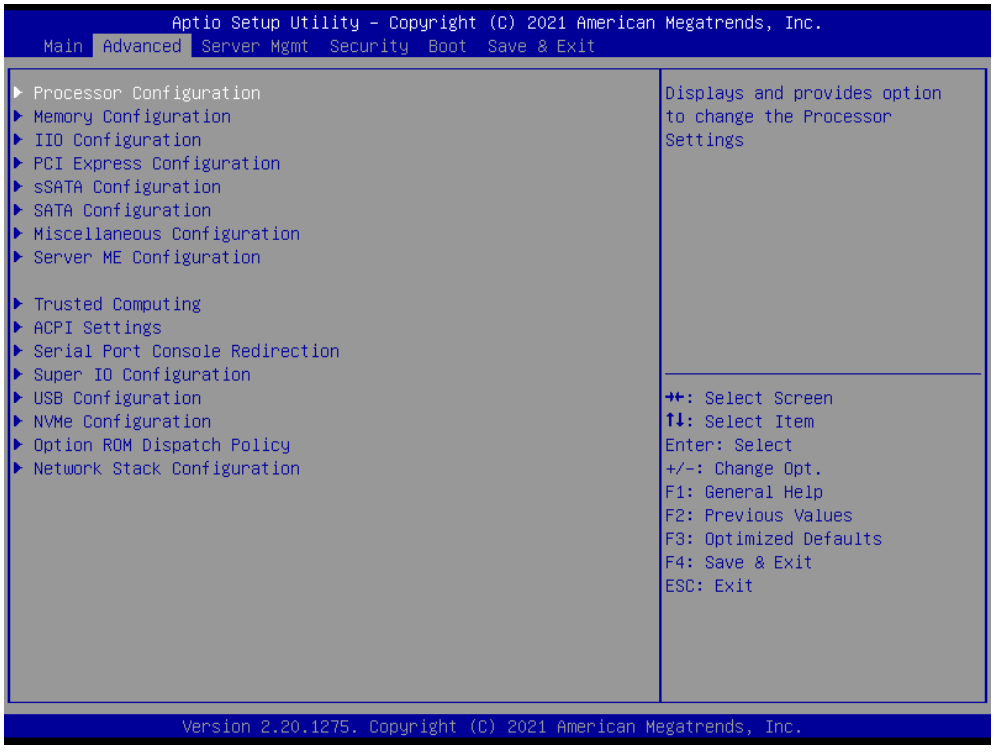
3.6.1.3 System Time

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

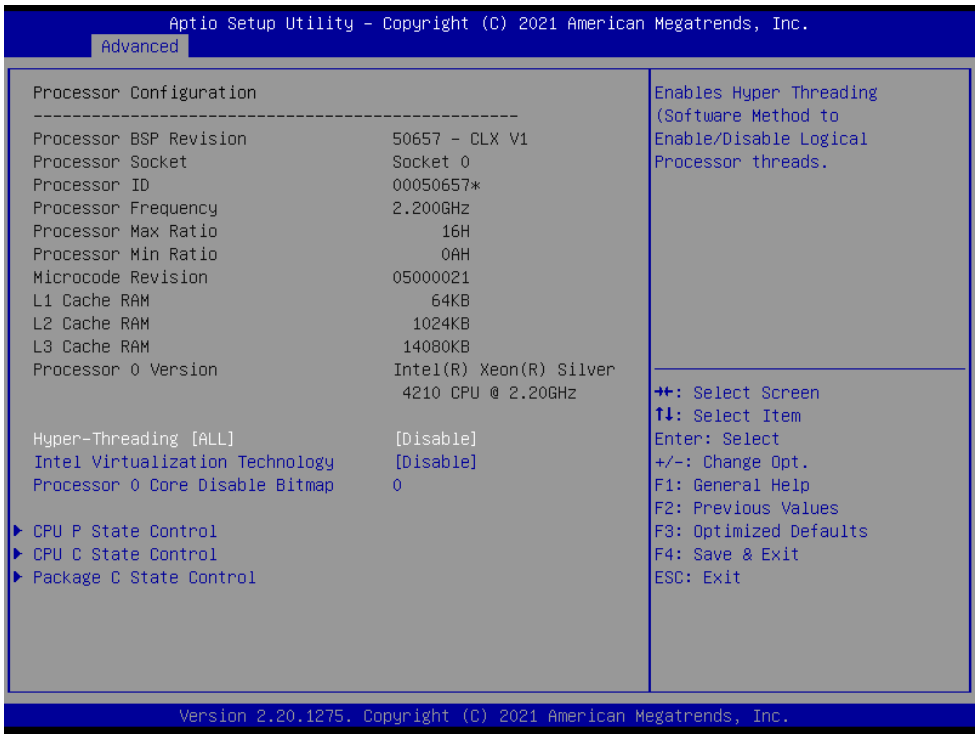
Note: The BIOS setup screens shown in this chapter are for reference purposes only, and may not exactly match what you see on your screen.
Visit the Avalue website (www.avalue.com.tw) to download the latest product and BIOS information.

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.

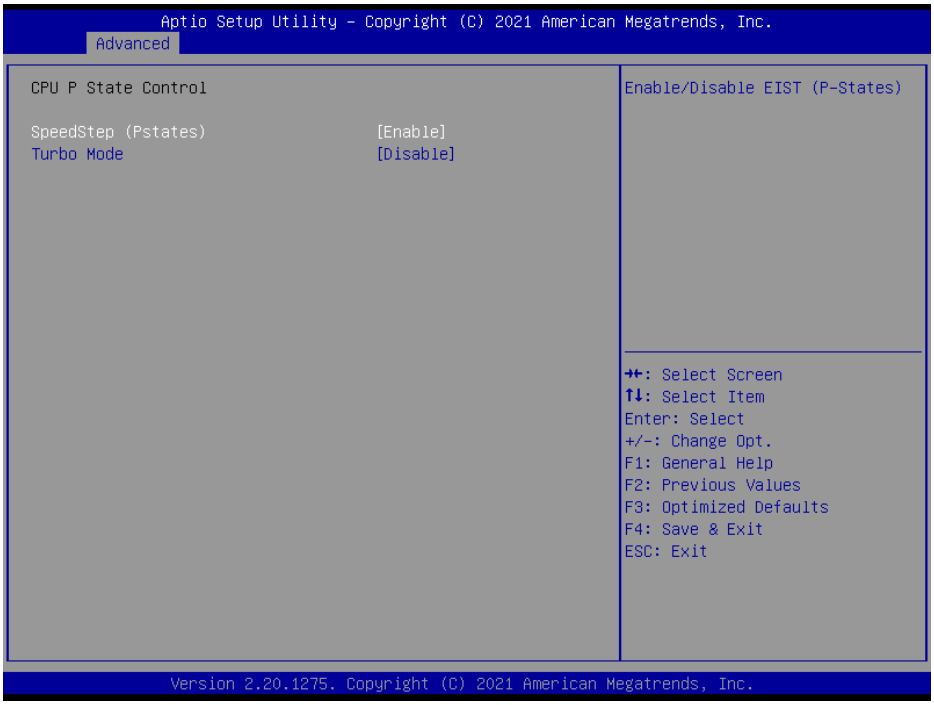


3.6.2.1 Processor Configuration



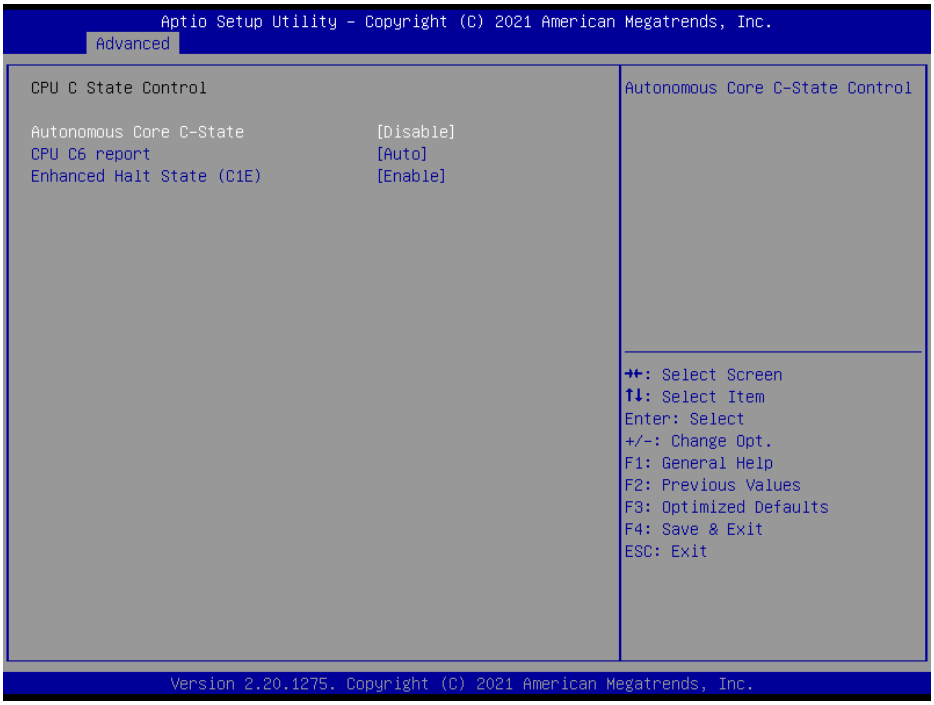
Item	Options	Description
Hyper-Threading (ALL)	Disable**[Default]** Enable	Enables Hyper Threading (Software Method to Enable/Disable Logical Processor threads.
Intel Virtualization Technology	Disable**[Default]** Enable	Enables the Vanderpool Technology, takes effect after reboot.
Processor 0 Core Disable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

3.6.2.1.1 CPU P State Control



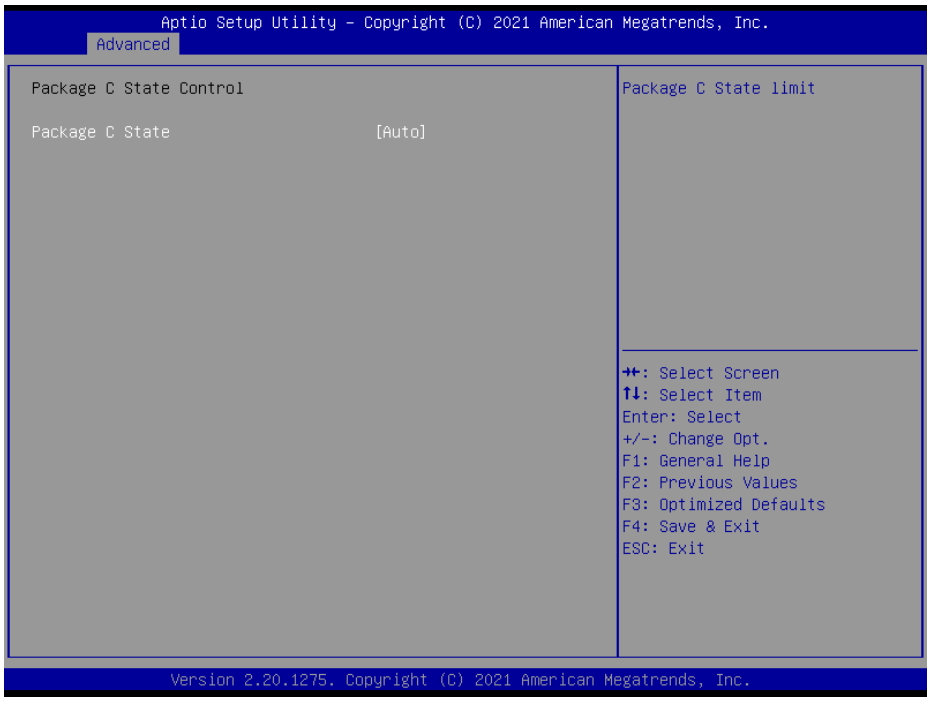
Item	Option	Description
SpeedStep (Pstates)	Enable**[Default]**, Disable	Enable/Disable EIST (P-States)
Turbo Mode	Enable Disable**[Default]**	Enable/Disable processor Turbo Mode (requires EMTTM enabled too).

3.6.2.1.2 CPU C State Control



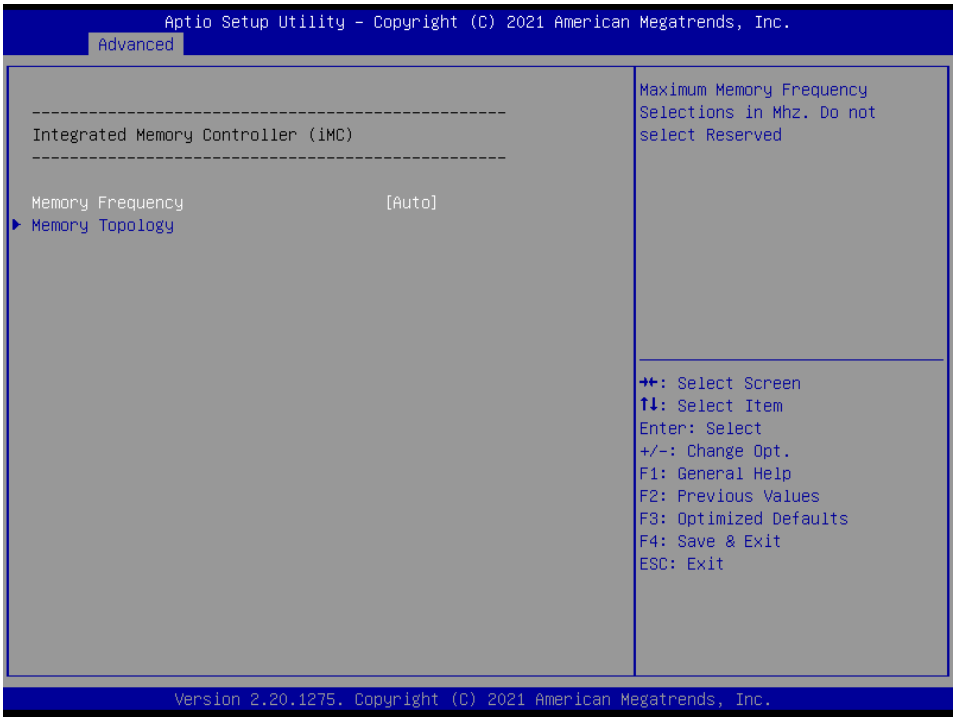
Item	Option	Description
Autonomous Core C-State	Enable Disable**[Default]**,	Autonomous Core C-State Control.
CPU C6 report	Disable Enable Auto**[Default]**	Enable/Disable CPU C6(ACPI C3) report to OS.
Enhanced Halt State (C1E)	Disable Enable**[Default]**	Core C1E auto promotion Control. Takes effect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

3.6.2.1.3 Package C State Control



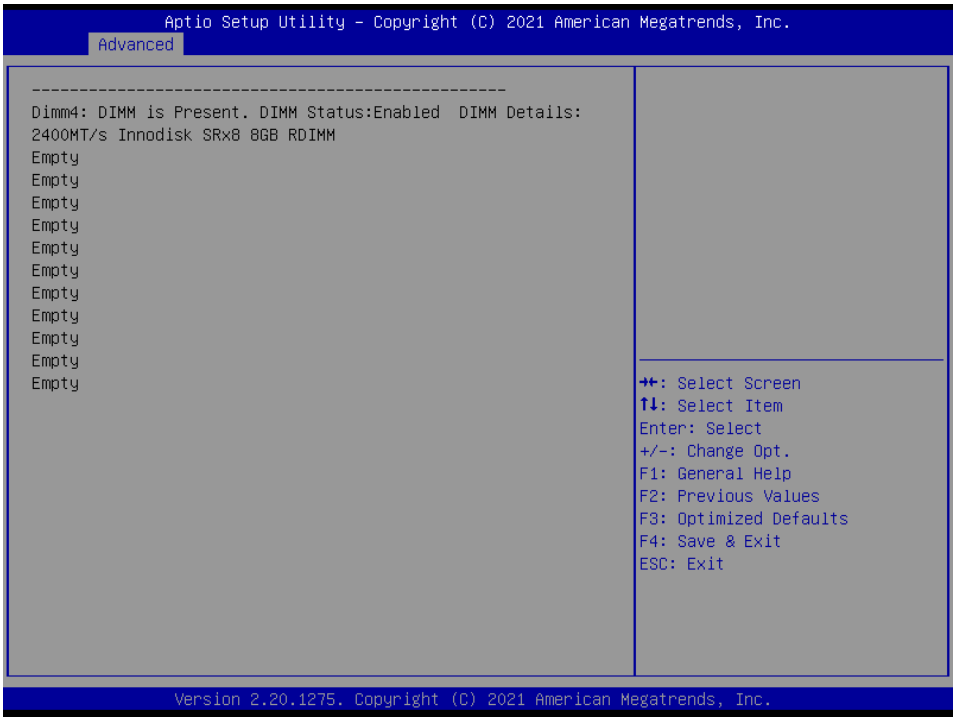
Item	Option	Description
Package C State	C0/C1 state C2 state C6(non Retention)state C6(Retention)state No Limit Auto**[Default]**,	Package C State limit.

3.6.2.2 Memory Configuration

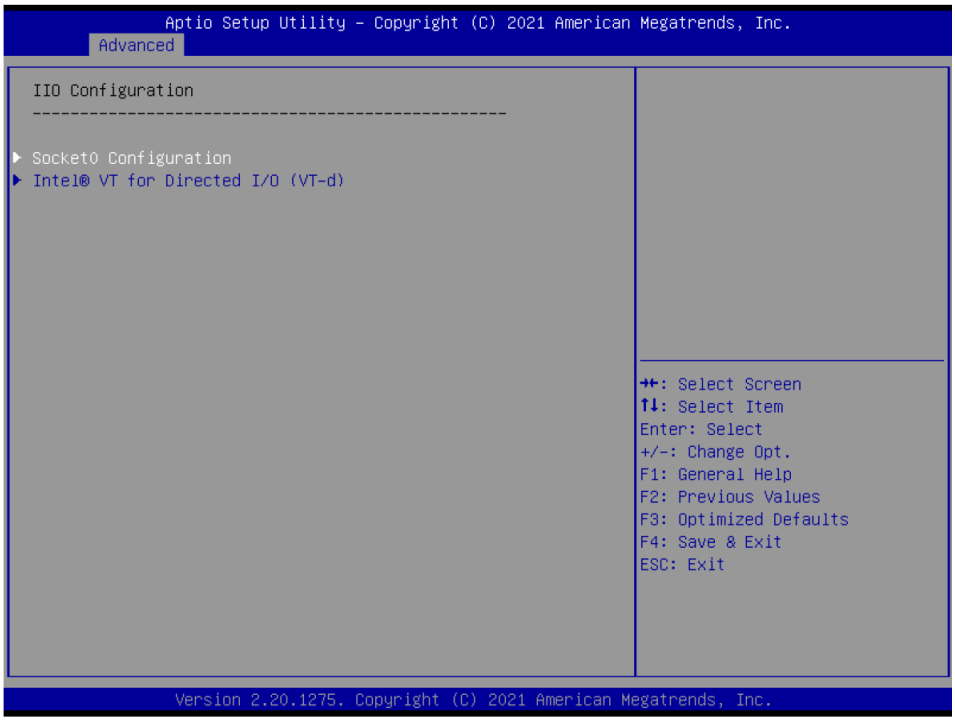


Item	Option	Description
Memory Frequency	Auto**[Default]**/800/1000/1066/1200 /1333/1400/1600/1800/1866 /2000/2133/2200/2400/2600/2666 /2800-OvrClk/2933/3000-OvrClk /3200-OvrClk/3400-OvrClk/3466-OvrClk /3600-OvrClk/3733-OvrClk/3800-OvrClk /4000-OvrClk/4200-OvrClk/4266-OvrClk /4400-OvrClk	Maximum Memory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

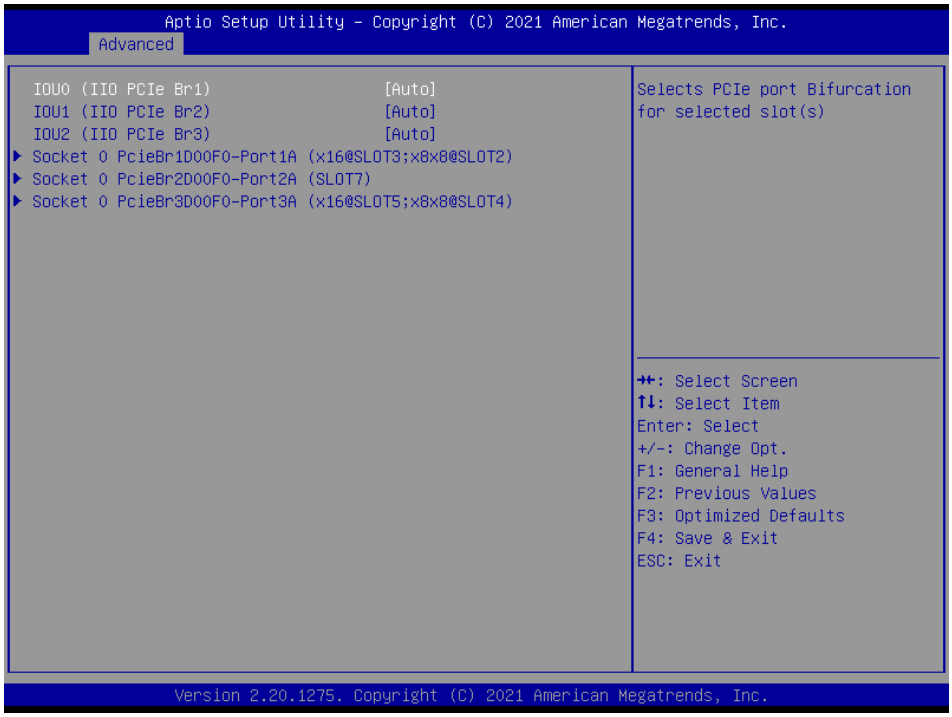
3.6.2.2.1 Memory Topology



3.6.2.3 IIO Configuration

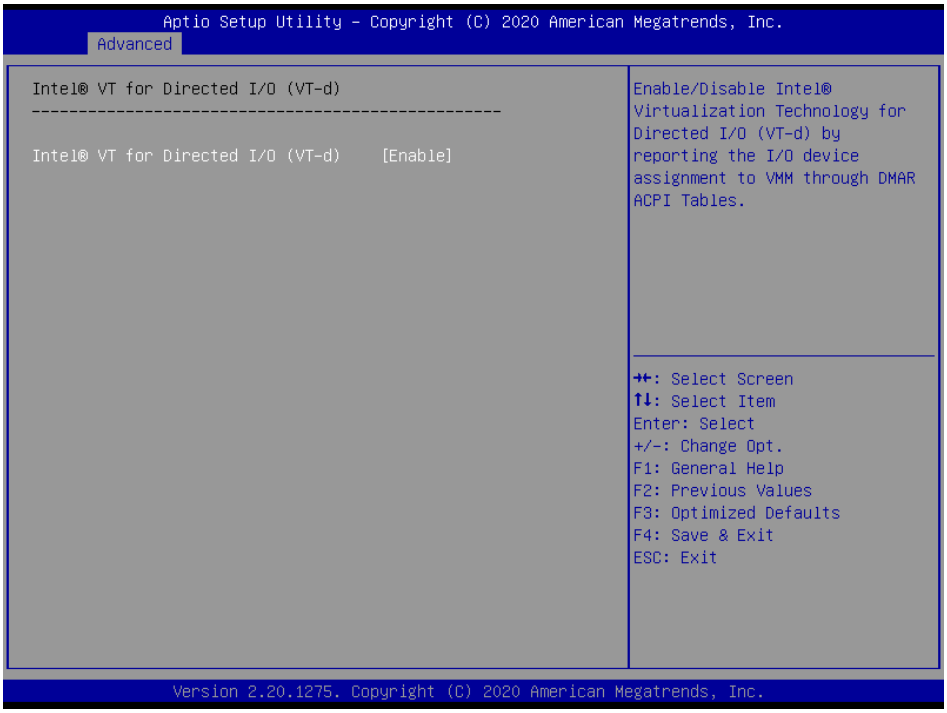


3.6.2.3.1 Socket0 Configuration



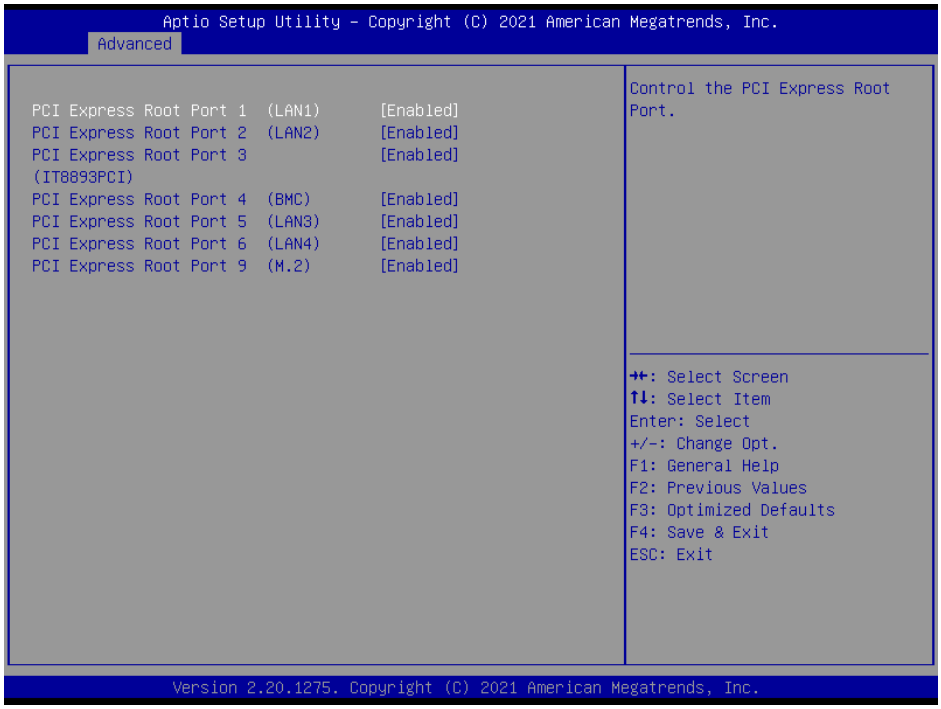
Item	Options	Description
IOU0 (IIO PCIe Br1)	x8x8 x16 Auto**[Default]**	Select PCIe port Bifurcation for selected slot(s).
IOU1 (IIO PCIe Br2)	x8x8 x16 Auto**[Default]**	Select PCIe port Bifurcation for selected slot(s).
IOU2 (IIO PCIe Br3)	x8x8 x16 Auto**[Default]**	Select PCIe port Bifurcation for selected slot(s).

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



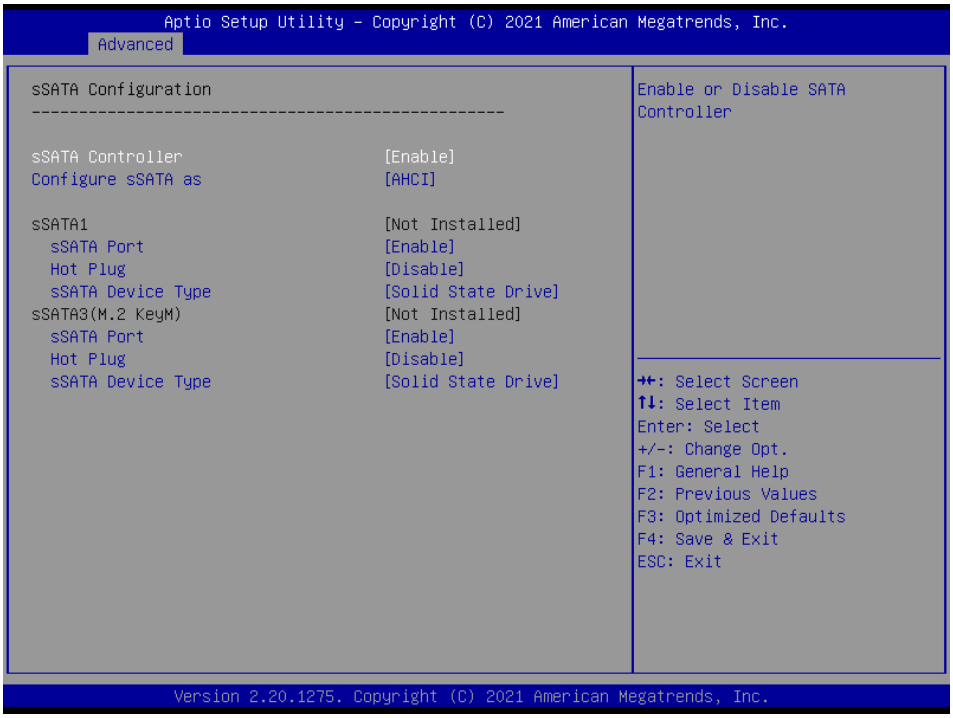
Item	Options	Description
Intel® VT for Directed I/O (VT-d)	Enable**[Default]** Disable	Enable/Disable Intel® Virtualization Technology for Directed I/O (VT-d) by reporting the I/O device assignment to VMM through DMAR ACPI Tables.

3.6.2.4 PCI Express Configuration



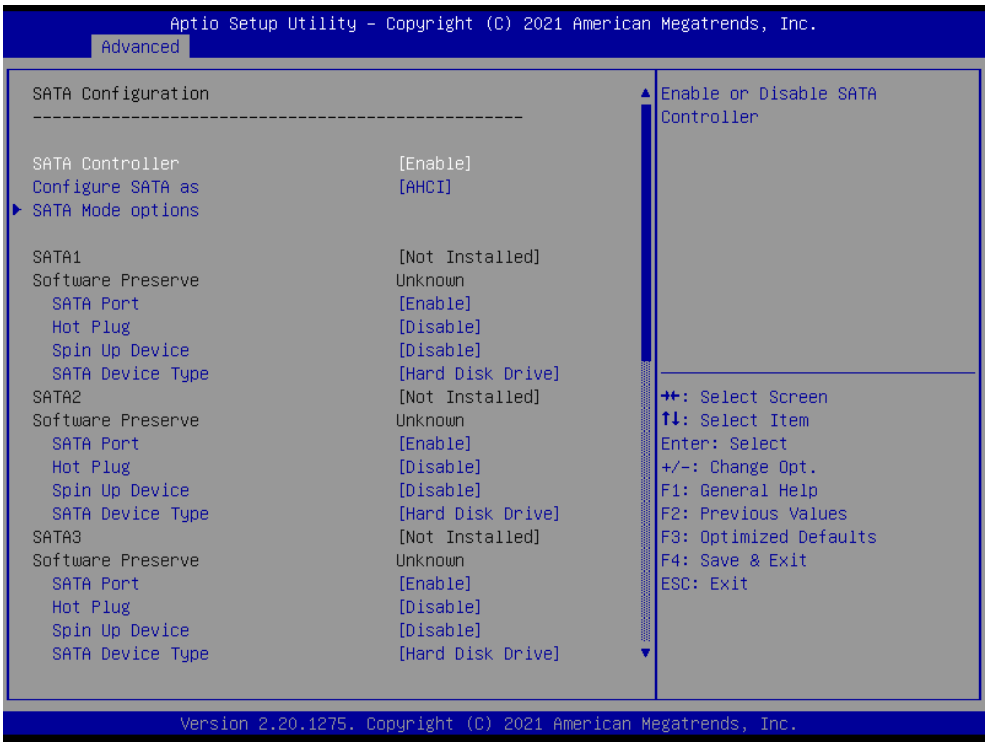
Item	Options	Description
PCI Express Root Port 1(LAN1)	Disabled Enabled**[Default]**	Control the PCI Express Root Port.
PCI Express Root Port 2(LAN2)	Disabled Enabled**[Default]**	Control the PCI Express Root Port.
PCI Express Root Port 3(IT8893PCI)	Disabled Enabled**[Default]**	Control the PCI Express 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.

3.6.2.5 sSATA Configuration



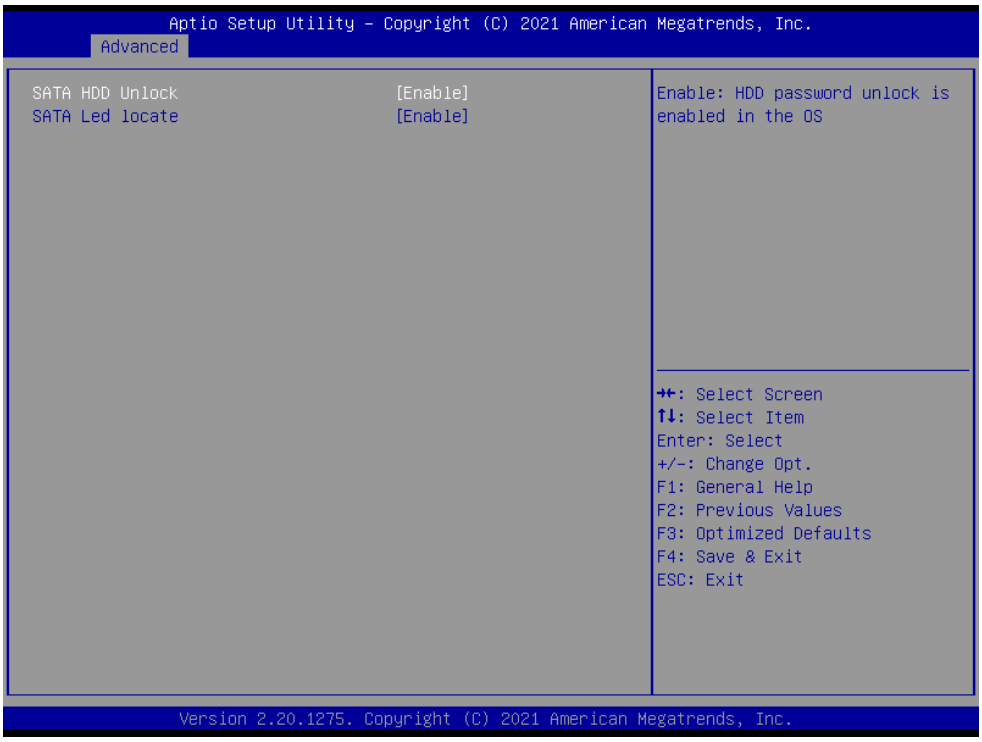
Item	Options	Description
sSATA Controller	Enable**[Default]** Disable	Enable or Disable SATA Controller.
Configure sSATA as	AHCI**[Default]** RAID	This will configure sSATA as RAID or AHCI.
sSATA Port	Disable Enable**[Default]**	Enable or Disable SATA Port.
Hot Plug	Disable**[Default]** Enable	Designates 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.

3.6.2.6 SATA Configuration



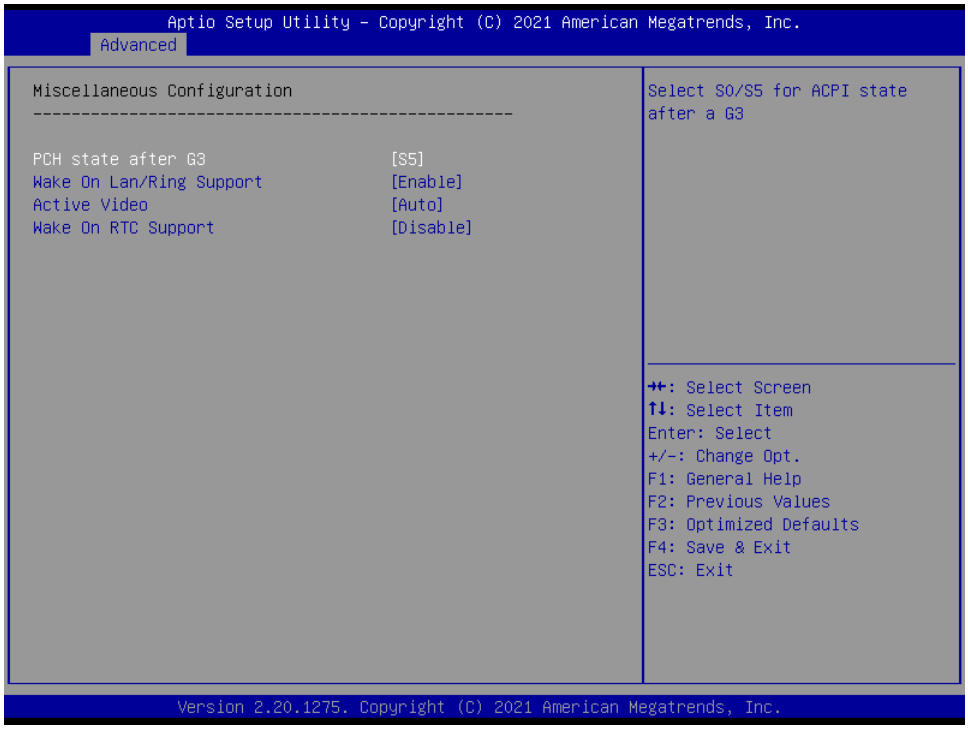
Item	Options	Description
SATA Controller	Enable**[Default]** Disable	Enable or Disable SATA Controller.
Configure SATA as	AHCI**[Default]** RAID	This will configure SATA as RAID or AHCI
SATA Port	Disable Enable**[Default]**	Enable or Disable SATA Port.
Hot Plug	Disable**[Default]** Enable	Designates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

3.6.2.6.1 SATA Mode options



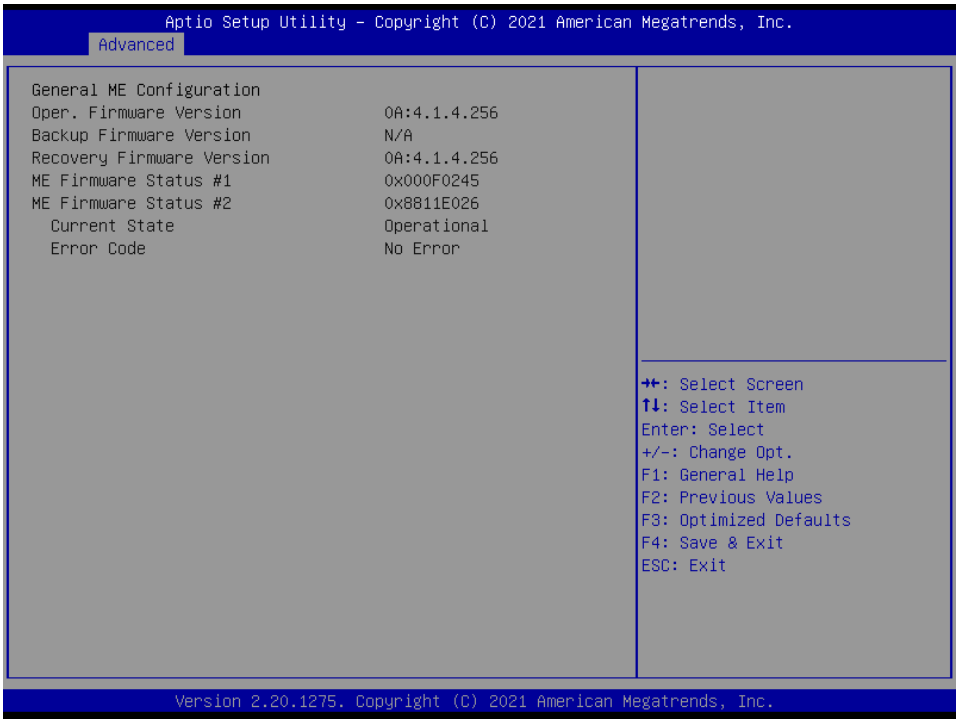
Item	Option	Description
SATA HDD Unlock	Disable Enable**[Default]**	Enable: HDD password unlock is enabled in the OS.
SATA Led locate	Disable Enable**[Default]**	If enabled LED/SGPIO hardware is attached.

3.6.2.7 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.

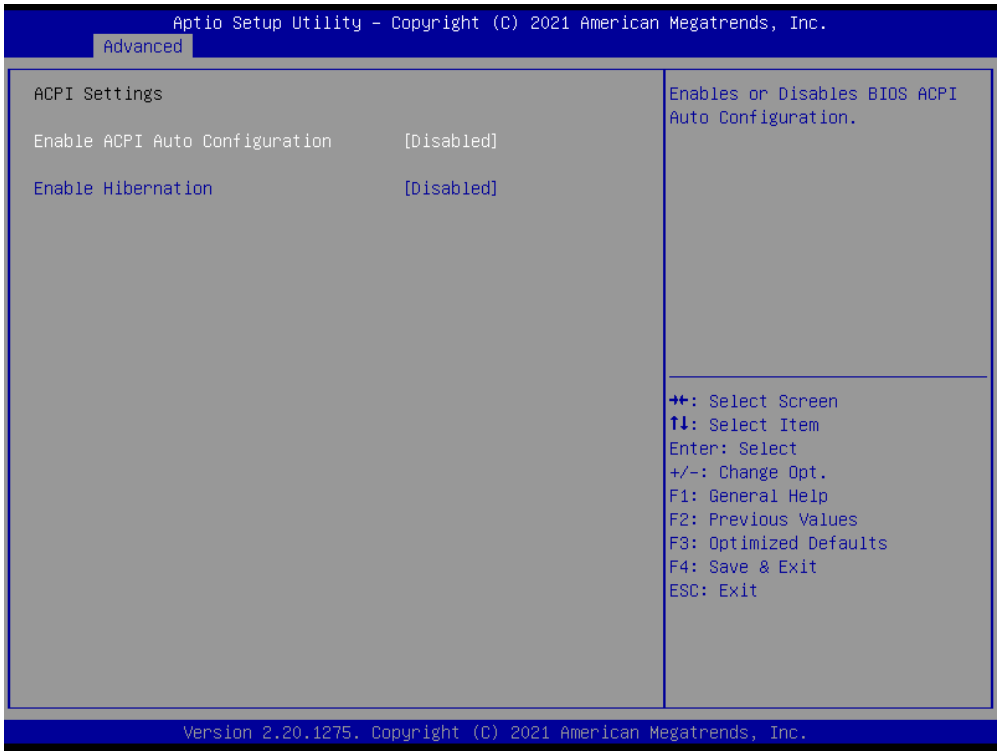
3.6.2.8 Server ME Configuration



3.6.2.9 Trusted Computing

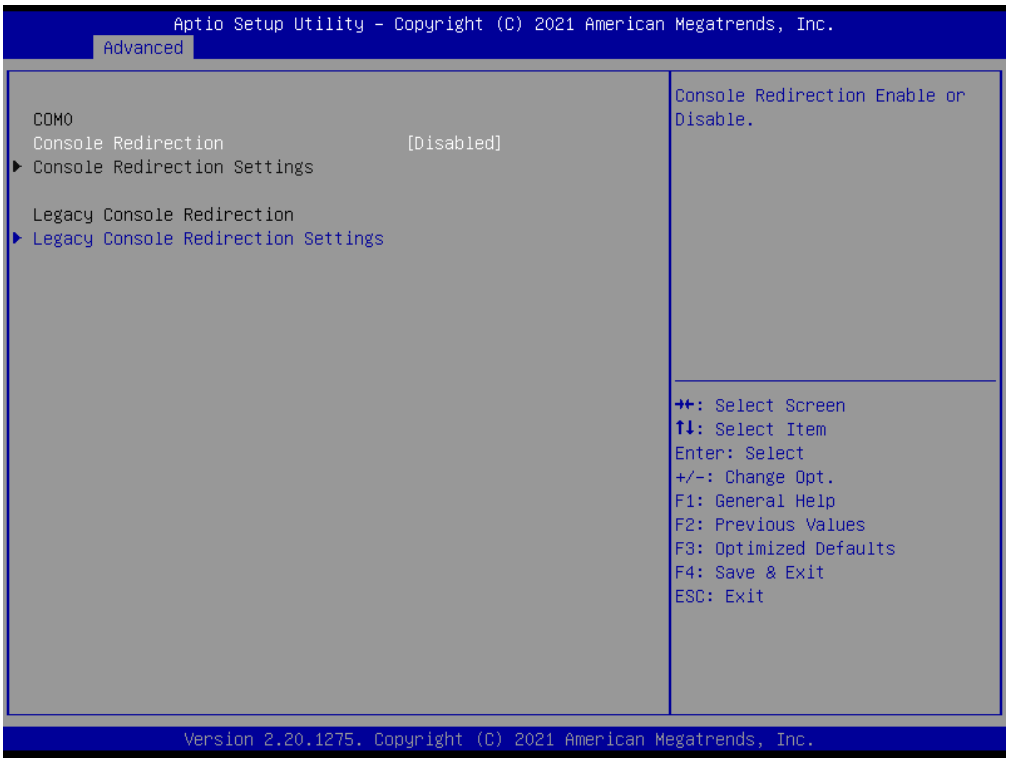
Item	Options	Description
TPM Support	Disable, Enable**[Default]**	Enables or Disables BIOS support for security device. O.S. will not show Security Device. TCG EFI protocol and INT1A interface will not be available.

3.6.2.10 ACPI Settings



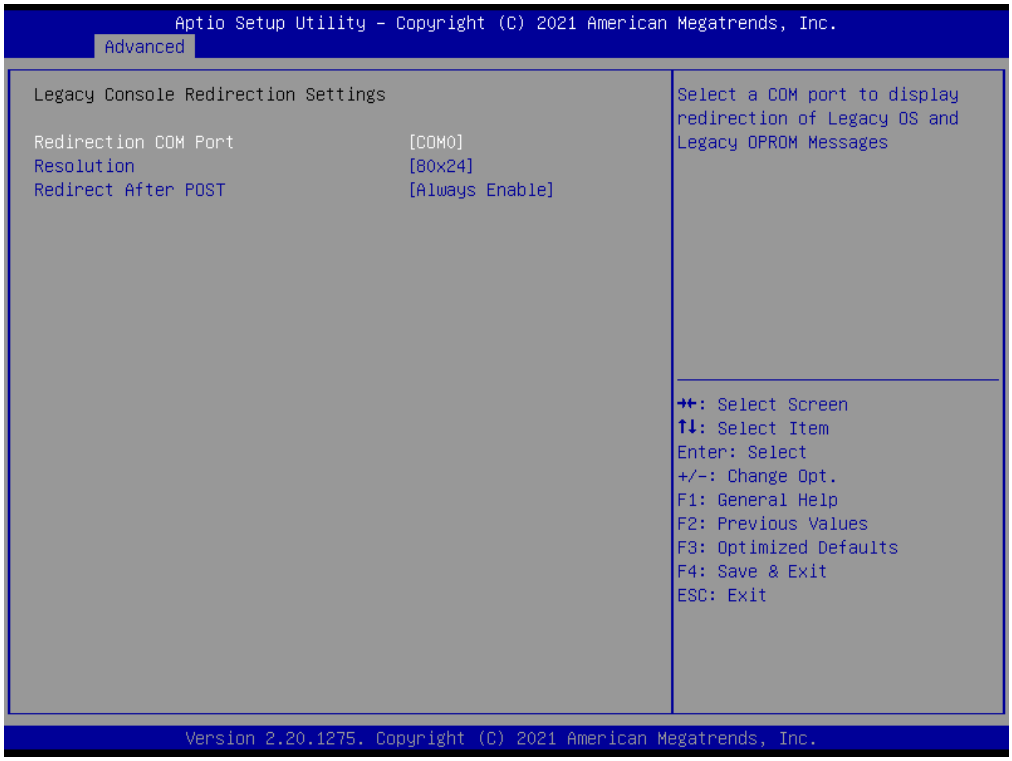
Item	Options	Description
Enable ACPI Auto Configuration	Disabled**[Default]** Enabled	Enables or Disables BIOS ACPI Auto Configuration.
Enable Hibernation	Disabled**[Default]** Enabled	Enables or Disables System ability to Hibernate (OS/S4 Sleep State). This option may not be effective with some operating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

3.6.2.11 Serial Port Console Redirection



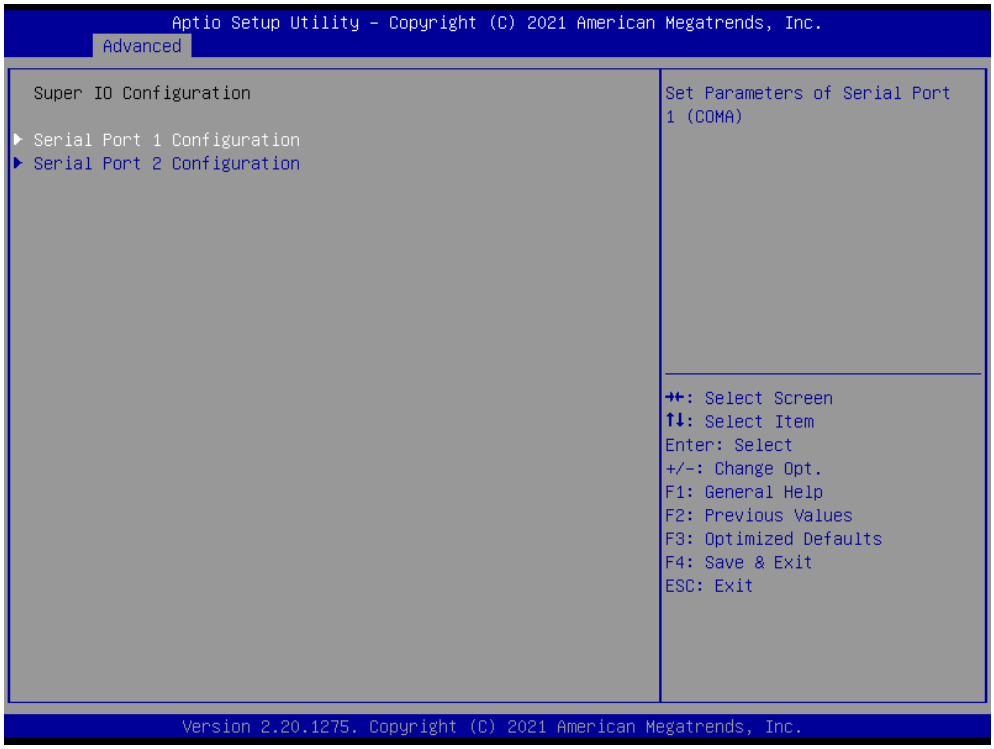
Item	Options	Description
Console Redirection	Disabled**[Default]**, Enabled	Console Redirection Enable or Disable.

3.6.2.11.1 Legacy Console Redirection Settings



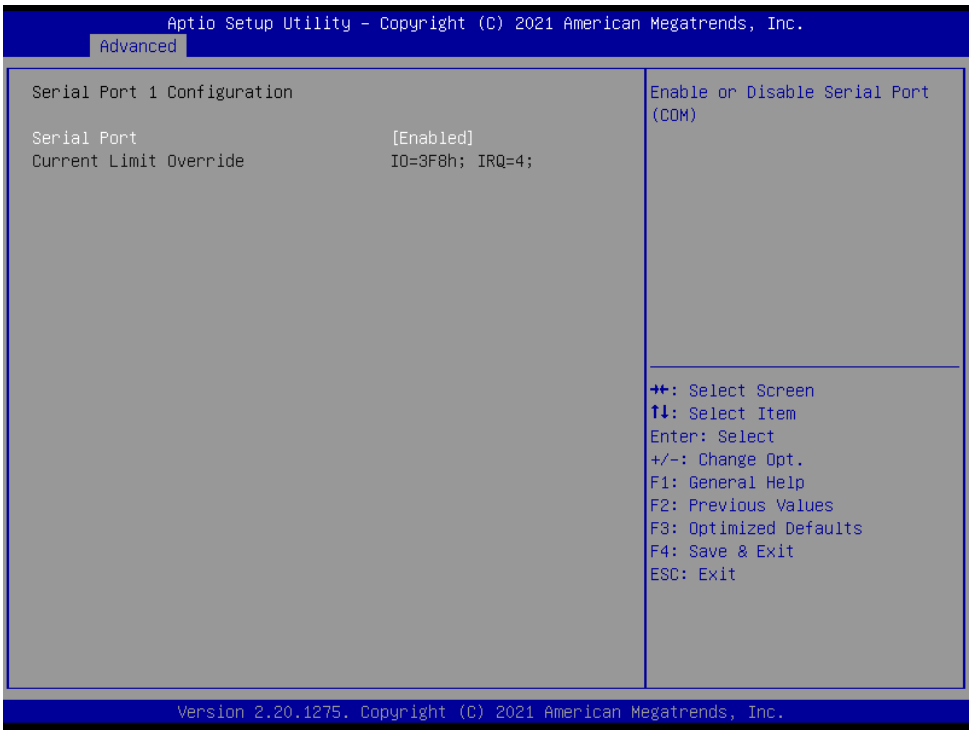
Item	Option	Description
Redirection COM Port	COM0**[Default]**	Select a COM port to display redirection of Legacy OS and Legacy OPROM Messages.
Resolution	80x24**[Default]** 80x25	On Legacy OS, the Number of Wows and Columns supported redirection.
Redirect After POST	Always Enable**[Default]** BootLoader	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.

3.6.2.12 Super IO Configuration



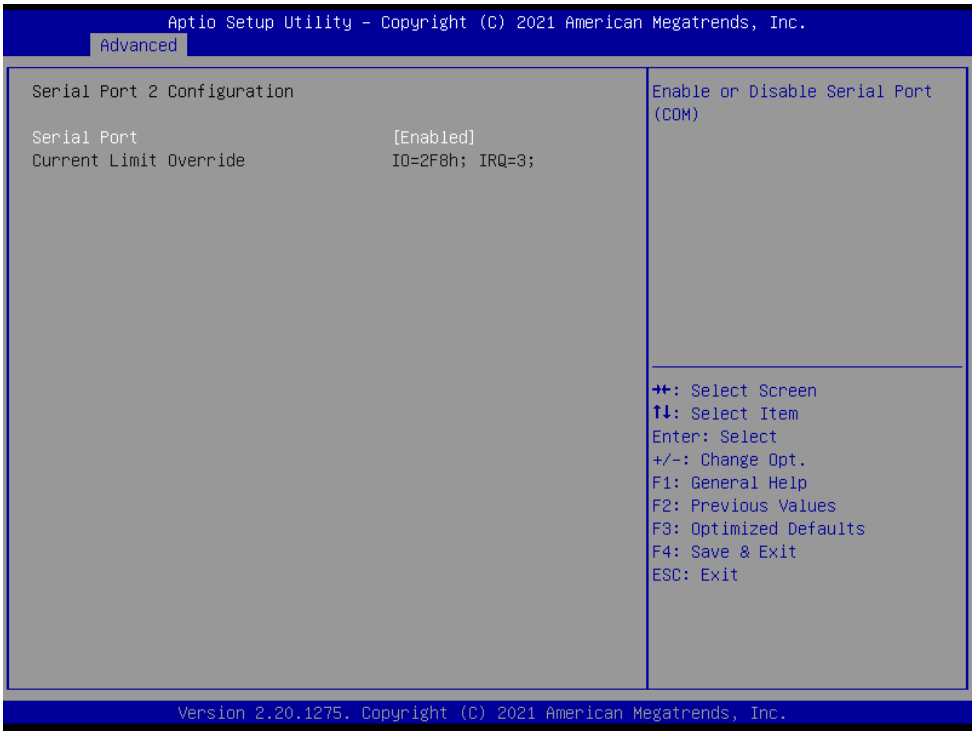
Item	Description
Serial Port 1 Configuration	Set Parameters of Serial Port 1 (COMA).
Serial Port 2 Configuration	Set Parameters of Serial Port 2 (COMB).

3.6.2.12.1 Serial Port 1 Configuration



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

3.6.2.12.2 Serial Port 2 Configuration



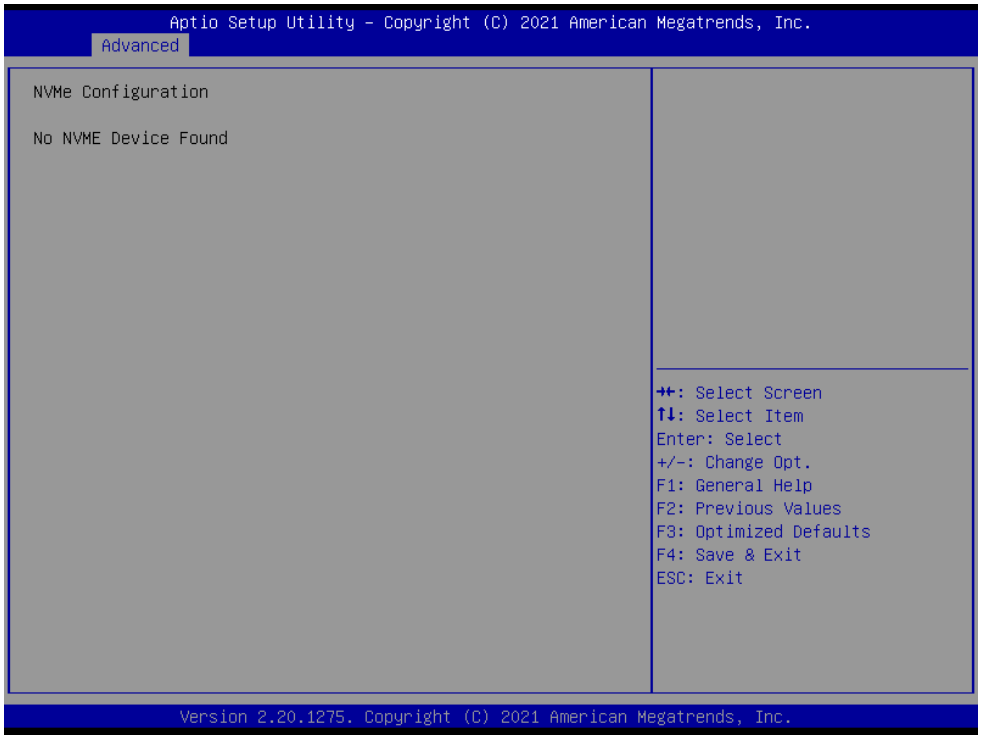
Item	Option	Description
Serial Port	Enabled**[Default]**, Disabled	Enable or Disable Serial Port (COM).

3.6.2.13 USB Configuration

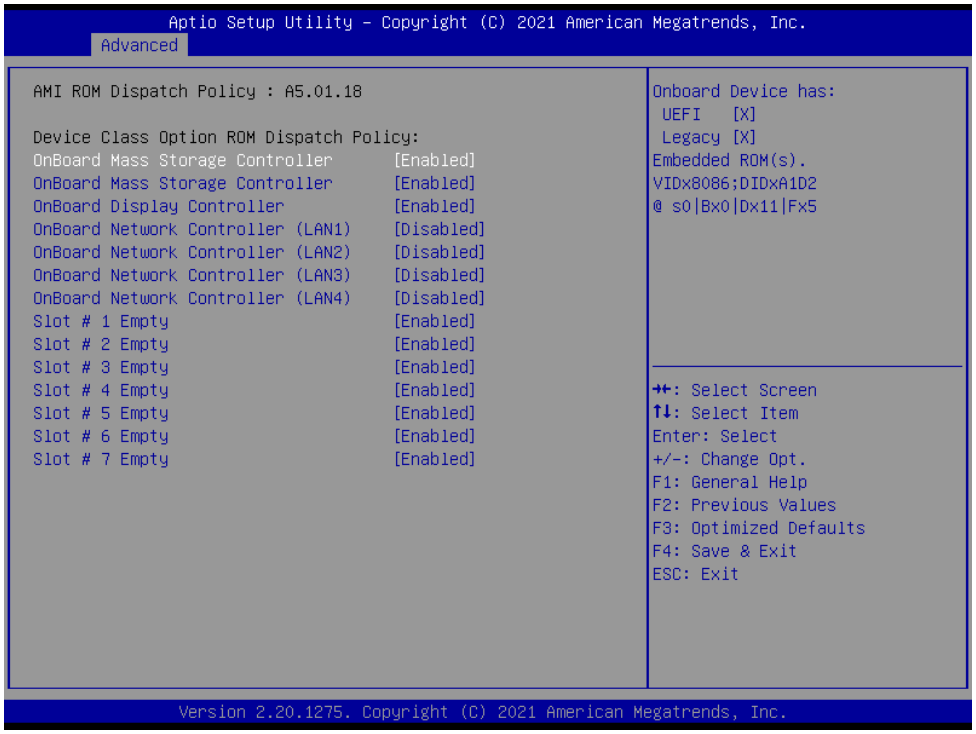
The USB Configuration menu helps read USB information and configures USB settings.

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.
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.

3.6.2.14 NVMe Configuration



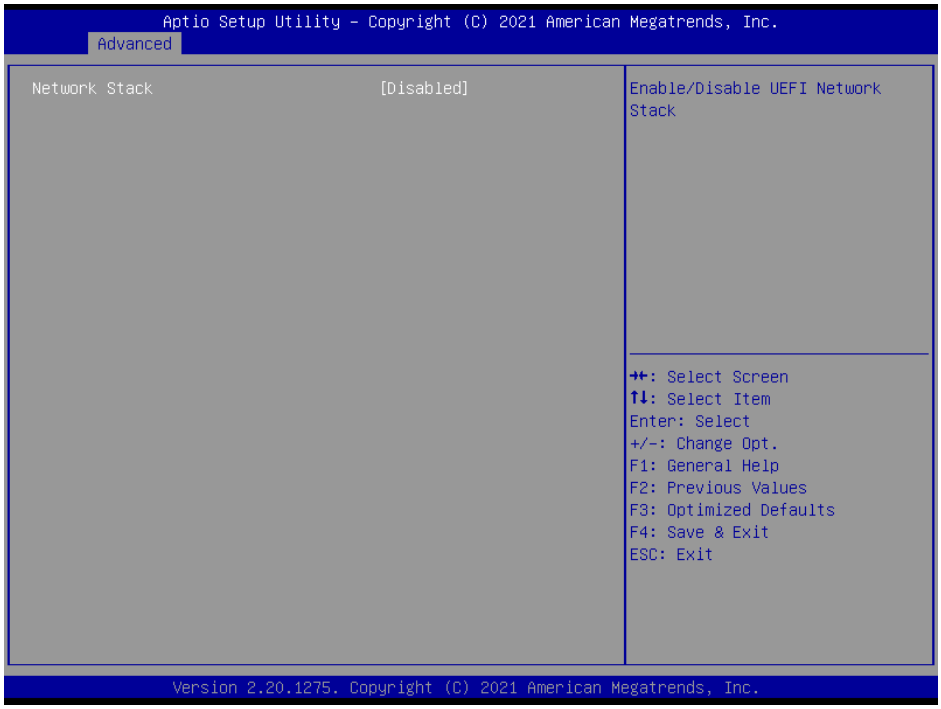
3.6.2.15 Option ROM Dispatch Policy



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

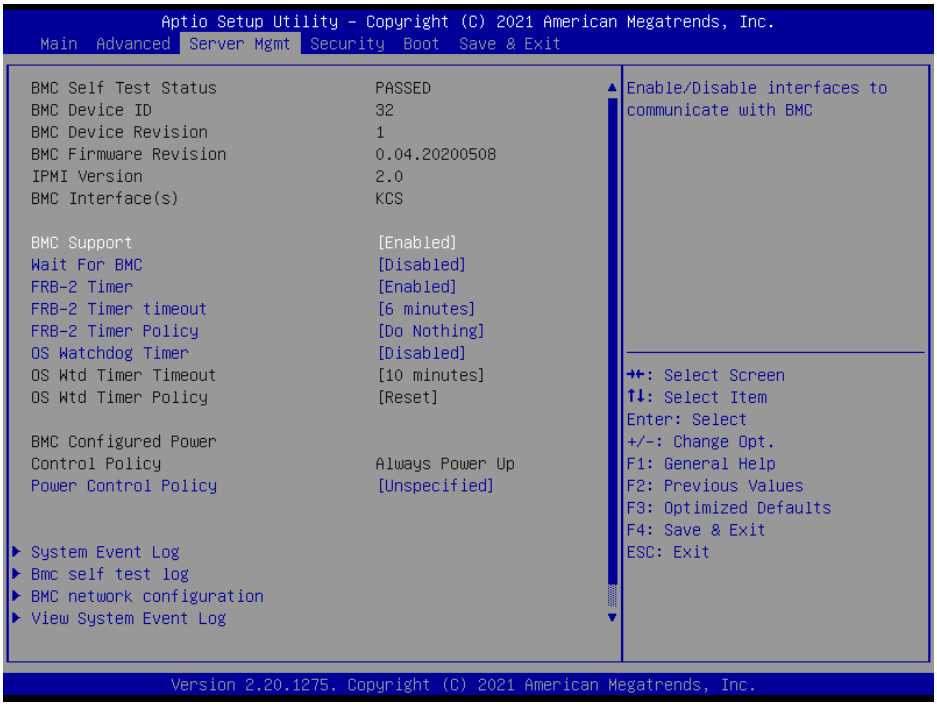
		Embedded ROM(s). VIDx8086; DIDxA1D2 @ s0|Bx0 |Dx11 |Fx5
Onboard Display Controller	Enabled**[Default]**, Disabled	Onboard Device has: UEFI [X] Legacy [X] Embedded ROM(s). VIDx1A03; DIDx2000 @ s0|BxA |Dx0 |Fx0
Onboard Network Controller(LAN1)	Enabled**[Default]**, Disabled	Onboard Device has: UEFI [X] 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.

3.6.2.16 Network Stack Configuration



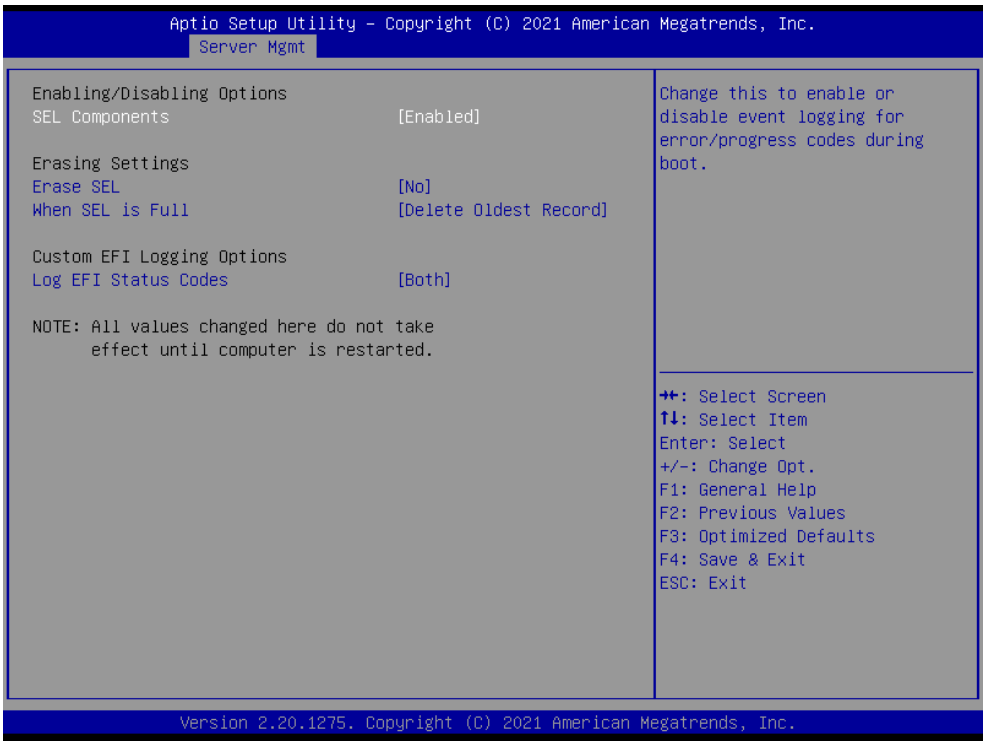
Item	Options	Description
Network Stack	Enabled Disabled**[Default]**	Enable/Disable UEFI Network Stack.

3.6.3 Server Mgmt



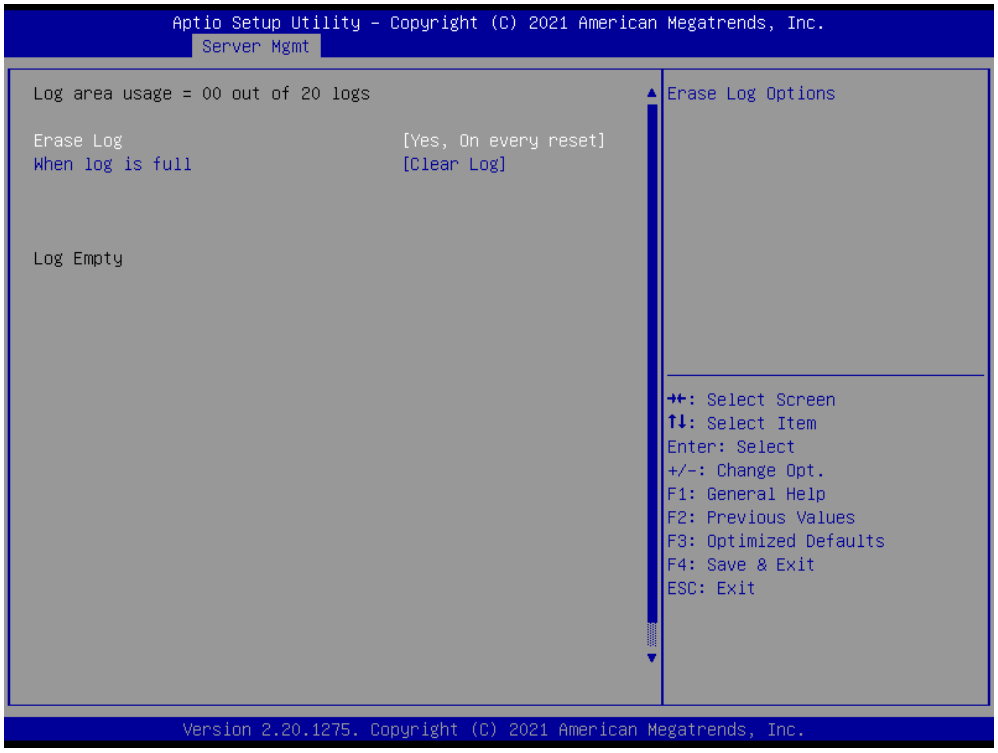
Item	Options	Description
BMC Support	Enabled**[Default]** Disabled	Enable/Disable interfaces to communicate with BMC.
Wait For BMC	Enabled Disabled**[Default]**	Wait For BMC response for specified time out. BMC starts at the same time when BIOS starts during AC power ON. It takes around 30 seconds to 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



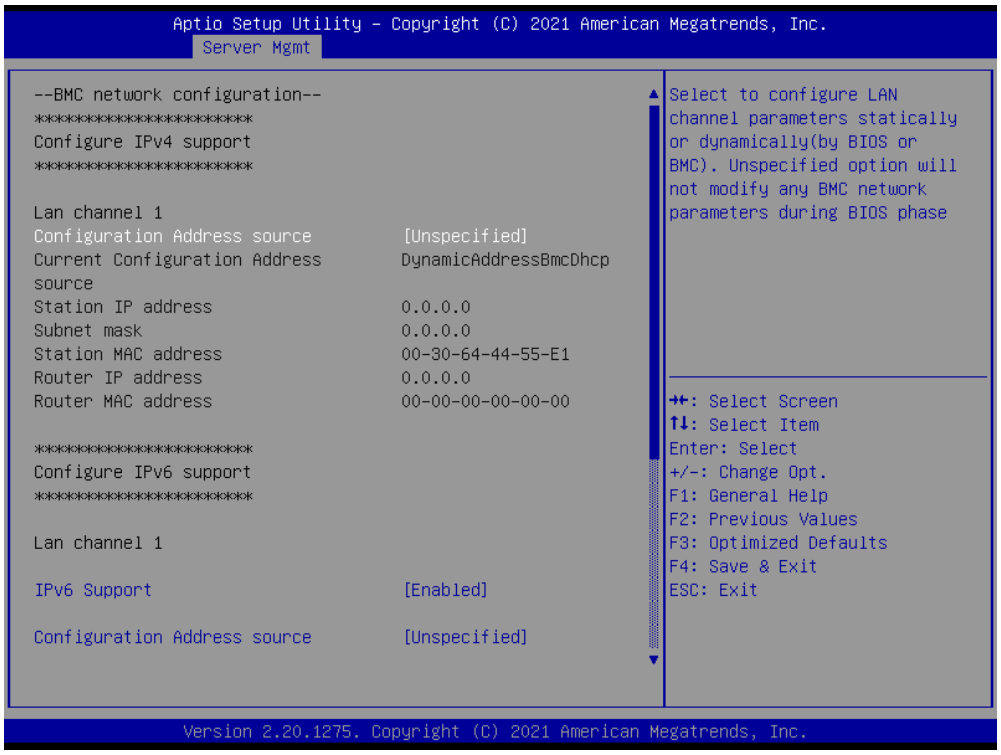
Item	Option	Description
SEL Components	Enabled**[Default]** Disabled	Change this to enable or disable event logging for error/progress codes during boot.
Erase SEL	No**[Default]** Yes, On next reset Yes, On every reset	Choose options for erasing SEL.
When SEL is Full	Do Nothing Erase Immediately Delete 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



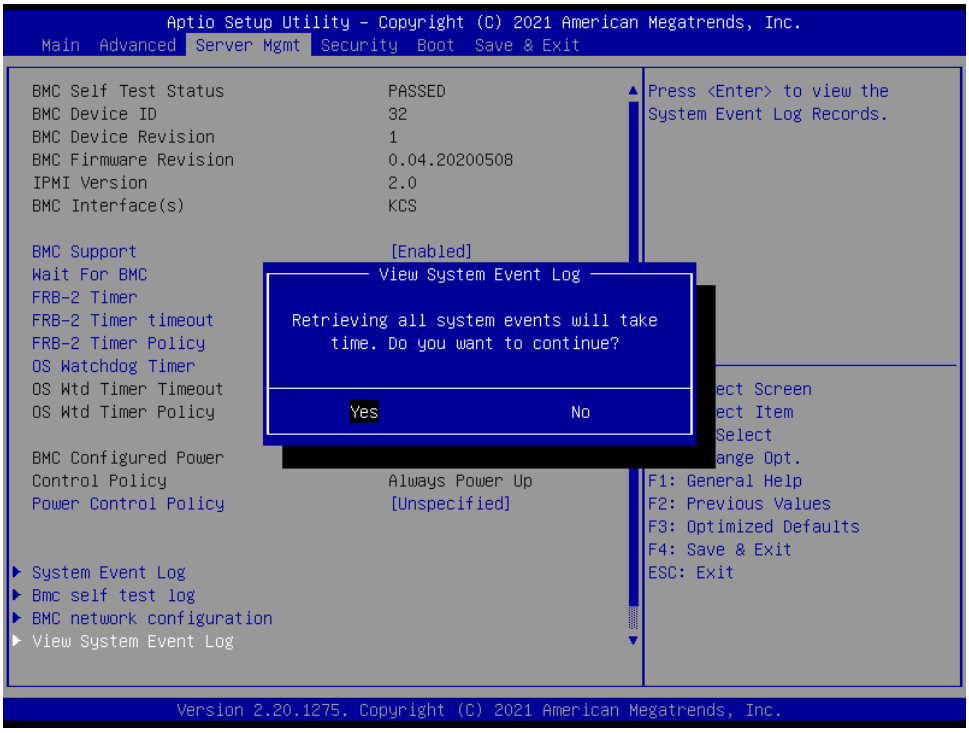
Item	Option	Description
Erase Log	Yes, On every reset**[Default]** No	Erase Log Options.
When log is full	Clear Log**[Default]** Do not log any more	Select the action to be taken when log is full.

3.6.3.3 BMC network configuration

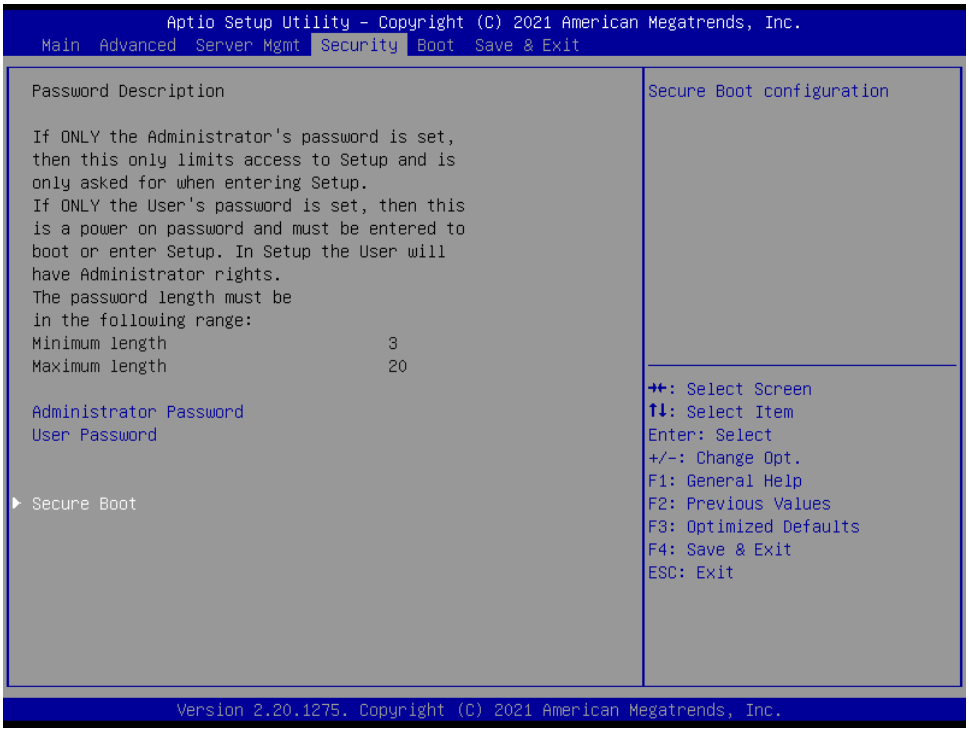


Item	Option	Description
Configuration Address source	Unspecified**[Default]** Static DynamicBmcDhcp DynamicBmcNonDhcp	Select configure LAN channel parameters statically or dynamically(by BIOS or BMC). Unspecified option will not modify any BMC network parameters during BIOS phase.
IPV6 Support	Enabled**[Default]**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



3.6.4 Security



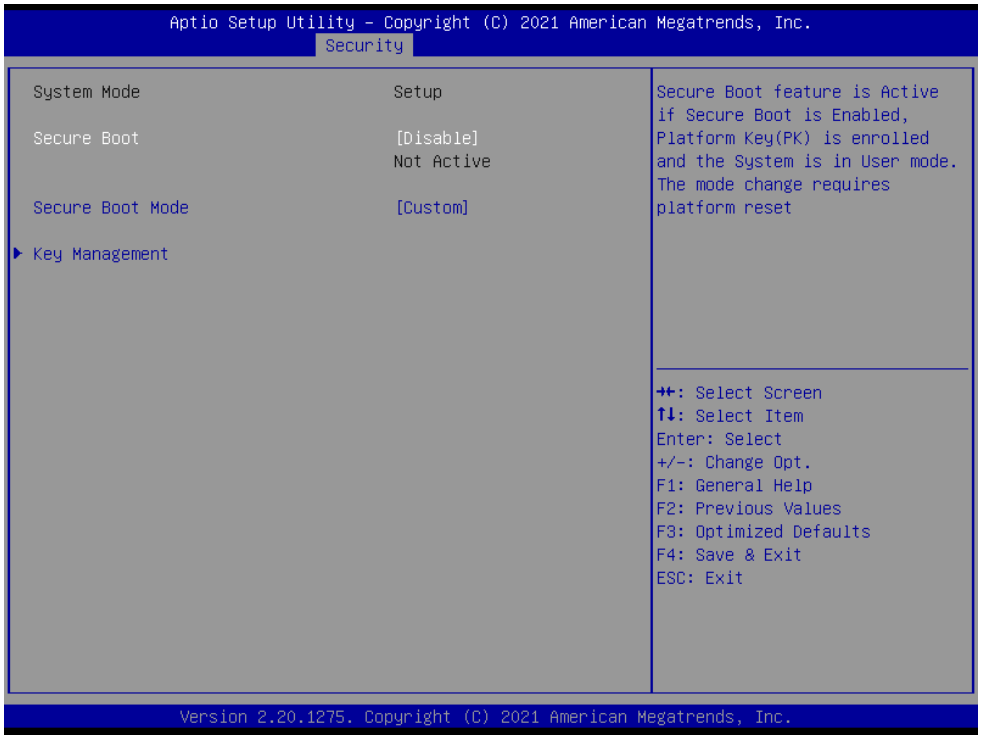
- **Administrator Password**

Set setup Administrator Password

- **User Password**

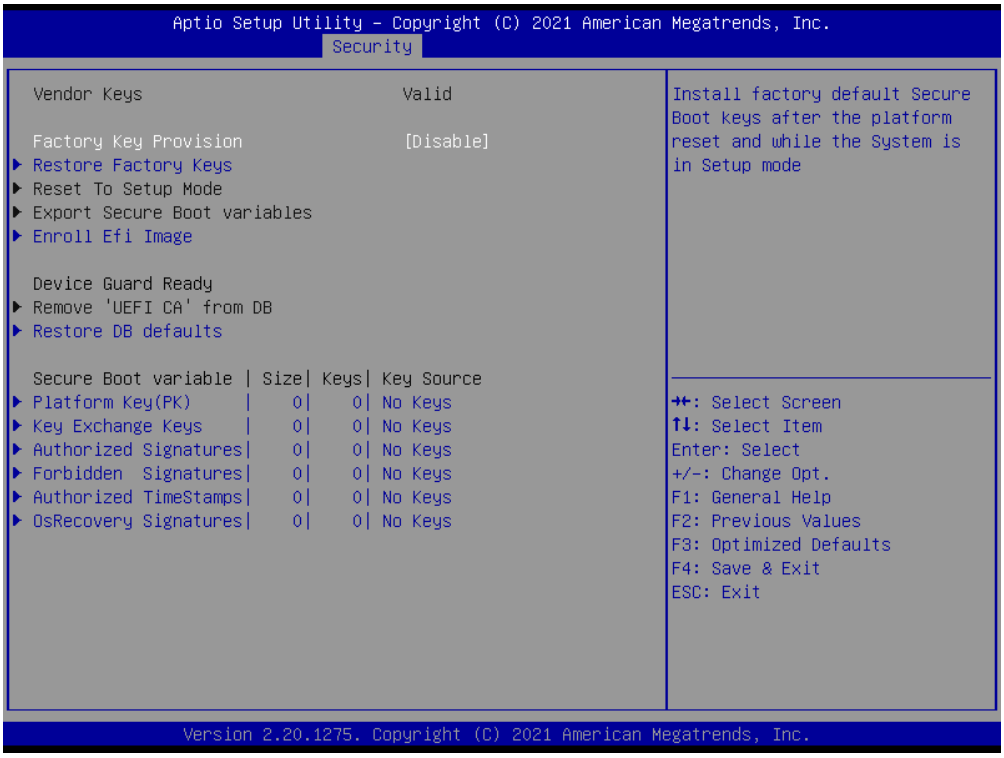
Set User Password

3.6.4.1 Secure Boot



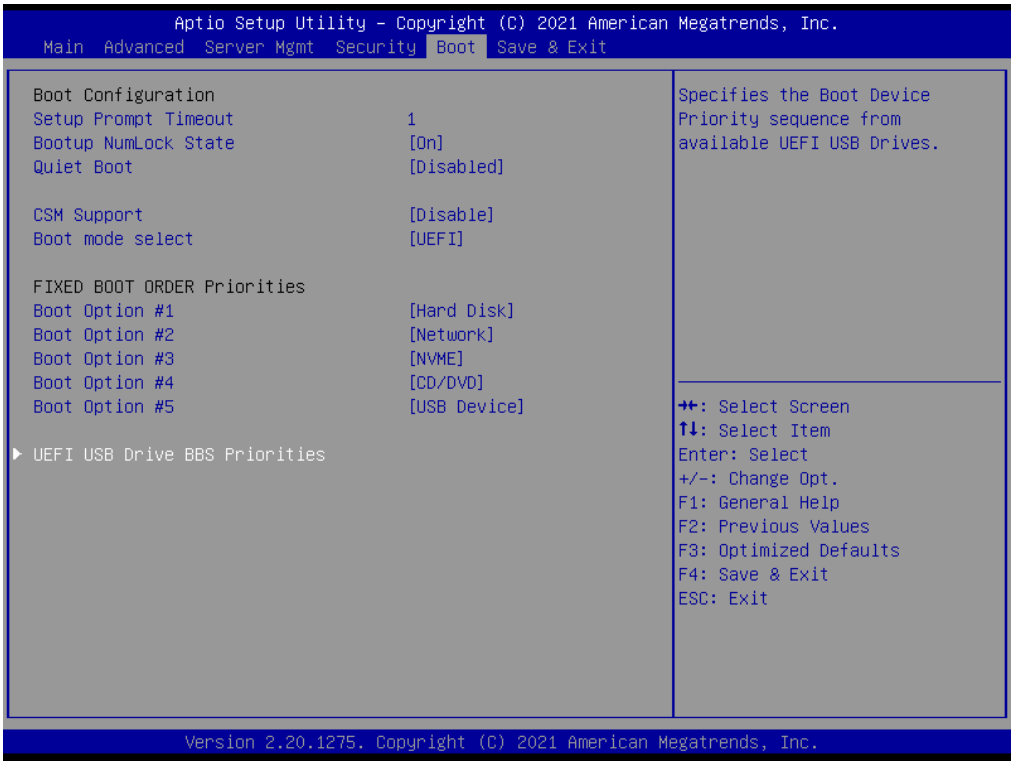
Item	Option	Description
Secure Boot	Disable**[Default]** Enable	Secure Boot feature is Active if Secure Boot is Enable, Platform Key(PK) is enrolled and the System is in User mode. The mode change requires platform reset.
Secure Boot Mode	Standard Custom**[Default]**	Secure Boot mode selector: Standard/Custom.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

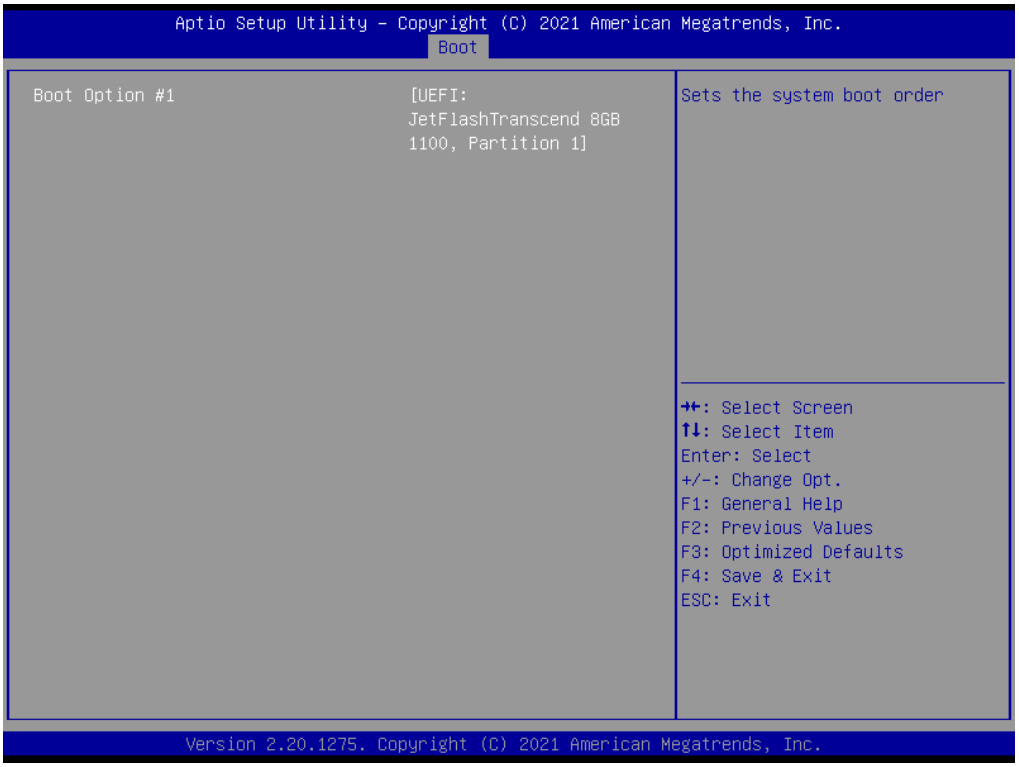
3.6.4.1.1 Key Management



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

3.6.5 Boot

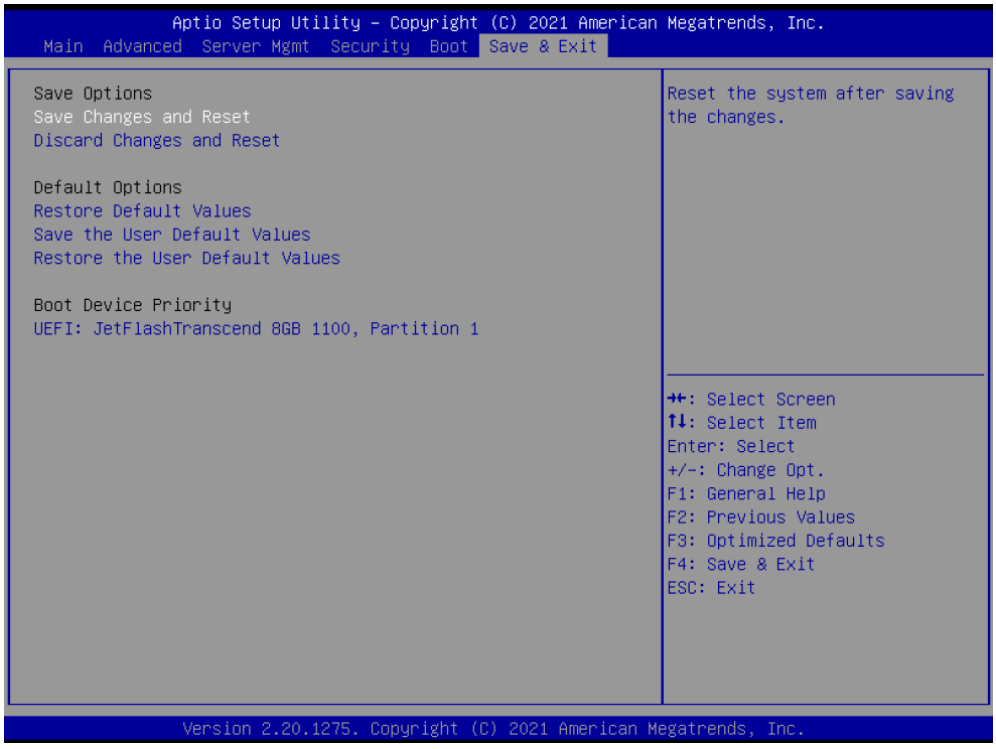


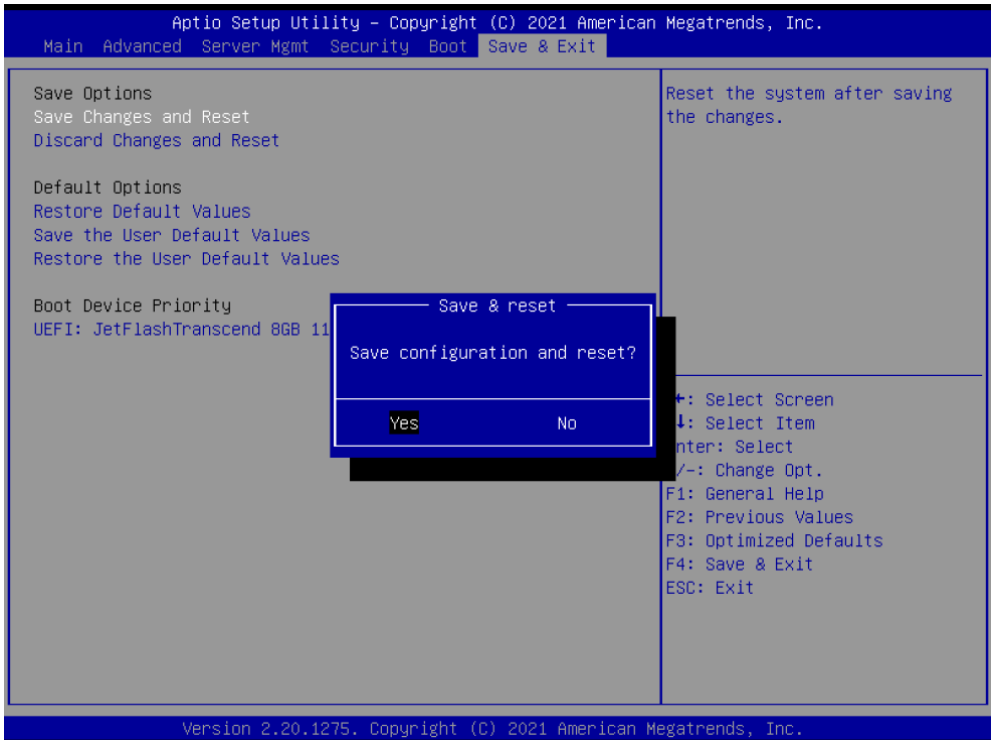


Item	Option	Description
Setup Prompt Timeout	1~ 65535	Set the default timeout before system boot. A value of 65535 will disable the timeout completely.

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.

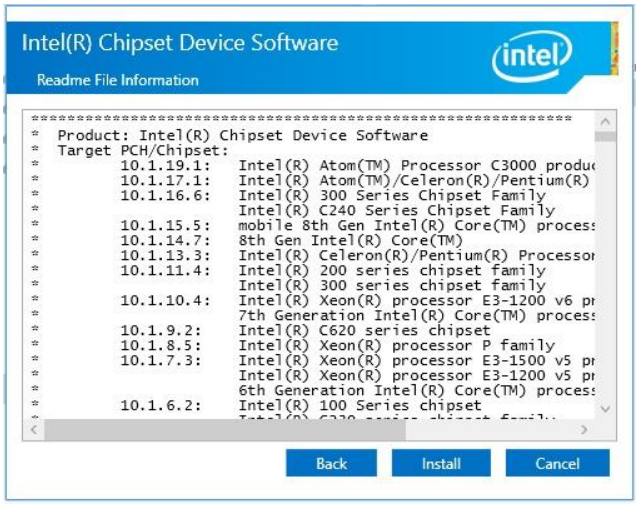
4. Drivers Installation

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**.

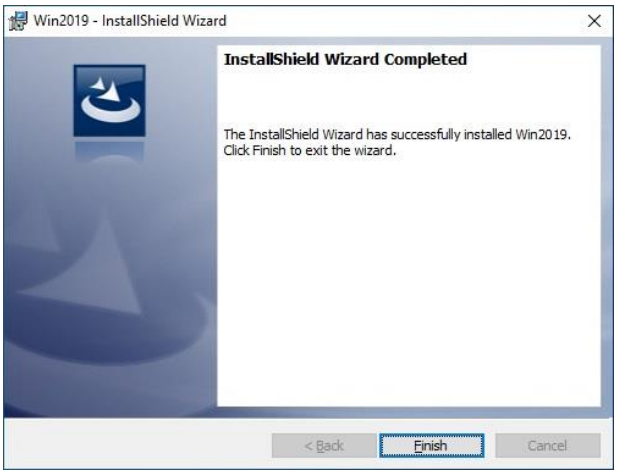
Step 4. Setup completed.

Step 2. Click **Accept**.

4.2 Install VGA Driver

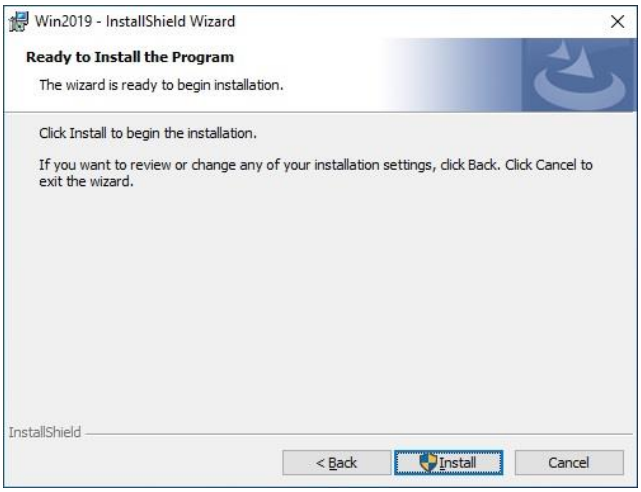
All drivers can be found on the Avalue Official Website: http://www.avalue.com.tw.

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.

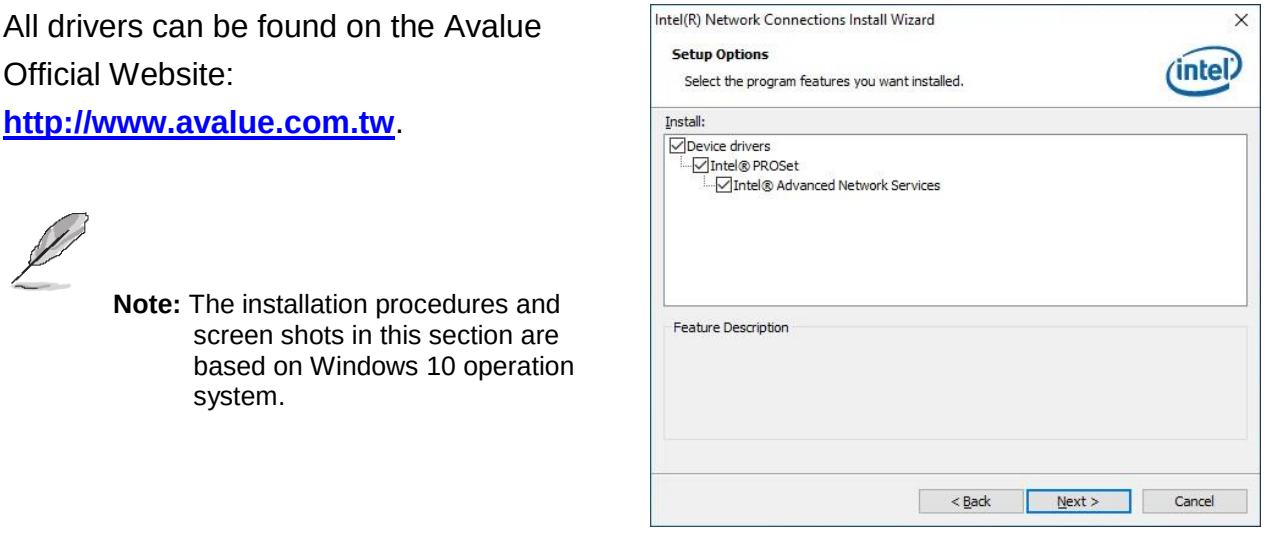


Step 2. Click **Install**.

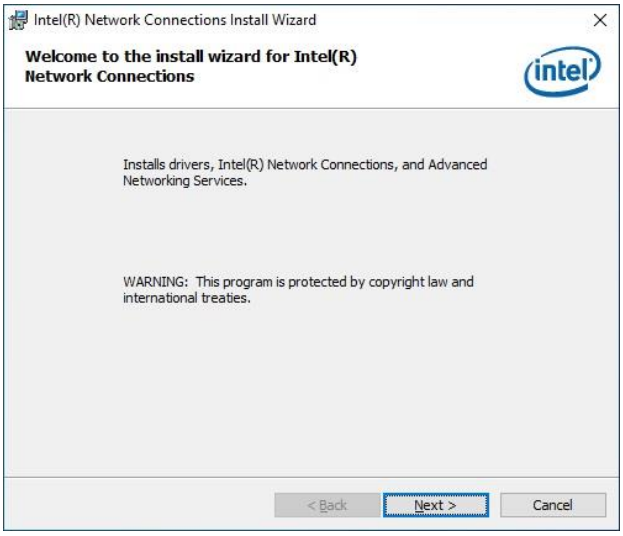
4.3 Install Ethernet Driver

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

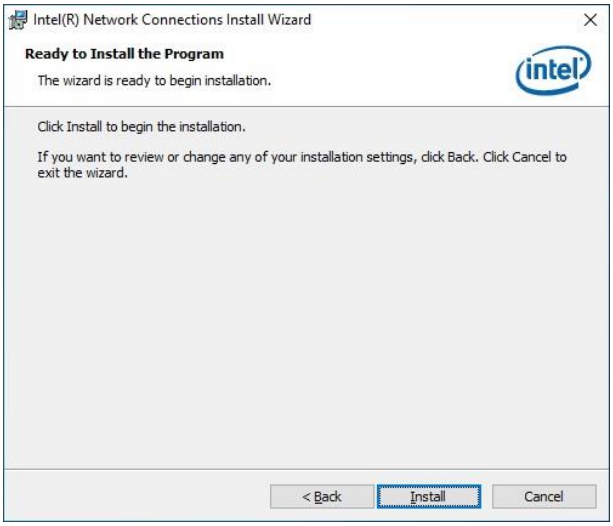
Note: The installation procedures and screen shots in this section are based on Windows 10 operation system.



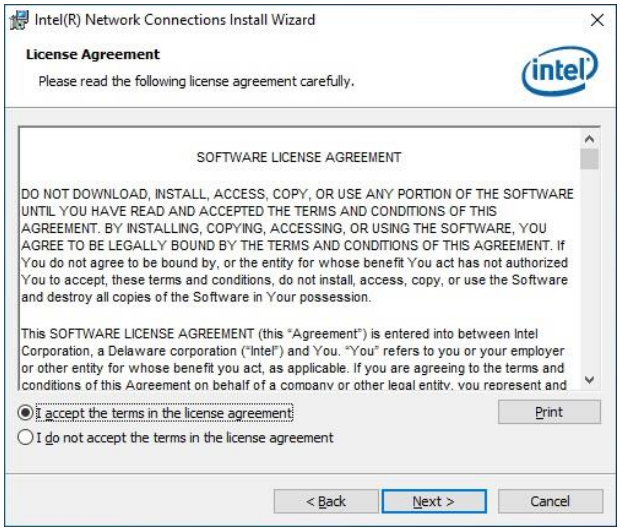
Step 3. Click **Next.**



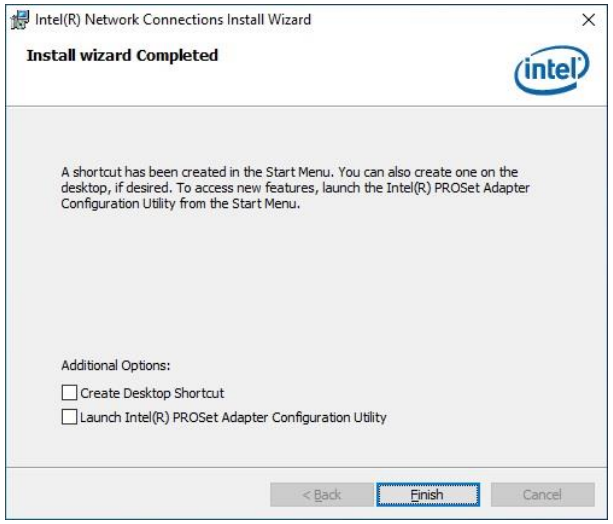
Step 1. Click **Next** to continue installation.



Step 4. Click **Install**.



Step 2. Click **Next**.

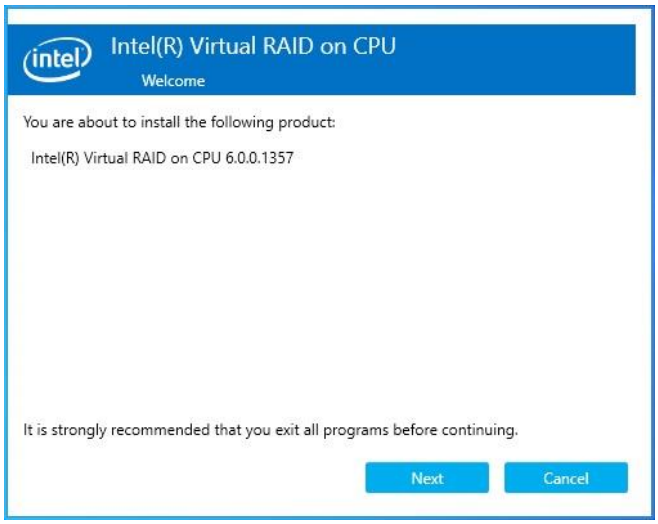


Step 5. Click **Finish** to complete setup.

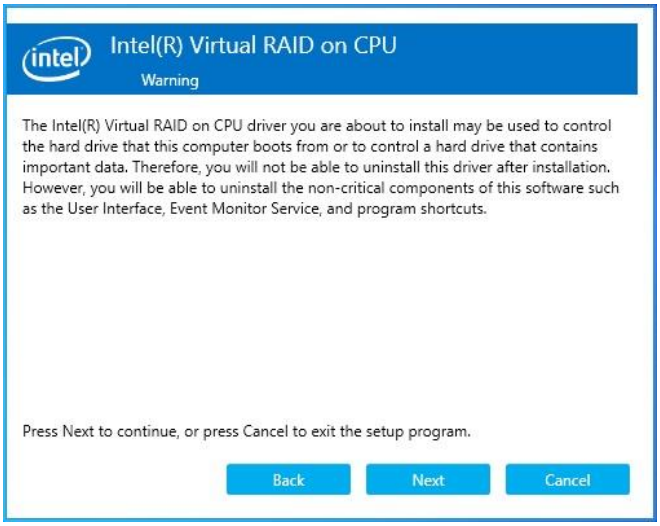
4.4 Install VROC Driver

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

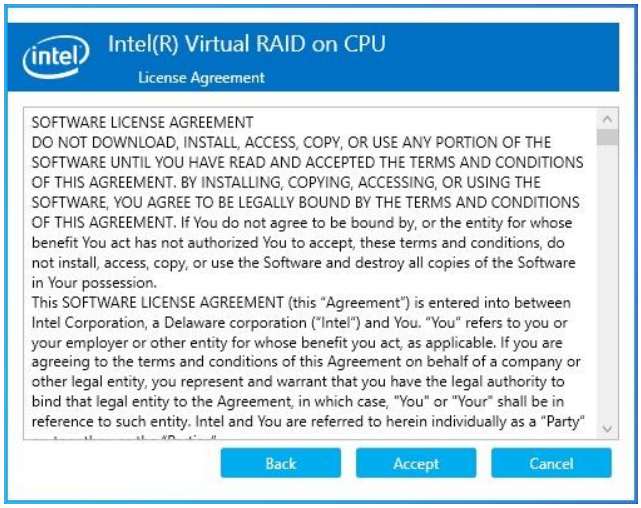
Note: The installation procedures and screen shots in this section are based on Windows 10 operation system.



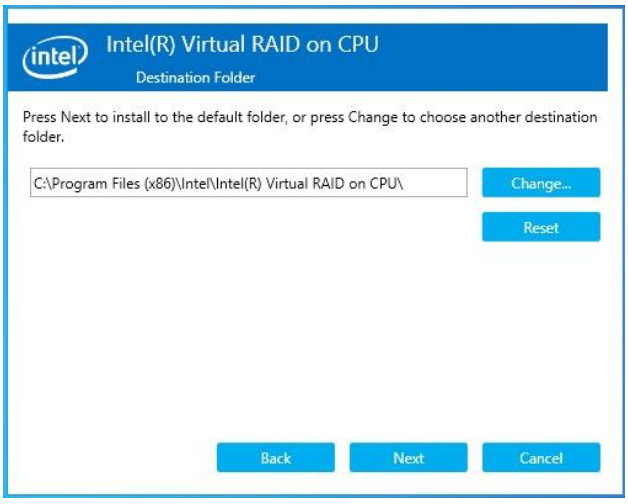
Step 1. Click **Next** to continue installation.



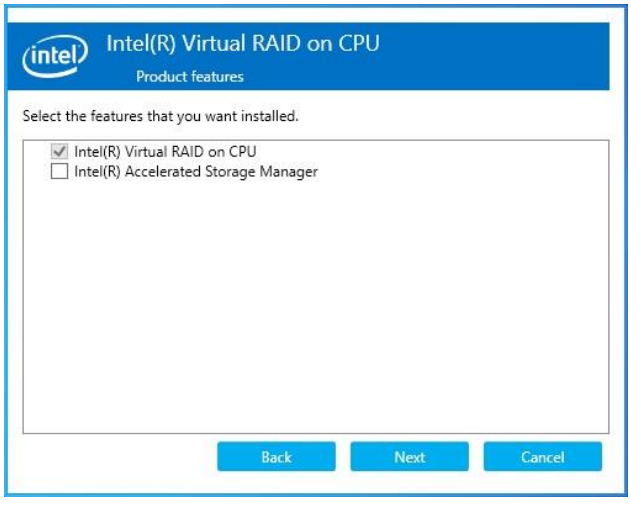
Step 2. Click **Next**.



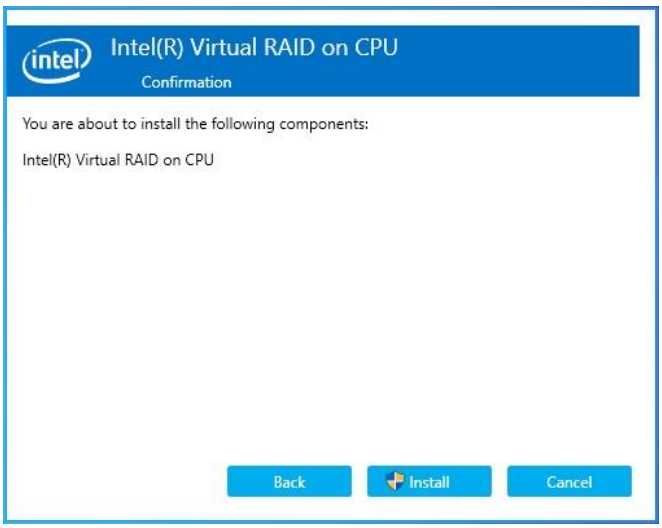
Step 3. Click **Accept.**



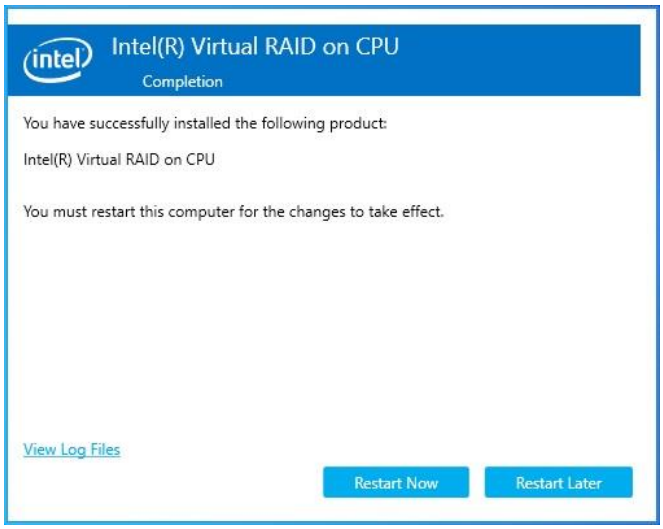
Step 4. Click **Next**.



Step 5. Click **Next**.

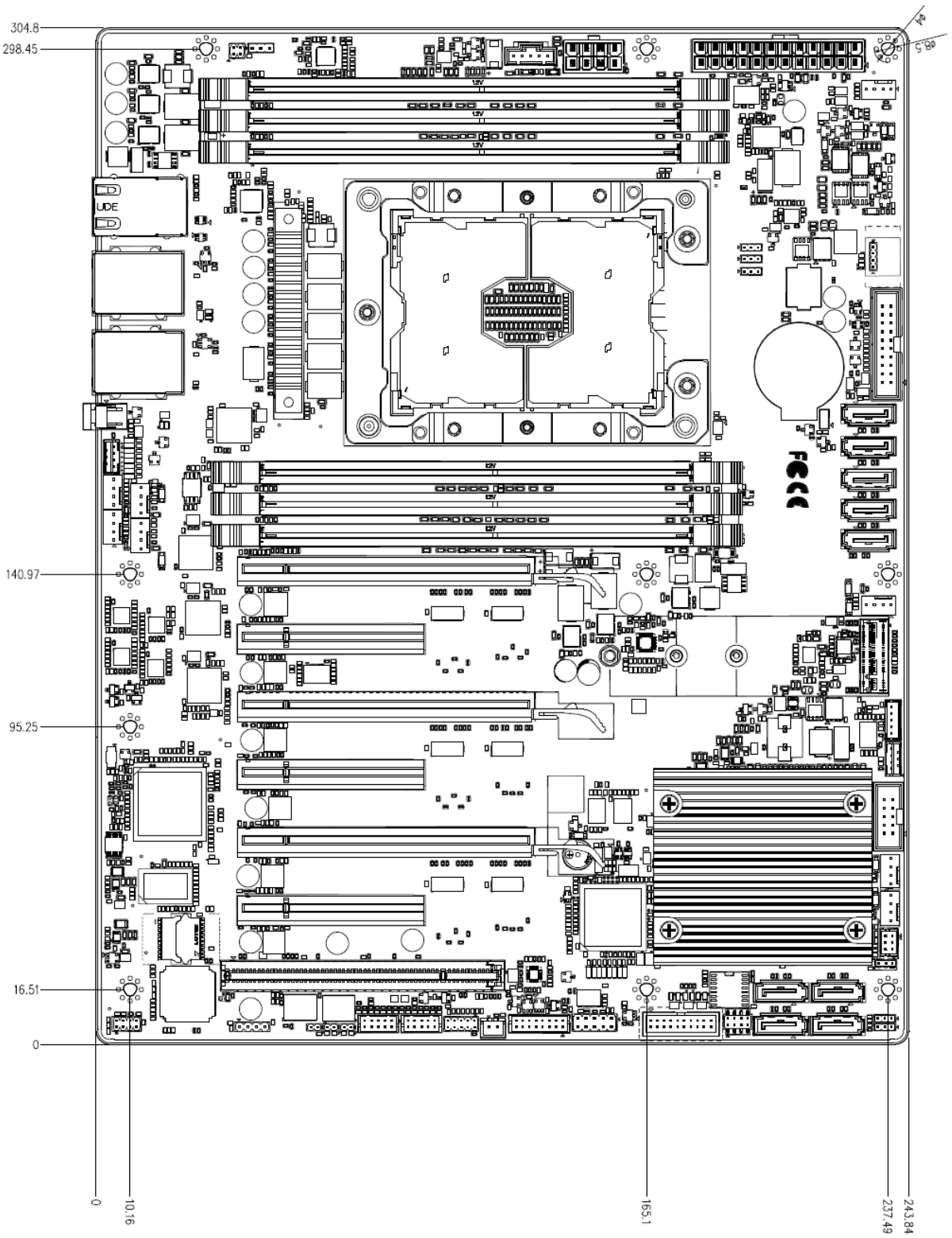


Step 6. Click **Install** to complete setup.



Step 7. Setup completed.

5. Mechanical Drawing



Unit: mm