ESM-ZXE

Zhaoxin KX-6640A/6640MA 4 Core COMe Type6 Basic Module

User's Manual

2nd Ed –14 October 2020

Part No. E2047290001R

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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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 ESM-ZXE COMe Module
- 1 x Desiccant (5g)
- 5 x Screws

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

1.3 Document Amendment History

Revision	Date	By	Comment
1st	May 2020	Avalue	Initial Release
2nd	October 2020	Avalue	Update System Specifications

1.4 Manual Objectives

This manual describes in details Avalue Technology ESM-ZXE 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 ESM-ZXE series 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 NVRAM that make booting impossible. If this should happen, clear the NVRAM 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	Zhaoxin E KX-6000 series KX- 6640A 4core 2.6 GHz BGA CPU TDP 35W KX- 6640MA 4core 2.2 GHz BGA CPU TDP 25W
BIOS	AMI BIOS, 64 Mbit SPI Flash ROM (Not support BIOS Boot Selection(BIOS_DIS0#,BIOS_DIS1#)
System Chipset	SoC
I/O Chip	ZX-200(optional)
System Memory	2 x 260-Pin DDR4 2666MHz SO-DIMM, supports 8G/16G & up to 32GB (Non-ECC)
Watchdog Timer	H/W Reset, 1sec. ~ 65535sec. and 1sec./step
H/W Status Monitor	Monitoring System Temperature, Voltage and FAN Status with Auto Throttling Control
Expansion	KX- 6640A/6640MA Configuration1：5PCIEX1+1PCIEX8 (default) Configuration2：5PCIEX1+2PCIEX4 Configuration3：1PCIEX1+1PCIEX4+1PCIEX8 Configuration4：1PCIEX1+3PCIEX4 Configuration5：3PCIEX1+1PCIEX2+1PCIEX8 KX- 6640MA (TDP 25W→26W when use PCIex8) Configuration1：5PCIEX1+1PCIEX8 (default) Configuration2：1PCIEX1+1PCIEX4+1PCIEX8 Configuration3：3PCIEX1+1PCIEX2+1PCIEX8 KX- 6640A+ZX200 Configuration1：4PCIEX1(Gen2) (default) Configuration2：1PCIEX4 (Gen2) KX- 6640MA+ZX200 Configuration1：4PCIEX1(Gen2) (default) Configuration2：1PCIEX4 (Gen2)
TPM	TCM (Nations IC-Z32H330TC-SQN-611) Optional
Carrier board	EEV-EX16
I/O	
MIO	Max.2x SATAIII 6.0Gb/s *Max. 4 x SATAIII 6.0Gb/s (when KX- 6640A+ ZX-200 & KX- 6640MA+ ZX-200) LPC, SMBus, I2C

	2 x UART(2-wire),
USB	Max. 2 x USB3.0, 6 x USB 2.0 *Up to Max. 4 x USB3.0 Gen.1 (5 Gbps), 8 x USB 2.0 only on models KX-6640A & KX- 6640MA with ZX-200)
GPIO	8bit GPIO, WDG/HW monitor/FAN
Display	
Resolution	HDMI 2.0: 4096 x 2160 @ 60Hz (only 3840x2160@60Hz is tested, 4096 x 2160 @ 60Hz needs to be further validated when device is available) DP 1.2a: 4096 x 2304 @60Hz, (only 3840 x 2160@60Hz is tested, 4096 x 2160 @ 60Hz needs to be further validated when device is available) LVDS (via eDP-to-LVDS IC): 1920x1080 @60Hz, Dual-channel 18/24-bit LVDS (LVDS via CH7511B) VGA: 1920 x 1080 @60Hz
Multiple Display	Supporting 3 display (2 display with clone mode, 1 display with extend mode) LVDS(HDMI or DP)+ VGA + DDI(HDMI or DP)
LCD Interface	Dual-channel 18/24-bit LVDS (LVDS via CH7511B)
Audio	
AC97 Codec	Zhaoxin HD audio I/F
Ethernet	
LAN Chip	1xIntel 210AT Gigabit Ethernet *1 x Intel® I210IT Gigabit Ethernet (for wide temp. model) TBD
Ethernet Interface	10/100/1000 GbE connection
Mechanical & Environmental	
Power Requirement	+9~ +19V
ACPI	Single power ATX Support S0, S3, S5 ACPI 5.0 Compliant
Power Type	AT/ATX
Operating Temp.	0 ~ 60 °C (32 ~ 140 °F) Extended temp. -40 ~+60 °C (-40 ~ 140 °F) TBD
Storage Temp.	-40°C ~ 75°C (-40°F ~ 167°F)
Operating Humidity	40°C @ 95% Relative Humidity, Non-condensing
Size (L x W) (Please consult product engineers for the production feasibility if the size is larger than 410x360mm or smaller than 80x70mm)	125*95 mm (3.74" x 4.92")
Weight	0.44lbs(0.2kg)

OS Support (listed in accordance with Intel document)	Microsoft® Windows 10 64-bit/Windows 7 Linux (NeoKylin DT V7.0), Ubuntu 16.04.5
Vibration 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: 0.01818G²/Hz , 3.0 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
Shock Test	1 Wave from : Half Sine wave 2 Acceleration Rate : 10g 3 Duration Time : 11ms 4 No. of shock : Z axis 300 times 5 Test Axis : Z axis 6 operation mode 7 Reference IEC 60068-2-27 testing procedures Test Eb : Shock Test
Drop Test	Package drop 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

Note:

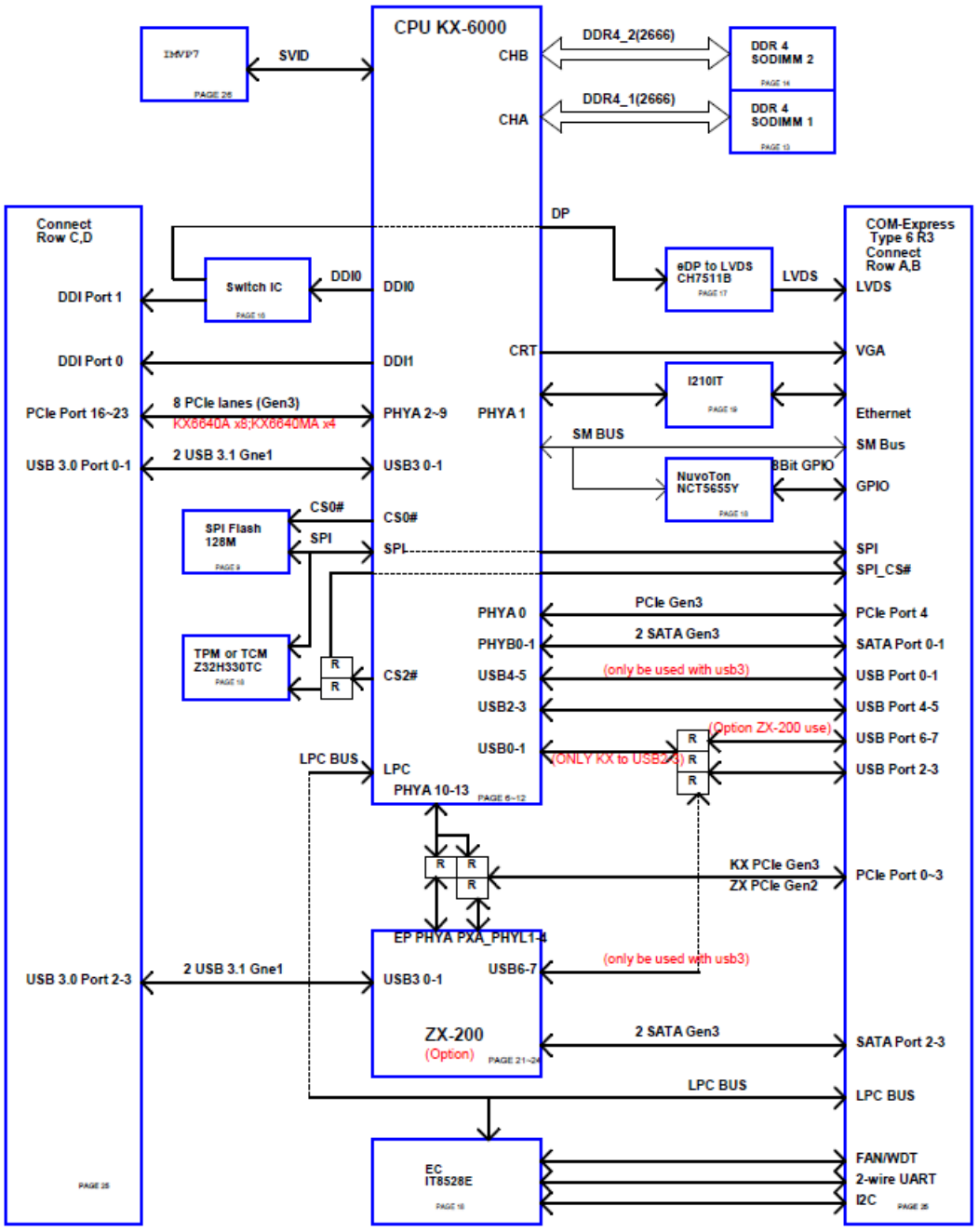
1. Specifications are subject to change without notice.

2. DDI0 can setup to LVDS or DDI(designed on carrier board) by Switch IC.

It would cause LVDS display abnormal when DDI0 set to LVDS in BIOS setting and DDI port connect device on carrier board.

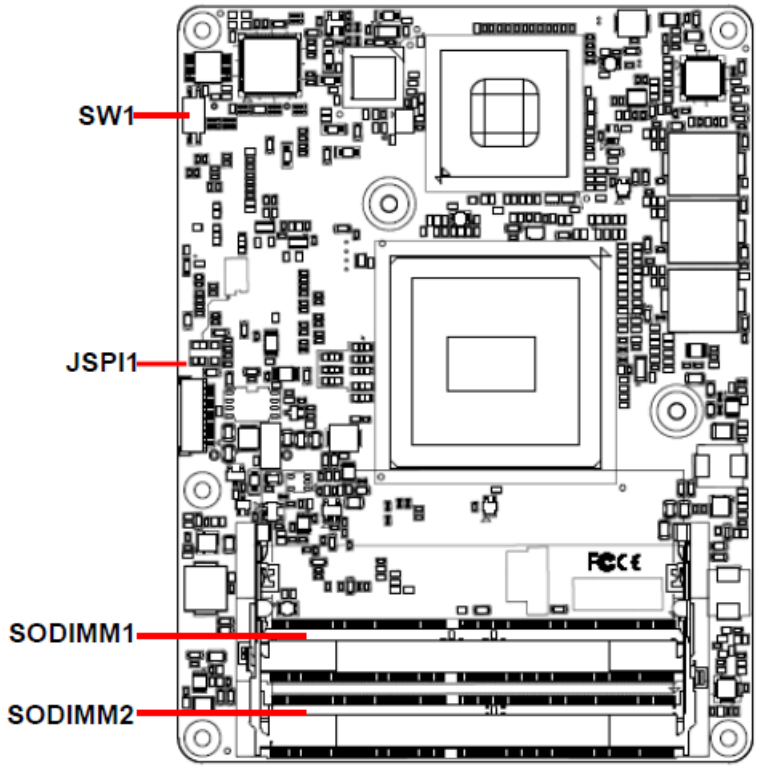
1.6 Architecture Overview—Block Diagram

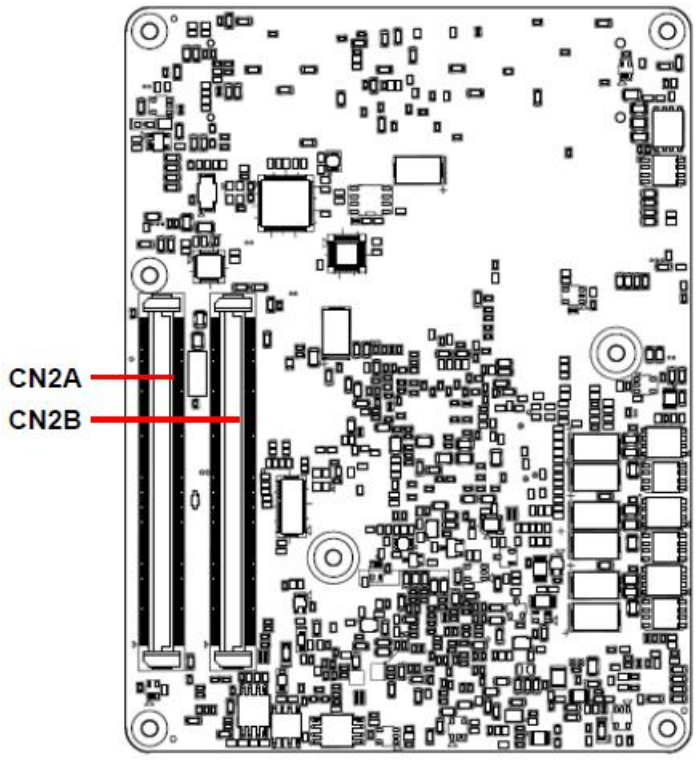
The following block diagram shows the architecture and main components of ESM-ZXE.



2. Hardware Configuration

2.1 Product Overview

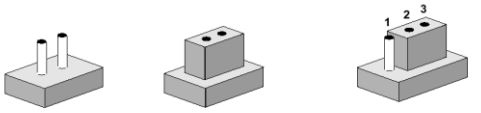




2.2 Connector List

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.

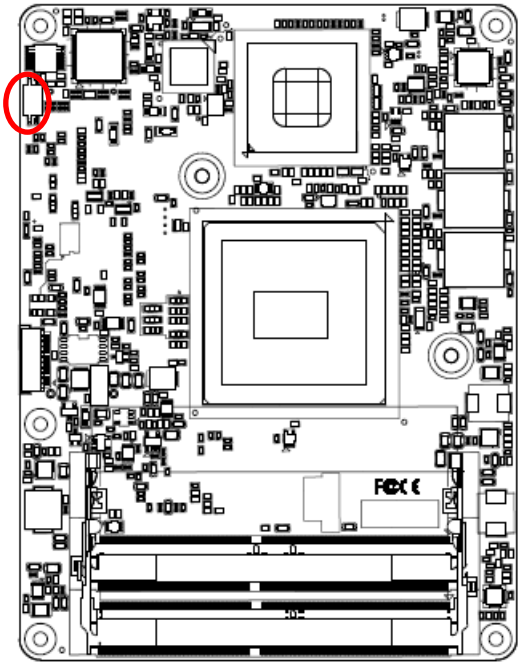
The following tables list the function of each of the board's jumpers and connectors.

Connectors

Label	Function	Note
JSPI1	(Reserved for BIOS programming)	10 x 1 wafer, pitch 1.00mm
SODIMM1	260-pin DDR4 SDRAM DIMM socket 1	
SODIMM2	260-pin DDR4 SDRAM DIMM socket 2	
CN2A	COM Express connector 1	
CN2B	COM Express connector 2	
SW1	AT/ATX mode selector	

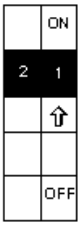
2.3 Setting Jumpers & Connectors

2.3.1 AT/ATX mode selector (SW1)

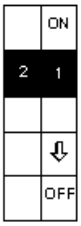


AT/ATX mode

AT mode*



ATX mode

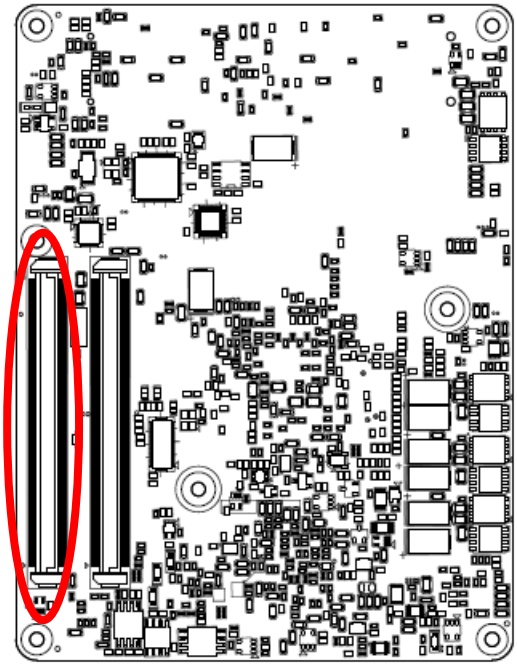


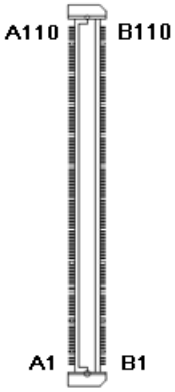
***Default**

2.3.1.1 Signal Description –AT/ATX mode selection

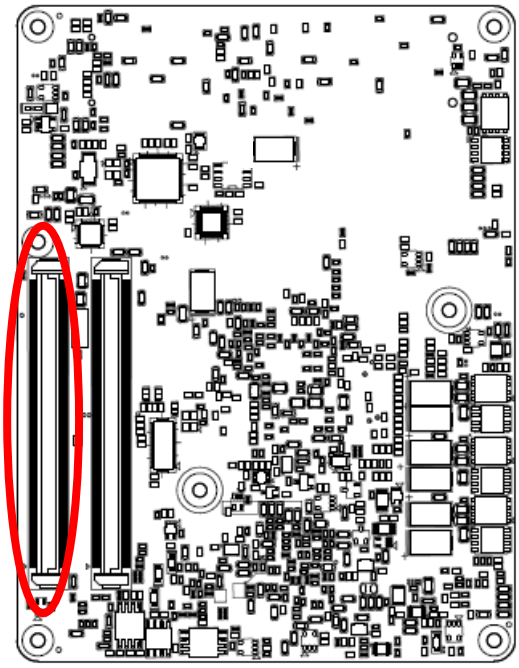
AT/ATX mode	Description
AT mode 	Auto-power on, no need to press Power button to enable power on/off
ATX mode 	Press the power button to enable power on/off

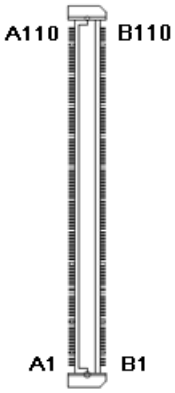
2.3.2 COM Express Connector 1 (CN2A)



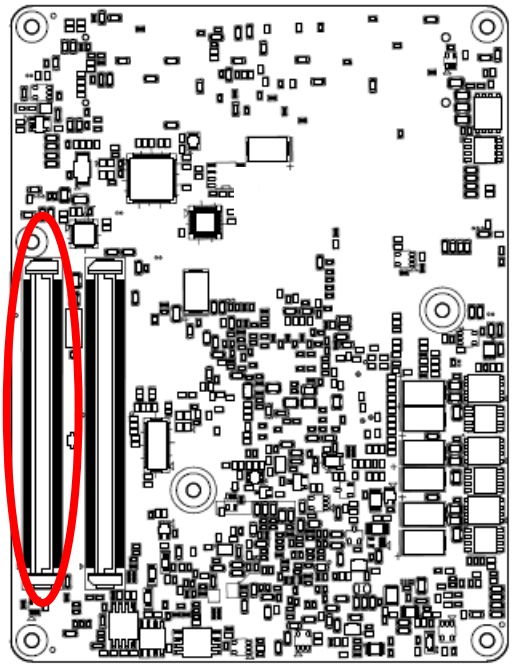


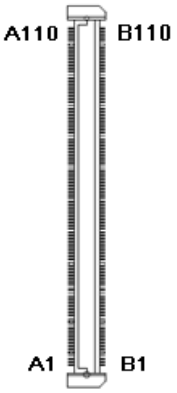
Signal	PIN	PIN	Signal
GND	A110	B110	GND
VCC	A109	B109	VCC
VCC	A108	B108	VCC
VCC	A107	B107	VCC
VCC	A106	B106	VCC
VCC	A105	B105	VCC
VCC	A104	B104	VCC
LID#	A103	B103	SLEEP#
SER1_RX	A102	B102	FAN_TACHIN
SER1_TX	A101	B101	FAN_PWMOUT
GND	A100	B100	GND
SER0_RX	A99	B99	RSVD4
SER0_TX	A98	B98	RSVD3
TYPE10#	A97	B97	SPI_CS#
TPM_PP	A96	B96	VGA_I2C_DAT
SPI_MOSI	A95	B95	VGA_I2C_CK
SPI_CLK	A94	B94	VGA_VSYNC
GPO0	A93	B93	VGA_HSYNC
SPI_MISO	A92	B92	VGA_BLU
+3.3V	A91	B91	VGA_GRN
GND	A90	B90	GND
PCIE_CLK_REF-	A89	B89	VGA_RED
PCIE_CLK_REF+	A88	B88	NC
EDP_HDP	A87	B87	+ATX5VSB
NC	A86	B86	+ATX5VSB
GPI3	A85	B85	+ATX5VSB
LVDS_I2C_DAT/EDP_AUX-	A84	B84	+ATX5VSB
LVDS_I2C_CK/EDP_AUX+	A83	B83	LVDS_BKLT_CTRL/ EDP_BKLT_CTRL
LVDS_A_CK-/EDP_TX3-	A82	B82	LVDS_B_CK-
LVDS_A_CK+/EDP_TX3+	A81	B81	LVDS_B_CK+



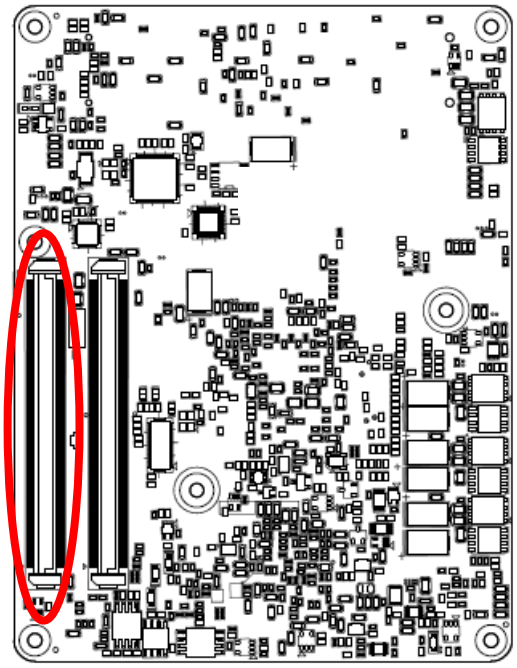


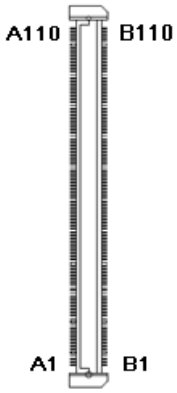
Signal	PIN	PIN	Signal
GND	A80	B80	GND
LVDS_A3-	A79	B79	LVDS_BKLT_EN/ EDP_BKLT_EN
LVDS_A3+	A78	B78	LVDS_B3-
LVDS_VDD_EN/EDP_VDD_EN	A77	B77	LVDS_B3+
LVDS_A2-/EDP_TX0-	A76	B76	LVDS_B2-
LVDS_A2+/EDP_TX0+	A75	B75	LVDS_B2+
LVDS_A1-/EDP_TX1-	A74	B74	LVDS_B1-
LVDS_A1+/EDP_TX1+	A73	B73	LVDS_B1+
LVDS_A0-/EDP_TX2-	A72	B72	LVDS_B0-
LVDS_A0+/EDP_TX2+	A71	B71	LVDS_B0+
GND	A70	B70	GND
PCIE_TX0-	A69	B69	PCIE_RX0-
PCIE_TX0+	A68	B68	PCIE_RX0+
GPI2	A67	B67	WAKE1#
GND	A66	B66	WAKE0#
PCIE_TX1-	A65	B65	PCIE_RX1-
PCIE_TX1+	A64	B64	PCIE_RX1+
GPI1	A63	B63	GPO3
PCIE_TX2-	A62	B62	PCIE_RX2-
PCIE_TX2+	A61	B61	PCIE_RX2+
GND	A60	B60	GND
PCIE_TX3-	A59	B59	PCIE_RX3-
PCIE_TX3+	A58	B58	PCIE_RX3+
GND	A57	B57	GPO2
PCIE_TX4-	A56	B56	PCIE_RX4-
PCIE_TX4+	A55	B55	PCIE_RX4+
GPI0	A54	B54	GPO1
NC	A53	B53	NC
NC	A52	B52	NC
GND	A51	B51	GND





Signal	PIN	PIN	Signal
LPC_SERIRQ	A50	B50	CB_RESET#
GBE0_SDP	A49	B49	SYS_RESET#
RSVD1	A48	B48	NC
+3.3V	A47	B47	NC
USB0+	A46	B46	USB1+
USB0-	A45	B45	USB1-
USB_2_3_OC#	A44	B44	USB_0_1_OC#
USB2+	A43	B43	USB3+
USB2-	A42	B42	USB3-
GND	A41	B41	GND
USB4+	A40	B40	USB5+
USB4-	A39	B39	USB5-
USB_6_7_OC#	A38	B38	USB_4_5_OC#
USB6+	A37	B37	USB7+
USB6-	A36	B36	USB7-
THRMTRIP#	A35	B35	THRM#
NC	A34	B34	I2C_DATA
HAD_SDOUT	A33	B33	I2C_CLK
HAD_BITCLK	A32	B32	SPKR
GND	A31	B31	GND
HDA_RST#	A30	B30	HDA_SDIN0
HDA_SYNC	A29	B29	HDA_SDIN1
(S)ATA_ACT#	A28	B28	NC
BATLOW#	A27	B27	WDT
SATA2_RX-	A26	B26	SATA3_RX-
SATA2_RX+	A25	B25	SATA3_RX+
SUS_S5#	A24	B24	PWR_OK
SATA2_TX-	A23	B23	SATA3_TX-
SATA2_TX+	A22	B22	SATA3_TX+
GND	A21	B21	GND





Signal	PIN	PIN	Signal
SATA0_RX-	A20	B20	SATA1_RX-
SATA0_RX+	A19	B19	SATA1_RX+
NC	A18	B18	SUS_STAT#
SATA0_TX-	A17	B17	SATA1_TX-
SATA0_TX+	A16	B16	SATA1_TX+
SUS_S3#	A15	B15	SMB_ALERT#
NC	A14	B14	SMB_DAT
GBE0_MDI0+	A13	B13	SMB_CK
GBE0_MDI0-	A12	B12	PWRBTN#
GND	A11	B11	GND
GBE0_MDI1+	A10	B10	LPC_CLK
GBE0_MDI1-	A9	B9	LPC_DRQ1#
GBE0_LINK#	A8	B8	LPC_DRQ0#
GBE0_MDI2+	A7	B7	LPC_AD3
GBE0_MDI2-	A6	B6	LPC_AD2
GBE0_LINK1000#	A5	B5	LPC_AD1
GBE0_LINK100#	A4	B4	LPC_AD0
GBE0_MDI3+	A3	B3	LPC_FRAME#
GBE0_MDI3-	A2	B2	GBE0_ACT#
GND	A1	B1	GND

2.3.2.1 Signal Description – COM Express Connector 1 (CN2A)

2.3.2.1.1 Audio Signals

Signal	Signal Description
HDA_SYNC	HD Audio Sync
HDA _RST#	HD Audio Reset
HDA _SDI[0:1]	Audio CODEC Serial Data
HDA _BITCLK	HD Audio Clock
HDA _SDOUT	HD Audio Data

2.3.2.1.2 Gigabit Ethernet Signals

<table>
<tr><th>Signal</th><th>Signal Description</th></tr>
<tr><td>GBE0_MD[0:3] +/-</td><td>Gigabit Ethernet Controller 0: Media Dependent Interface Differential Pairs 0,1,2,3. The MDI can operate in 1000, 100 and 10 Mbit / sec modes. Some pairs are unused in some modes, per the following:
<table>
<tr><th></th><th>1000B-T</th><th>100B-T</th><th>10B-T</th></tr>
<tr><td>MDI[0]+/-</td><td>B1_DA+/</td><td>TX+/-</td><td>TX+/-</td></tr>
<tr><td>MDI[1]+/</td><td>B1_DB+/</td><td>RX+/-</td><td>RX+/-</td></tr>
<tr><td>MDI[2]+/</td><td>B1_DC+/</td><td>X</td><td>X</td></tr>
<tr><td>MDI[3]+/</td><td>B1_DD+/</td><td>X</td><td>X</td></tr>
</table>
</td></tr>
<tr><td>GBE0_ACT#</td><td>Gigabit Ethernet Controller 0 activity indicator, active low.</td></tr>
<tr><td>GBE0_Link#</td><td>Gigabit Ethernet Controller 0 link indicator, active low.</td></tr>
<tr><td>GBE0_Link100#</td><td>Gigabit Ethernet Controller 0 100 Mbit / sec link indicator, active low.</td></tr>
<tr><td>GBE0_Link1000#</td><td>Gigabit Ethernet Controller 0 1000 Mbit / sec link indicator, active low.</td></tr>
</table>

2.3.2.1.3 PCI Express Signals

Signal	Signal Description
PCIE_TX[16:23] +/-	PCI Express Differential Transmit Pair 16 through 23 These are same lines as PEG_TX [0:7]+ and -
PCIE_RX[16:23] +/-	PCI Express Differential Transmit Pair 16 through 23 These are same lines as PEG_RX [0:7]+ and -
PCIE0_CK_REF+/-	Reference clock output for PCI Express lanes 0-7 and for PCI Express Graphics lanes 0-15

2.3.2.1.4 Flat Panel LVDS Signals

Signal	Signal Description
LVDS_BKLT_CTRL	Controls panel digital power.
LVDS_I2C_CK	I2C clock output for LVDS display use.
LVDS_I2C_DAT	I2C data line for LVDS display use.
LVDS_VDD_EN	LVDS panel power enables.
LVDS_A/EDP_TX [0:3] +/-	LVDS Channel A differential pairs.
LVDS_B[0:3] +/-	LVDS Channel B differential pairs.
LVDS_VDD_EN/EDP_VDD_EN	LVDS panel power enables.
LVDS_A_CK/EDP_TX3 +/-	LVDS Channel A differential clock.
LVDS_B_CK +/-	LVDS Channel A differential clock.

2.3.2.1.5 LPC Signals

Signal	Signal Description
LPC_FRAME#	LPC frame indicates the start of an LPC cycle
LPC_AD[0:3]	LPC multiplexed address, command and data bus
LPC_CLKOUT1	LPC clock output - 33MHz nominal
LPC_SERIRQ	LPC serial interrupt

2.3.2.1.6 GPIO Signals

Signal	Signal Description
GPI[0:4]	General purpose input pins.
GPO[0:4]	General purpose output pins.

2.3.2.1.7 Power & System Management Signals

Signal	Signal Description
SUS_S3#	Indicates system is in Suspend to RAM state. Active low output.
SUS_S5#	Indicates system is in Soft Off state.
BATLOW#	Indicates that external battery is low
PWRBTN#	Power button to bring system out of S5 (soft off), active on rising edge.
SMB_ALERT#	System Management Bus Alert - input can be used to generate an SMI# (System Management Interrupt) or to wake the system.

SUS_STAT#	Indicates imminent suspend operation.
PWR_OK	Power OK from main power supply
SYS_RESET#	Reset button input. Active low input.
WAKE0#	PCI Express wake up signal.
WAKE1#	General purpose wake up signal.

2.3.2.1.8 SATA Signals

Signal	Signal Description
SATA[0:3]_TX +/-	Serial ATA Channel 0-3 transmit differential pair.
SATA[0:3]_RX +/-	Serial ATA Channel 0-3 receive differential pair.
ATA_ACT#	ATA (parallel and serial) activity indicator, active low.

2.3.2.1.9 USB Signals

Signal	Signal Description
USB[0:7] +/-	USB differential pairs, channels 0 through 7
USB_0_1_OC#	USB over-current sense, USB channels 0 and 1
USB_2_3_OC#	USB over-current sense, USB channels 2 and 3
USB_4_5_OC#	USB over-current sense, USB channels 4 and 5
USB_6_7_OC#	USB over-current sense, USB channels 6 and 7

2.3.2.1.10 I2C Signals

Signal	Signal Description
I2C_CLK	General purpose I2C port clock output.
I2C_DATA	General purpose I2C port data I/O line.

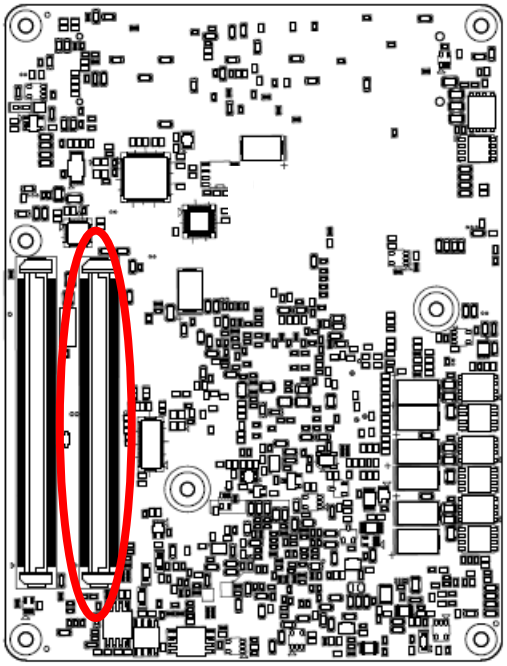
2.3.2.1.11 VGA Signals

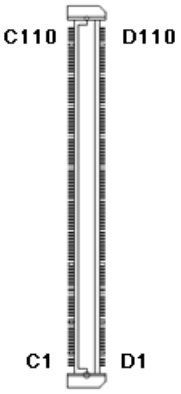
Signal	Signal Description
VGA_RED	Red for monitor. Analog DAC output.
VGA_GRN	Green for monitor. Analog DAC output.
VGA_BLU	Blue for monitor. Analog DAC output.
VGA_HSYNC	Horizontal sync output to VGA monitor
VGA_VSYNC	Vertical sync output to VGA monitor
VGA_ I^2C_CK	DDC clock line (I2C port dedicated to identify VGA monitor capabilities)
VGA_ I^2C_DAT	DDC data line.

2.3.2.1.12 COM.0 Pins Signals

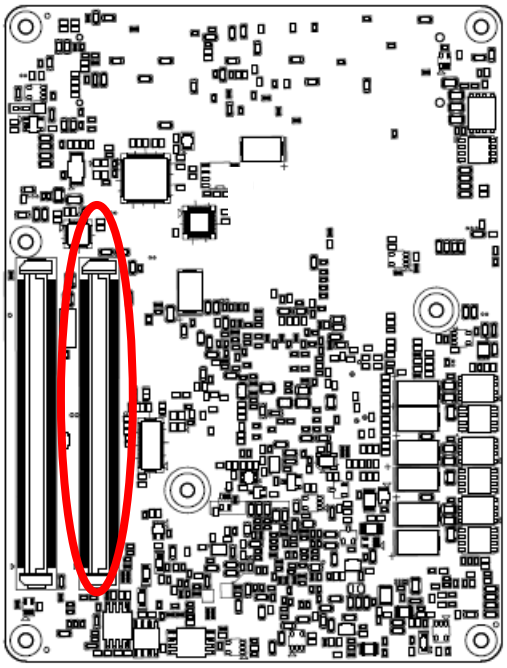
Signal	Signal Description
SER0/1_TX	TTL level outputs from the Module.
SER0/1_RX	TTL level inputs from the Module.

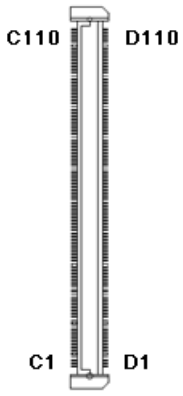
2.3.3 COM Express Connector 2 (CN2B)



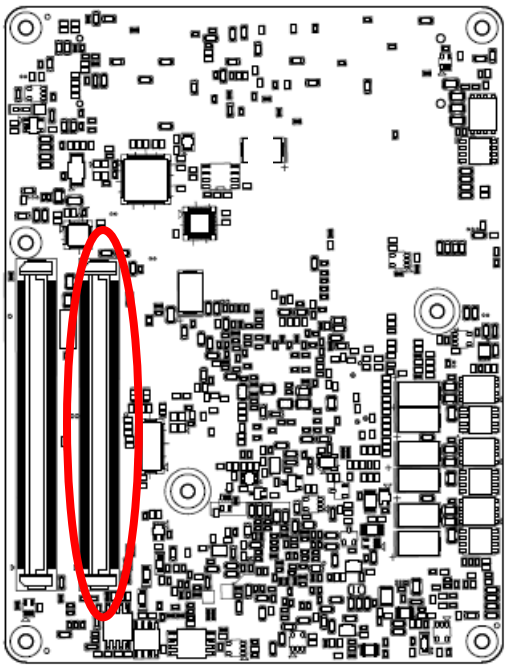


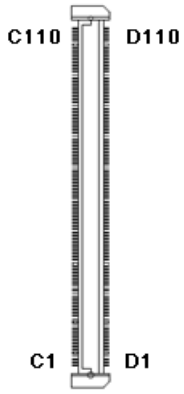
Signal	PIN	PIN	Signal
GND	C110	D110	GND
VCC	C109	D109	VCC
VCC	C108	D108	VCC
VCC	C107	D107	VCC
VCC	C106	D106	VCC
VCC	C105	D105	VCC
VCC	C104	D104	VCC
GND	C103	D103	GND
NC	C102	D102	NC
NC	C101	D101	NC
GND	C100	D100	GND
NC	C99	D99	NC
NC	C98	D98	NC
NC	C97	D97	NC
GND	C96	D96	GND
NC	C95	D95	NC
NC	C94	D94	NC
GND	C93	D93	GND
NC	C92	D92	NC
NC	C91	D91	NC
GND	C90	D90	GND
NC	C89	D89	NC
NC	C88	D88	NC
GND	C87	D87	GND
NC	C86	D86	NC
NC	C85	D85	NC
GND	C84	D84	GND
NC	C83	D83	NC
NC	C82	D82	NC
NC	C81	D81	NC



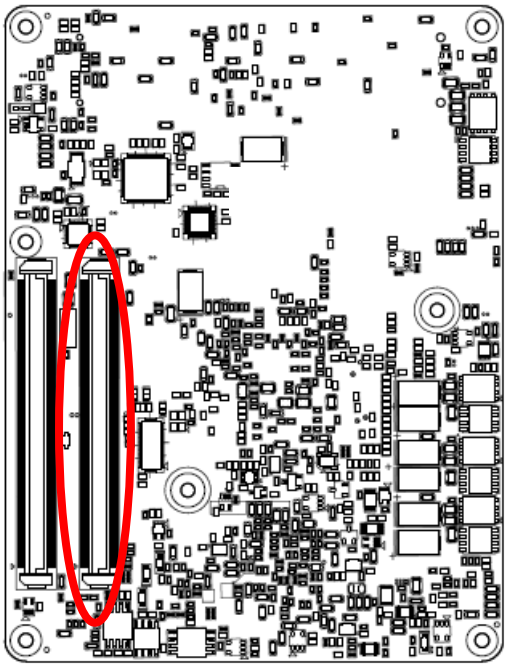


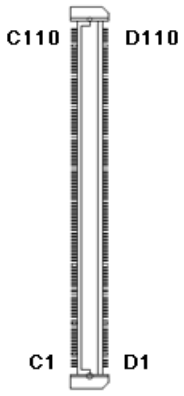
Signal	PIN	PIN	Signal
GND	C80	D80	GND
NC	C79	D79	NC
NC	C78	D78	NC
NC	C77	D77	NC
GND	C76	D76	GND
PEG_RX7-	C75	D75	PEG_TX7-
PEG_RX7+	C74	D74	PEG_TX7+
GND	C73	D73	GND
PEG_RX6-	C72	D72	PEG_TX6-
PEG_RX6+	C71	D71	PEG_TX6+
GND	C70	D70	GND
PEG_RX5-	C69	D69	PEG_TX5-
PEG_RX5+	C68	D68	PEG_TX5+
RAPID_SHUTDOWN	C67	D67	GND
PEG_RX4-	C66	D66	PEG_TX4-
PEG_RX4+	C65	D65	PEG_TX4+
NC	C64	D64	NC
NC	C63	D63	NC
PEG_RX3-	C62	D62	PEG_TX3-
PEG_RX3+	C61	D61	PEG_TX3+
GND	C60	D60	GND
PEG_RX2-	C59	D59	PEG_TX2-
PEG_RX2+	C58	D58	PEG_TX2+
TYPE1#	C57	D57	TYPE2#
PEG_RX1-	C56	D56	PEG_TX1-
PEG_RX1+	C55	D55	PEG_TX1+
TYPE0#	C54	D54	NC
PEG_RX0-	C53	D53	PEG_TX0-
PEG_RX0+	C52	D52	PEG_TX0+
GND	C51	D51	GND





Signal	PIN	PIN	Signal
NC	C50	D50	DDI2_PAIR3-
NC	C49	D49	DDI2_PAIR3+
NC	C48	D48	NC
NC	C47	D47	DDI2_PAIR2-
NC	C46	D46	DDI2_PAIR2+
NC	C45	D45	NC
NC	C44	D44	DDI2_HPD
NC	C43	D43	DDI2_PAIR1-
NC	C42	D42	DDI2_PAIR1+
GND	C41	D41	GND
NC	C40	D40	DDI2_PAIR0-
NC	C39	D39	DDI2_PAIR0+
NC	C38	D38	NC
NC	C37	D37	DDI1_PAIR3-
NC	C36	D36	DDI1_PAIR3+
NC	C35	D35	NC
DDI2_DDC_AUX_SEL	C34	D34	DDI1_DDC_AUX_SEL
DDI2_CTRLDATA_AUX-	C33	D33	DDI1_PAIR2-
DDI2_CTRLCLK_AUX+	C32	D32	DDI1_PAIR2+
GND	C31	D31	GND
NC	C30	D30	DDI1_PAIR1-
NC	C29	D29	DDI1_PAIR1+
NC	C28	D28	NC
RSVD7	C27	D27	DDI1_PAIR0-
NC	C26	D26	DDI1_PAIR0+
NC	C25	D25	NC
DDI1_HPD	C24	D24	NC
NC	C23	D23	NC
NC	C22	D22	NC
GND	C21	D21	GND





Signal	PIN	PIN	Signal
NC	C20	D20	NC
NC	C19	D19	NC
NC	C18	D18	NC
NC	C17	D17	NC
NC	C16	D16	DDI1_CTRLDATA_AUX-
NC	C15	D15	DDI1_CTRLCLK_AUX+
GND	C14	D14	GND
USB_SSRX3+	C13	D13	USB_SSTX3+
USB_SSRX3-	C12	D12	USB_SSTX3-
GND	C11	D11	GND
USB_SSRX2+	C10	D10	USB_SSTX2+
USB_SSRX2-	C9	D9	USB_SSTX2-
GND	C8	D8	GND
USB_SSRX1+	C7	D7	USB_SSTX1+
USB_SSRX1-	C6	D6	USB_SSTX1-
GND	C5	D5	GND
USB_SSRX0+	C4	D4	USB_SSTX0+
USB_SSRX0-	C3	D3	USB_SSTX0-
GND	C2	D2	GND
GND	C1	D1	GND

2.3.3.1 Signal Description – COM Express Connector 2 (CN2B)

2.3.3.1.1 USB3.1 Signals

Signal	Signal Description
USB_SSTX[0:3]+ USB_SSTX[0:3]-	Additional transmit signal differential pairs for the SuperSpeed USB data path.
USB_SSRX[0:3]+ USB_SSRX[0:3]-	Additional receive signal differential pairs for the SuperSpeed USB data path.

2.3.3.1.2 DDI Signals

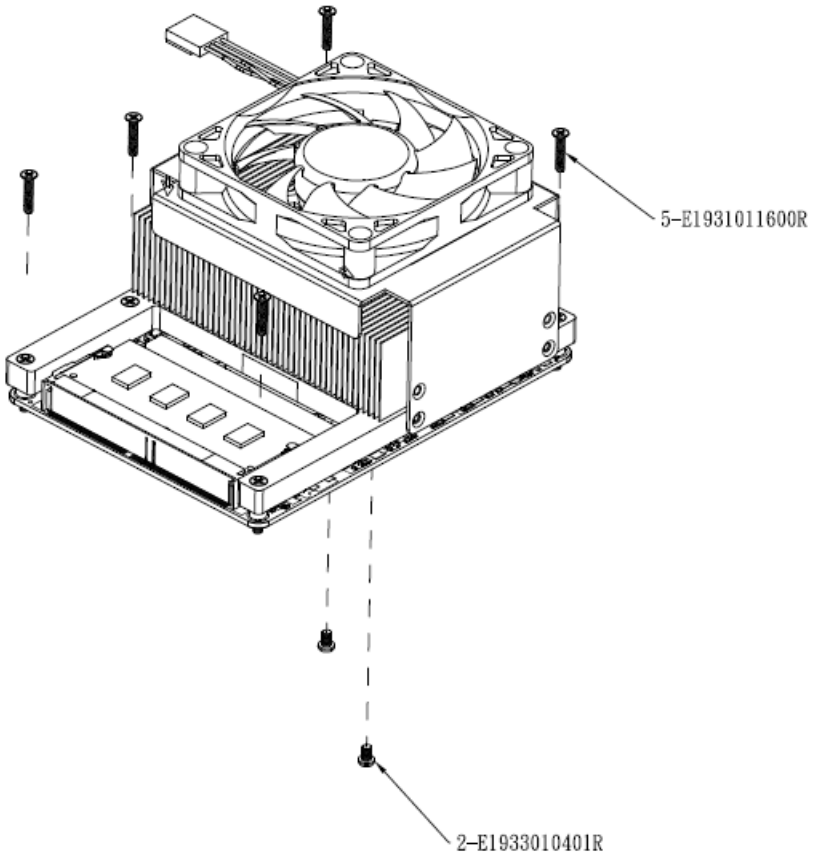
Signal	Signal Description
DDI[1:2]_PAIR[0:3]+ DDI[1:2]_PAIR[0:3]-	Digital Display Interface 1 to 3Pair[0:3] differential pairs
DDI[1:2]_DDC_AUX_SEL	Selects the function of DDI[1:3]_CTRLCLK_AUX+ and DDI[1:3]_CTRLDATA_AUX-. If this input is floating the AUX pair is used for the DP AUX+/- signals. If pulled-high the AUX pair contains the CRTLCLK and CTRLDATA signals.
DDI[1:2]_CTRLCLK_AUX+	DP AUX+function if DDI[1:3]_DDC_AUX_SEL is no connect HDMI/DVI I2C CTRLCLK if DDI[1:3]_DDC_AUX_SEL is pulled high
DDI[1:2]_CTRLDATA_AUX-	DP AUX-function if DDI[1:3]_DDC_AUX_SEL is no connect HDMI/DVI I2C CTRLDATA if DDI[1:3]_DDC_AUX_SEL is pulled high
DDI[1:2]_HPD	Digital Display Interface Hot-Plug Detect

2.3.3.1.3 PEG PCI Express Lanes Signals

Signal	Signal Description
PEG_TX[0:7]+ PEG_TX[0:7]-	PCI Express Graphics transmit differential paris.
PEG_RX[0:7]+ PEG_RX[0:7]-	PCI Express Graphics recevie differential paris.

2.4 Installing Cooler / Heat spreader

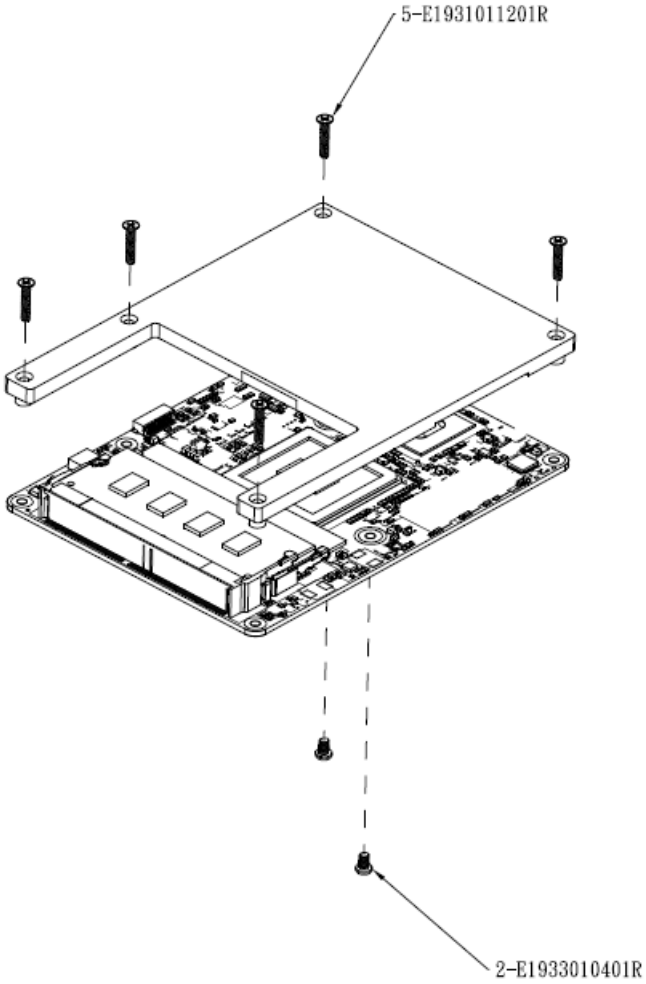
Cooler



Step1. Using 7 screws (M2.5-12L) to lock the Heatsink from PCB backside.

Note:
Screw Size/Q'TY
- M2.5-12L Ni*7pcs

Heat spreader



Step1. Using 7 screws (M2.5-12L) to lock the Heat spreader from PCB backside.

Note:
Screw Size/Q'TY
- M2.5-12L Ni*7pcs

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 <F2> or <Del> immediately after switching the system on, or
By pressing the <F2> or <Del> key when the following message appears briefly at the left-top of the screen during the POST (Power On Self Test).

Press <F2> 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 F1 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 BIOS supports an override to the NVRAM settings which resets your system to its defaults.

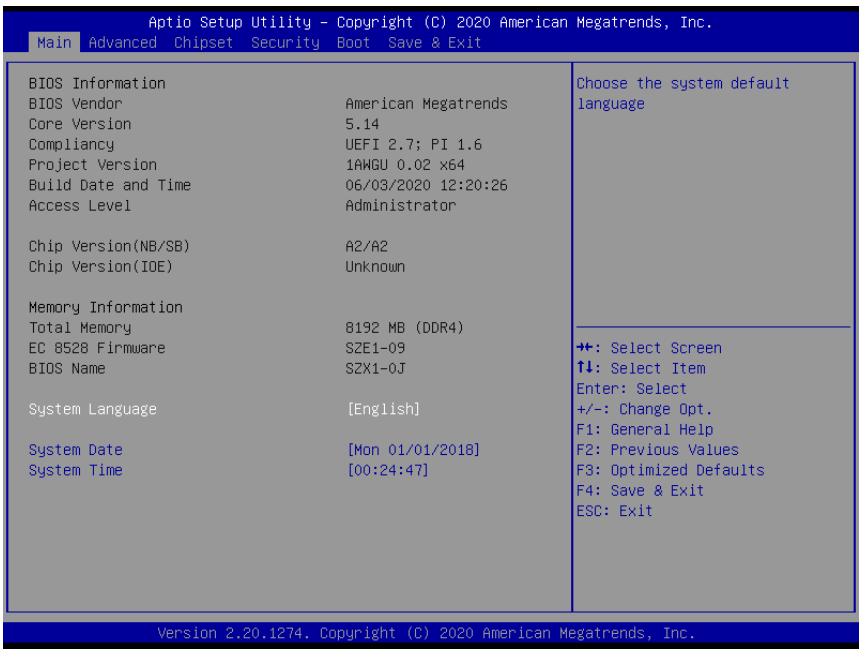
The best advice is to only alter settings which you thoroughly understand. To this end, we strongly recommend that you avoid making any changes to the chipset defaults. These defaults have been carefully chosen by both your systems manufacturer to provide the absolute maximum performance and reliability. 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

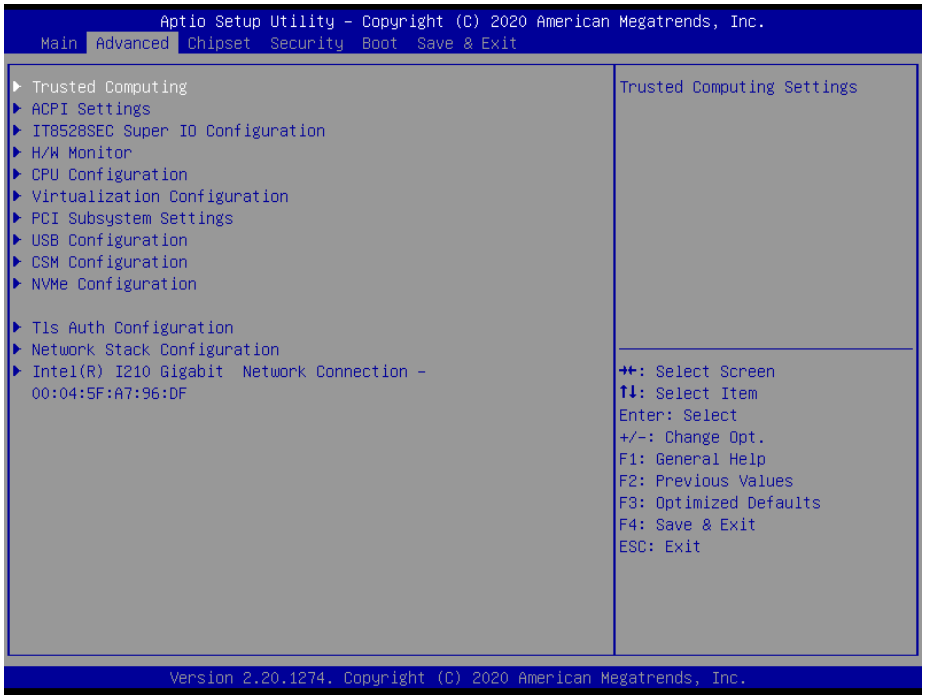
Use the system time option to set the system time. Manually enter the hours, minutes and seconds.

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.

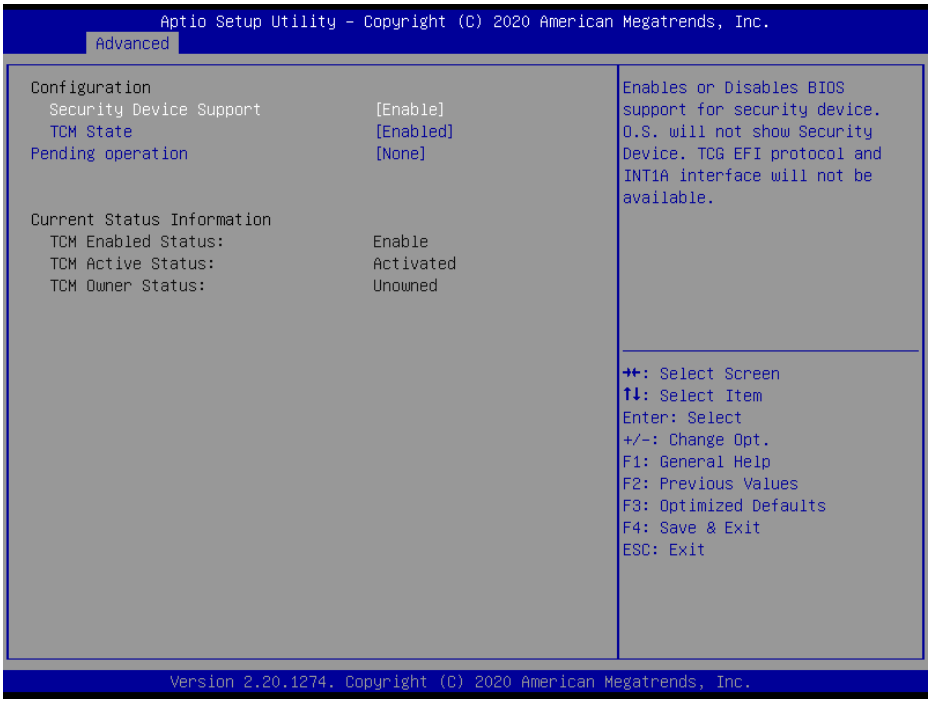
Visit the Avalue website (www.avalue.com.tw) to download the latest product and BIOS information.

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.

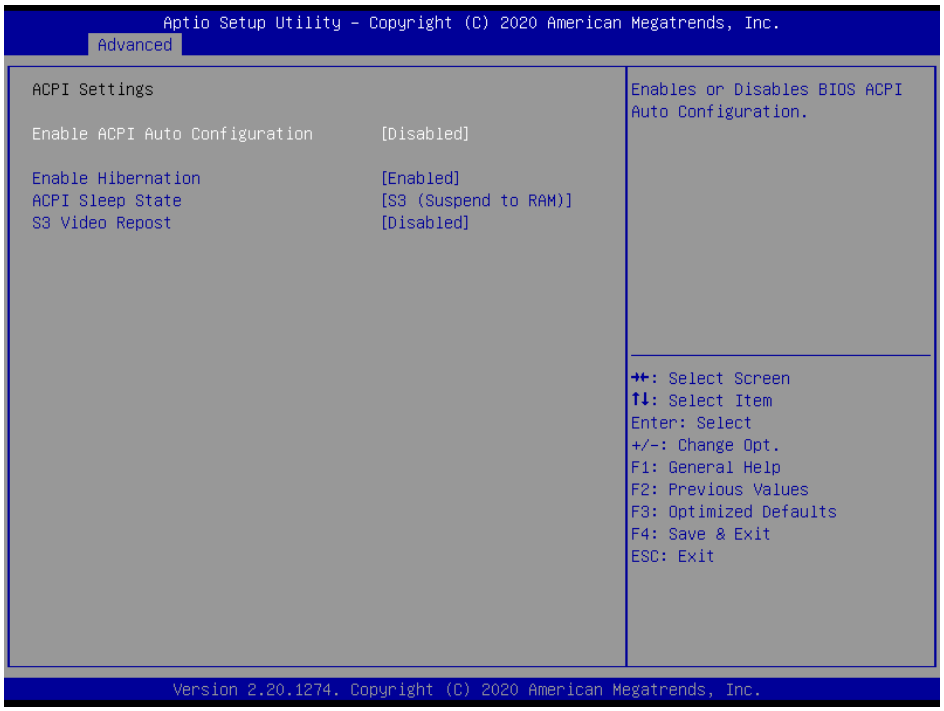


3.6.2.1 Trusted Computing



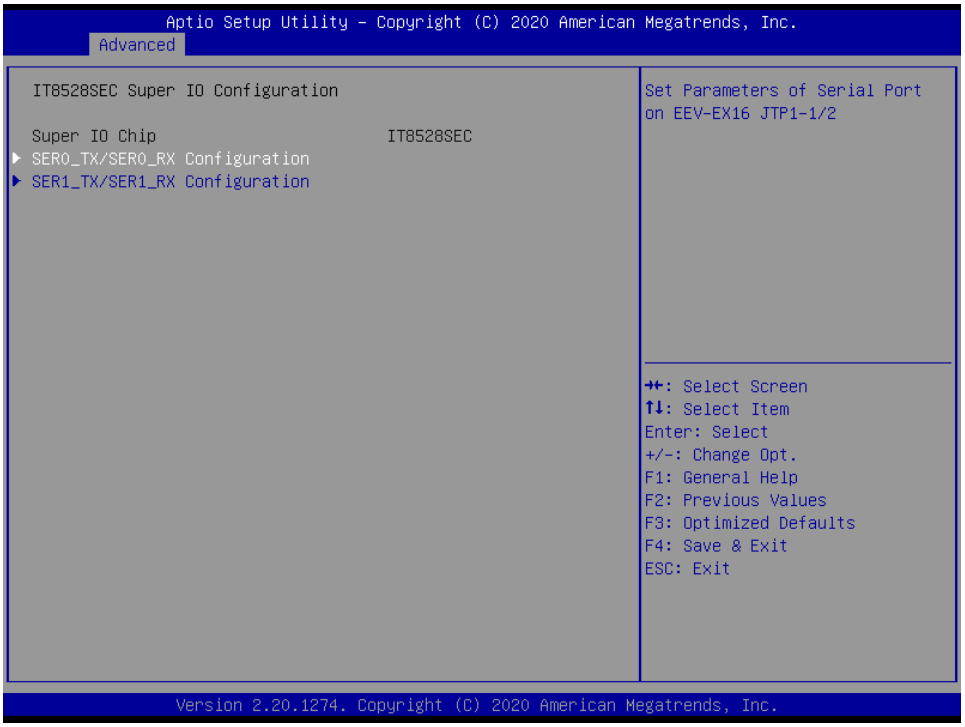
Item	Options	Description
Security Device Support	Disable Enable**[Default]**	Enables or Disables BIOS support for security device. O.S. will not show Security Device. TCG EFI protocol and INT1A interface will not be available.
TPM State	Disabled Enabled**[Default]**	Enable/Disable Security Device. NOTE: Your Computer will reboot during restart in order to change State of the Device.
Pending operation	None**[Default]** TPM Clear	Schedule an Operation for the Security Device. NOTE: Your Computer will reboot during restart in order to change State of Security Device.

3.6.2.2 APCI Settings

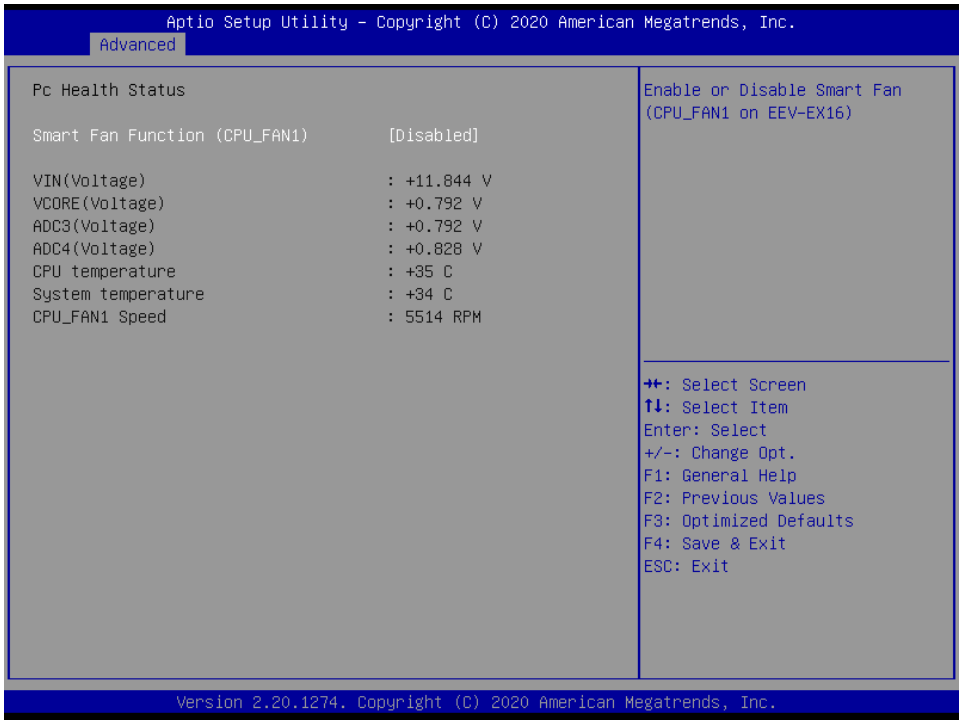


Item	Options	Description
Enable ACPI Auto Configuration	Disabled**[Default]**, Enabled	Enables or Disables BIOS ACPI Auto Configuration.
Enable Hibernation	Disabled Enabled**[Default]**,	Enables or Disables System ability to Hibernate (OS/S4 Sleep State). This option may not be effective with some OS.
ACPI Sleep State	Suspend Disabled, S3 (Suspend to RAM)**[Default]**	Select the highest ACPI sleep state the system will enter when the SUSPEND button is pressed.
S3 Video Repost	Disabled**[Default]**, Enabled	Enable or Disable S3 Video Repost.

3.6.2.3 IT8528SEC Super IO Configuration



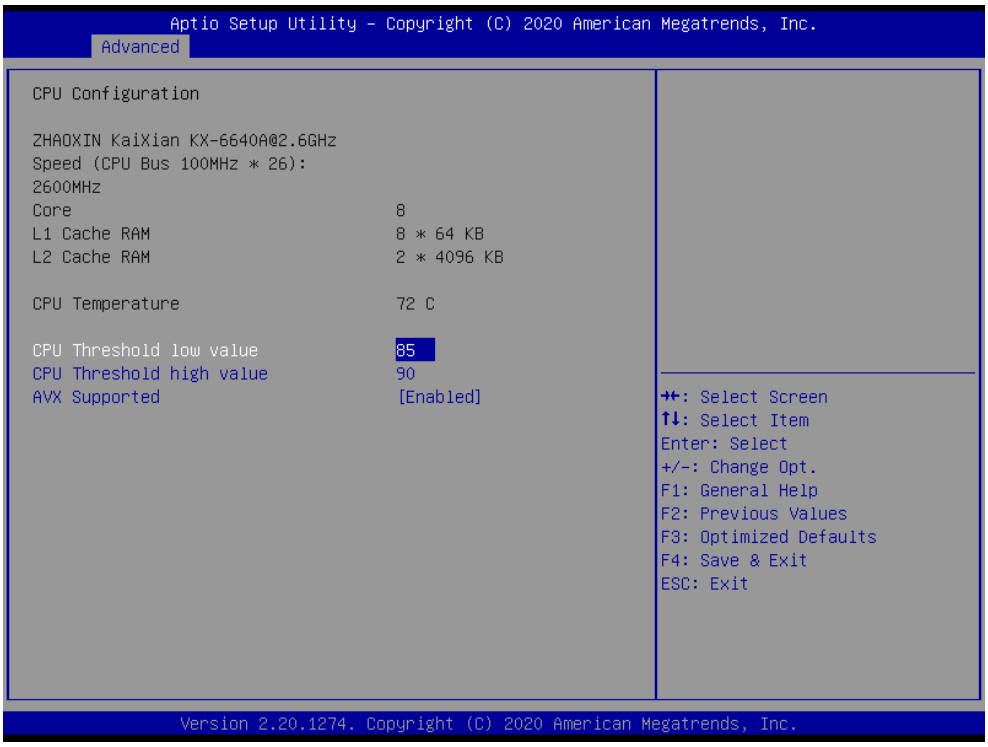
3.6.2.4 HW Monitor



Item	Options	Description
Smart Fan Function(CPU_FAN1)	Enabled, Disabled**[Default]**	Enables or Disables Smart Fan(CPU_FAN on EEV-EX16).

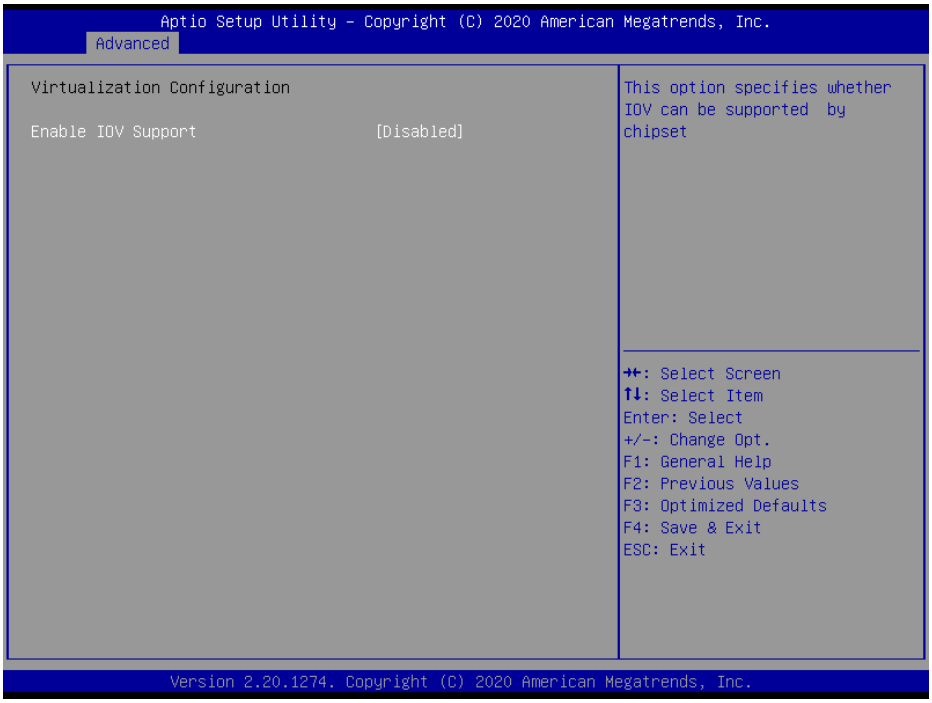
3.6.2.5 CPU Configuration

Use the CPU configuration menu to view detailed CPU specification and configure the CPU.



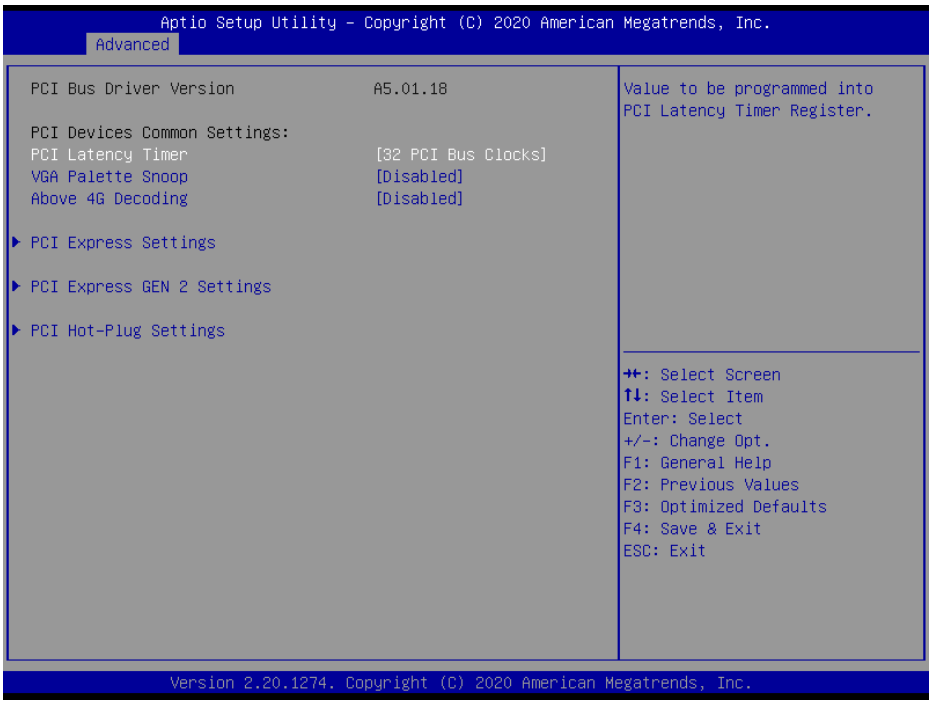
Item	Options	Description
CPU Threshold low value	0-85**[Default]**	CPU Threshold low value.
CPU Threshold high value	0-90**[Default]**	CPU Threshold high value.
AVX Supported	Disabled Enabled**[Default]**	AVX Supported.

3.6.2.6 Virtualization Configuration



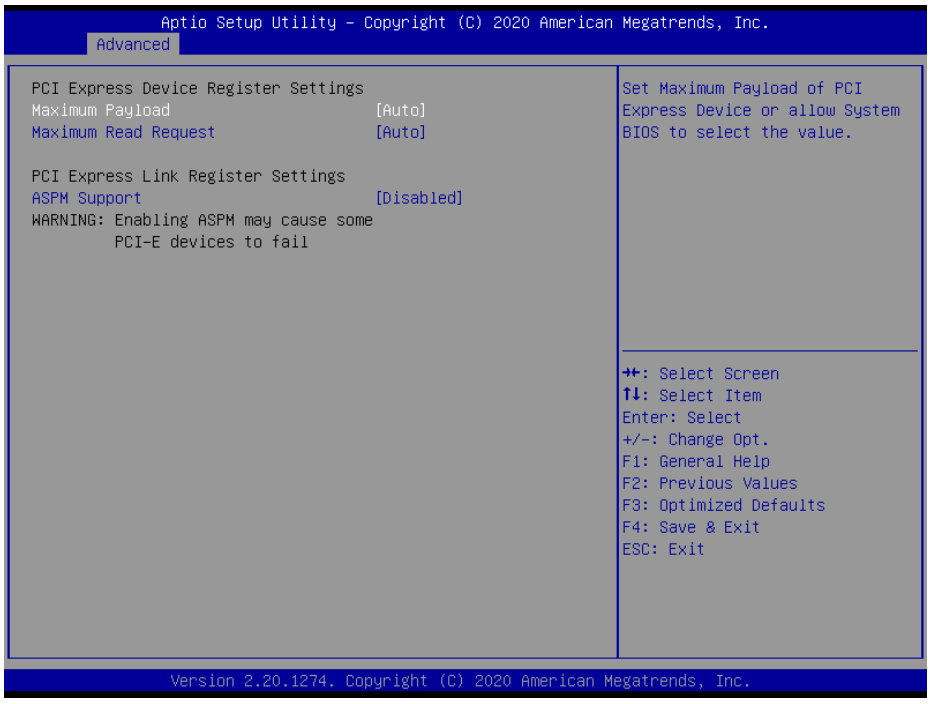
Item	Options	Description
Enable IOV Support	Disabled**[Default]**, Enabled	This option specifies whether IOV can be supported by chipset.

3.6.2.7 PCI Subsystem Settings



Item	Options	Description
PCI Latency Timer	32 PCI Bus Clocks**[Default]** 64 PCI Bus Clocks 96 PCI Bus Clocks 128 PCI Bus Clocks 160 PCI Bus Clocks 192 PCI Bus Clocks 224 PCI Bus Clocks 248 PCI Bus Clocks	Value to be programmed into PCI Latency Timer Register.
VGA Palette Snoop	Disabled**[Default]**, Enabled	Enables or Disables VGA Palette Registers Snooping.
Above 4G Decoding	Disabled**[Default]**, Enabled	Enables or Disables 64bit capable Devices to be Decoded in Above 4G Address Space (Only if System Supports 64 bit PCI Decoding).

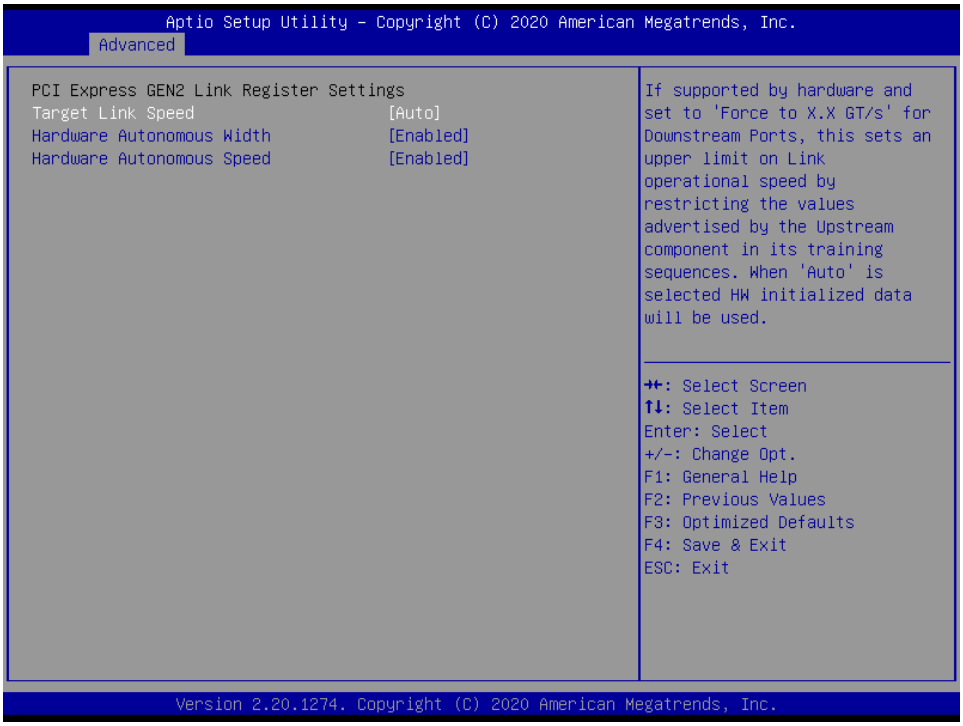
3.6.2.7.1 PCI Express Settings



Item	Option	Description
Maximum Payload	Auto**[Default]**, 128 Bytes 256 Bytes 512 Bytes 1024 Bytes 2048 Bytes 4096 Bytes	Set Maximum Payload of PCI Express Device or allow System BIOS to select the value.
Maximum Read Request	Auto**[Default]**, 128 Bytes 256 Bytes 512 Bytes	Set Maximum Read Request Size of PCI Express Device or allow System BIOS to select the value.

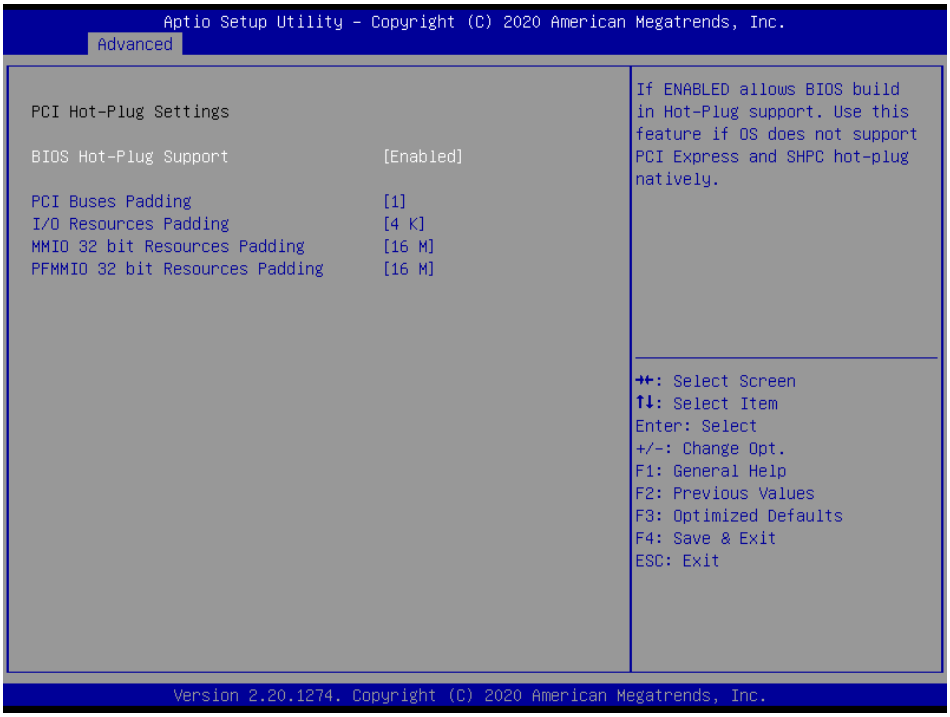
	1024 Bytes 2048 Bytes 4096 Bytes	
ASPM Support	Disabled**[Default]** Auto Force L0s	Set the ASPM Level: Force all links to L0s State AUTO – BIOS auto configure DISABLE – Disables ASPM.

3.6.2.7.2 PCI Express GEN2 Settings



Item	Option	Description
Target Link Speed	Auto**[Default]**, Force to 2.5 GT/s Force to 5.0 GT/s Force to 8.1 GT/s Force to 16.0 GT/s	If supported by hardware and set to 'Force to X.X GT/s' for Downstream Ports, this sets an upper limit on Link operational speed by restricting the values advertised by the Upstream component in its training sequences. When 'Auto' is selected HW initialized data will be used.
Hardware Autonomous Width	Enabled**[Default]** Disabled	If supported by hardware and set to 'Disabled', this will disable the hardware's ability to change link width except width size reduction for the purpose of correcting unstable link operation.
Hardware Autonomous Speed	Enabled**[Default]** Disabled	If supported by hardware and set to 'Disabled', this will disable the hardware's ability to change link speed except speed rate reduction for the purpose of correcting unstable link operation.

3.6.2.7.3 PCI Hot-Plug Settings

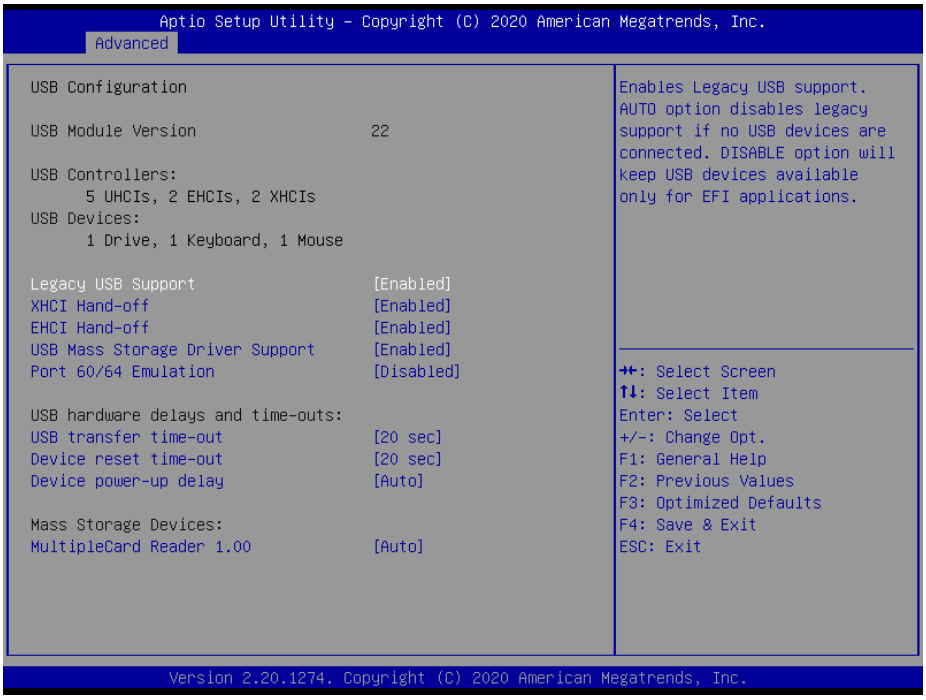


Item	Option	Description
BIOS Hot-Plug Support	Disabled Enabled**[Default]**	If ENABLED allows BIOS build in Hot-Plug support. Use this feature if OS does not support PCI Express and SHPC hot-plug natively.
PCI Buses Padding	Disabled 1**[Default]** 2 3 4 5	Pad PCI Buses behind the bridge for Hot-Plug.
I/O Resources Padding	Disabled 4 K**[Default]** 8 K 16 K 32K	Pad PCI I/O Resources behind the bridge for Hot-Plug.
MMIO 32 bit Resources Padding	Disabled 1 M 2 M 4 M 8 M 16 M**[Default]** 32 M 64 M 128 M	Pad PCI MMIO 32-bit Resources behind the bridge for Hot-Plug.
PFMMIO 32 bit Resources Padding	Disabled 1 M 2 M	Pad PCI MMIO 32-bit Prefetchable Resources behind the bridge for Hot-Plug.

	4 M 8 M 16 M**[Default]** 32 M 64 M 128 M	

3.6.2.8 USB Configuration

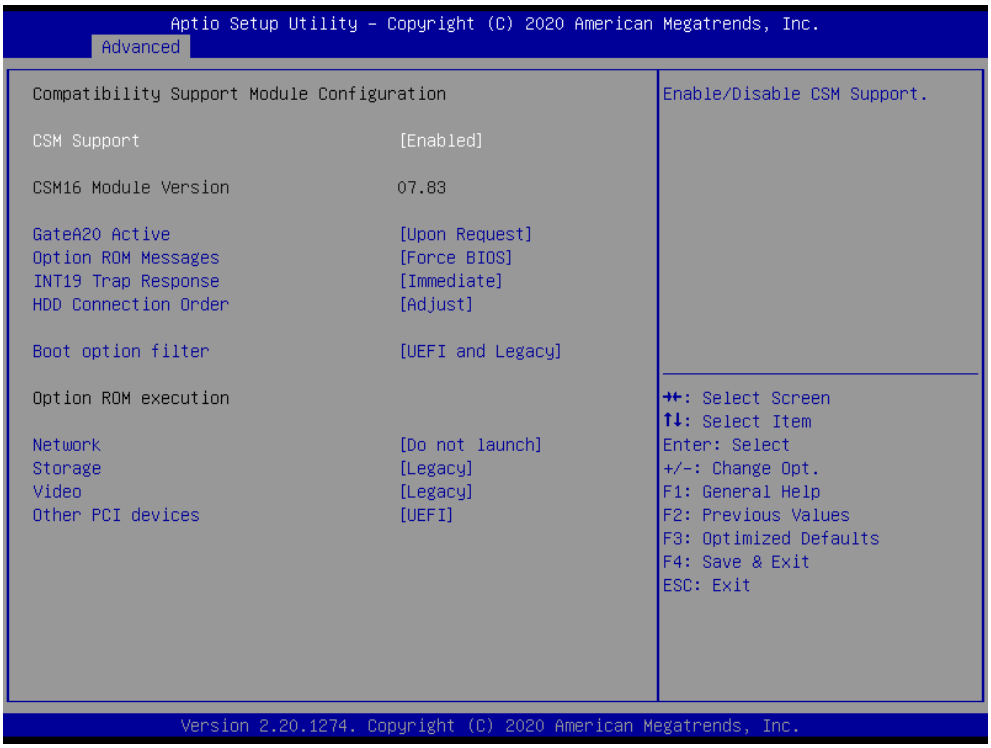
The USB Configuration menu helps read USB information and configures USB settings.



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.
XHCI Hand-off	Enabled**[Default]** Disabled	This is a workaround for OSes without XHCI hand-off support. The XHCI ownership change should be claimed by XHCI driver.
EHCI Hand-off	Enabled**[Default]** Disabled	This is a workaround for OSes without EHCI hand-off support. The EHCI ownership change should be claimed by EHCI driver.
USB Mass Storage Driver Support	Disabled Enabled**[Default]**	Enable/Disable USB Mass Storage Driver Support.
Port 60/64 Emulation	Disabled**[Default]** Enabled	Enables I/O ports 60h/64h emulation support. This should be enabled for the complete USB keyboard legacy support for non-USB aware OSes.
USB transfer time-out	1 sec 5 sec 10 sec 20 sec**[Default]**	The time-out value for Control, Bulk, and Interrupt transfers.

Device reset time-out	10 sec 20 sec**[Default]** 30 sec 40 sec	USB mass storage device Start Unit command time-out.
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.

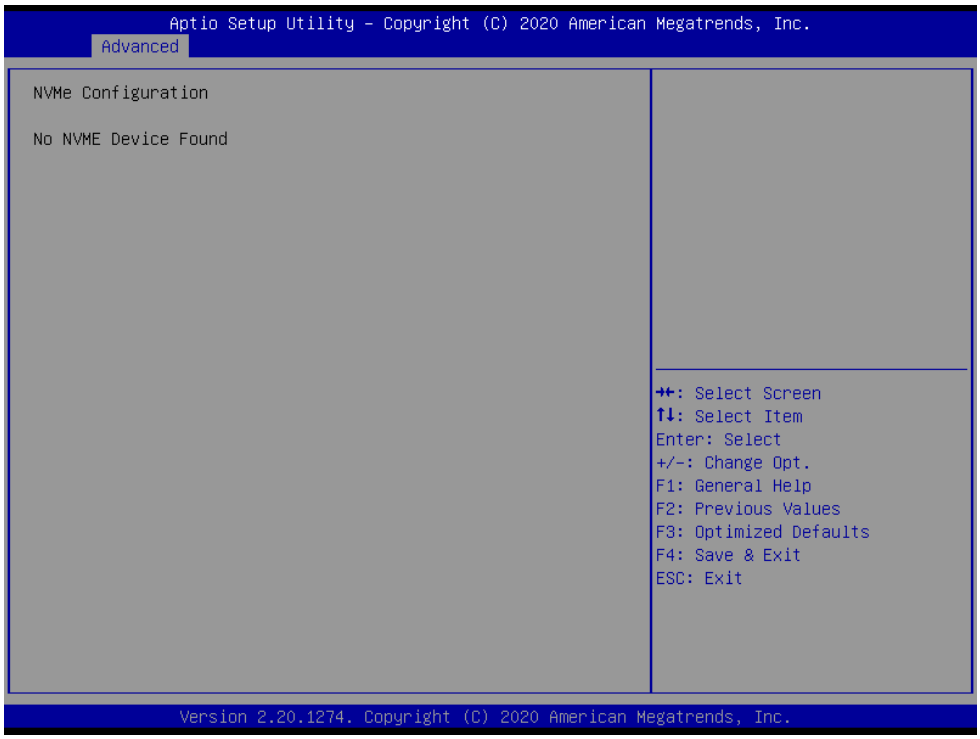
3.6.2.9 CSM Configuration



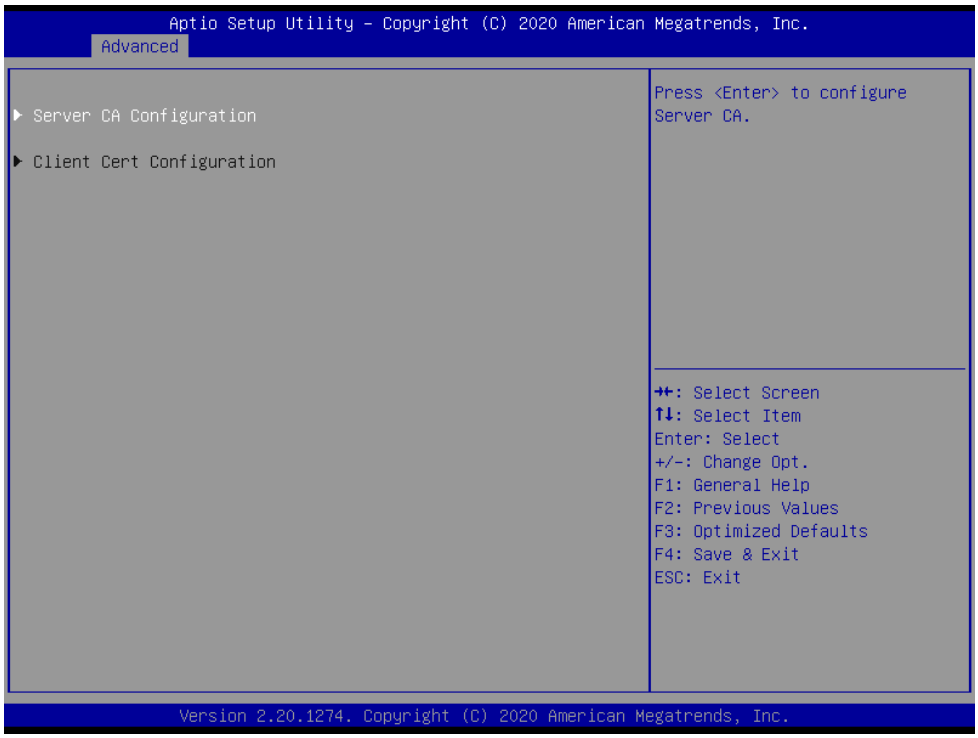
Item	Options	Description
CSM Support	Disabled Enabled**[Default]**	Enable/Disable CSM Support.
GateA20 Active	Upon Request**[Default]** Always	UPON REQUEST – GA20 can be disabled using BIOS services. ALWAYS – do not allow disabling GA20; this option is useful when any RT code is executed above 1MB.
INT19 Trap Response	Immediate**[Default]** Postponed	BIOS reaction on INT19 trapping by Option ROM: IMMEDIATE – execute the trap right away; POSTPONED – execute the trap during legacy boot.
HDD Connection Order	Adjust**[Default]**	Some OS require HDD handles to be

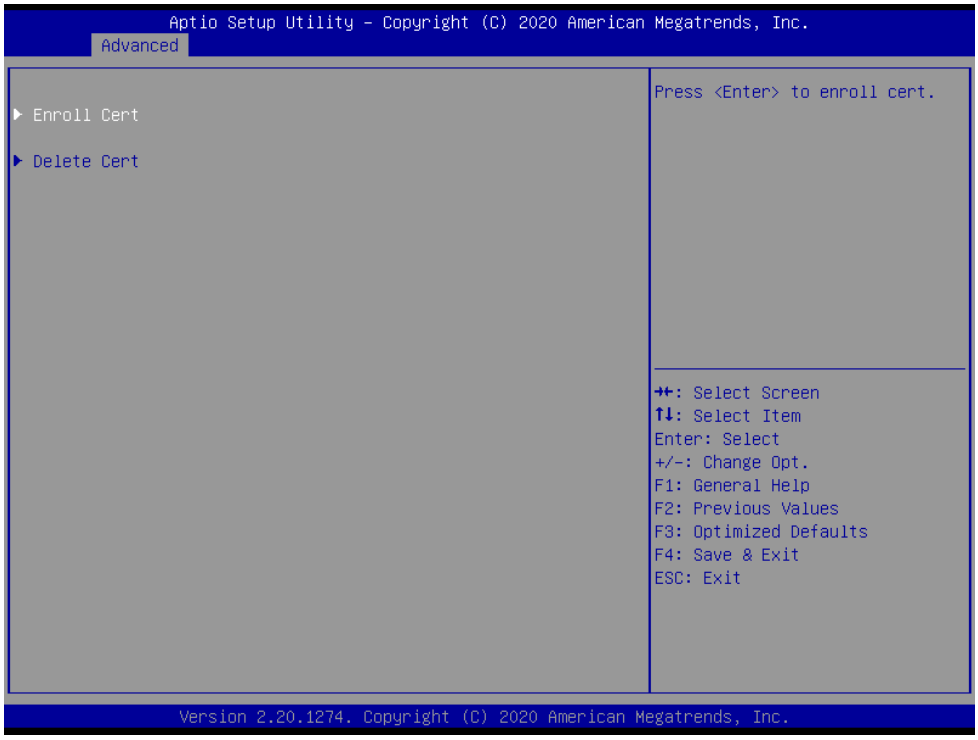
	Keep	adjusted, i.e. OS is installed on drive 80h.
Boot option filter	UEFI and Legacy Legacy only UEFI only**[Default]**	This option controls Legacy/UEFI ROMs priority.
Network	Do not launch**[Default]** UEFI Legacy	Controls the execution of UEFI and Legacy Network OpROM.
Storage	Do not launch UEFI Legacy**[Default]**	Controls the execution of UEFI and Legacy Storage OpROM.
Video	Do not launch UEFI**[Default]** Legacy	Controls the execution of UEFI and Legacy Video OpROM.
Other PCI devices	Do not launch UEFI**[Default]** Legacy	Determines OpROM execution policy for devices other than Network, Storage, or Video.

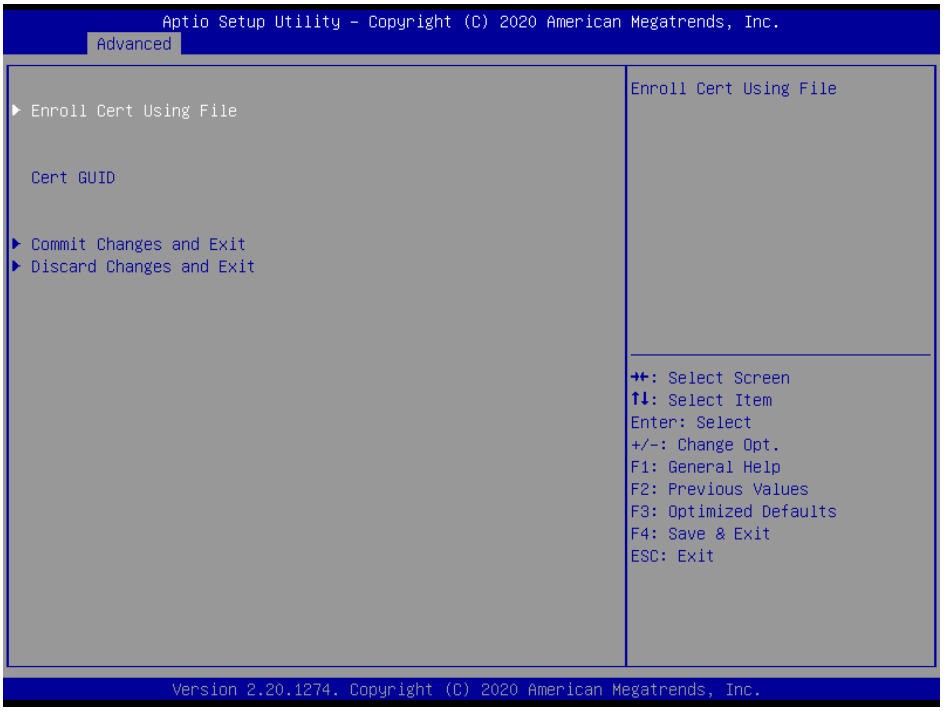
3.6.2.10 NVMe Configuration



3.6.2.11 Tis Auth Configuration

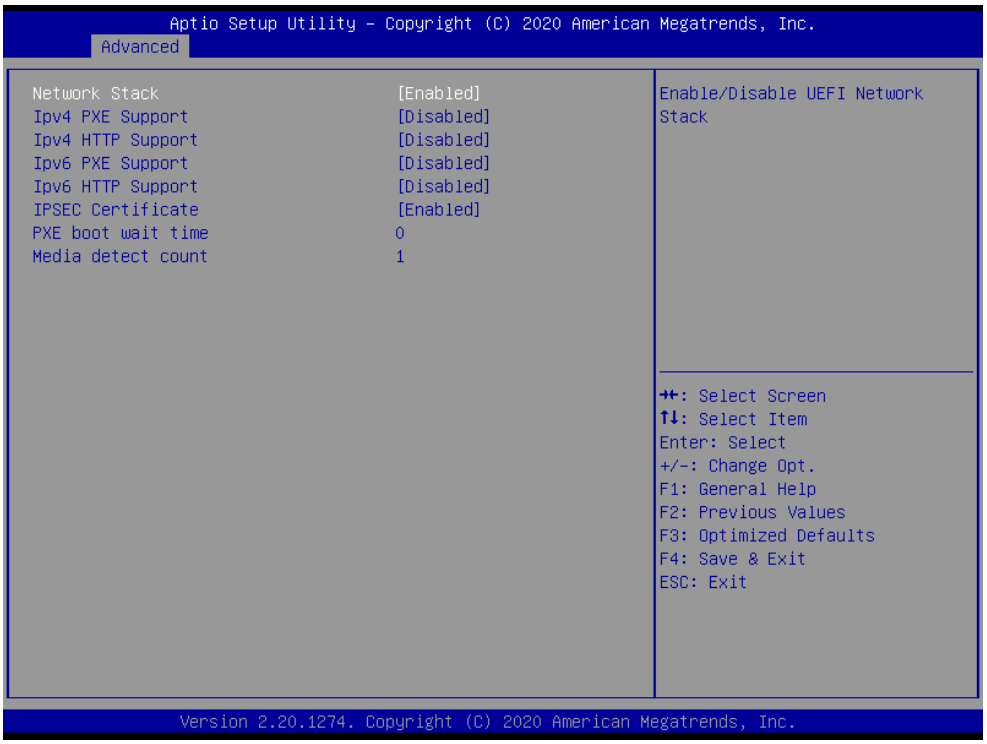






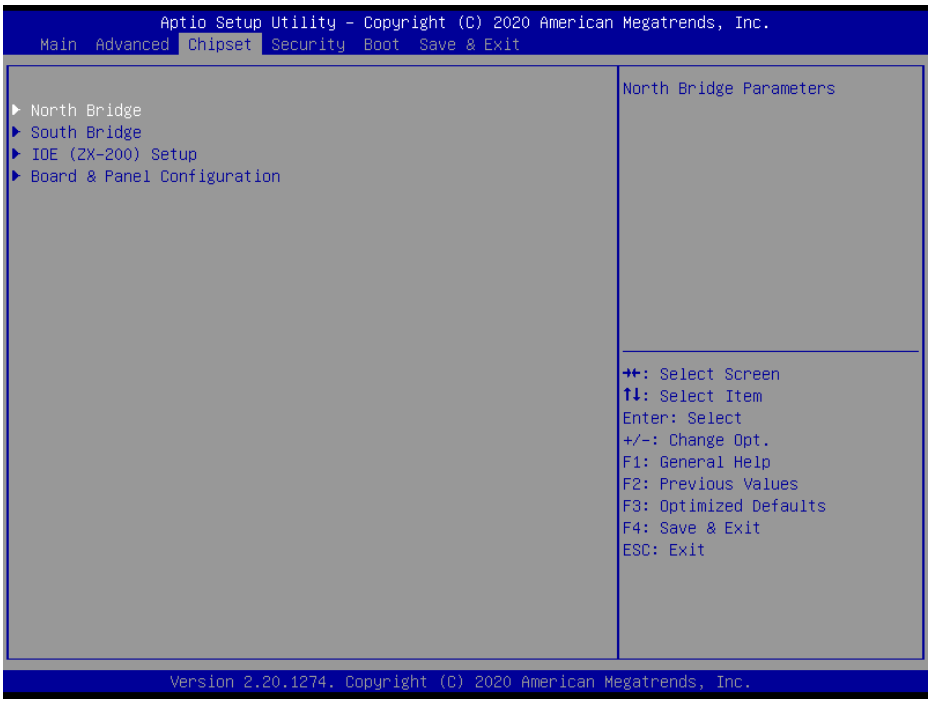
3.6.2.12 Network Stack Configuration

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

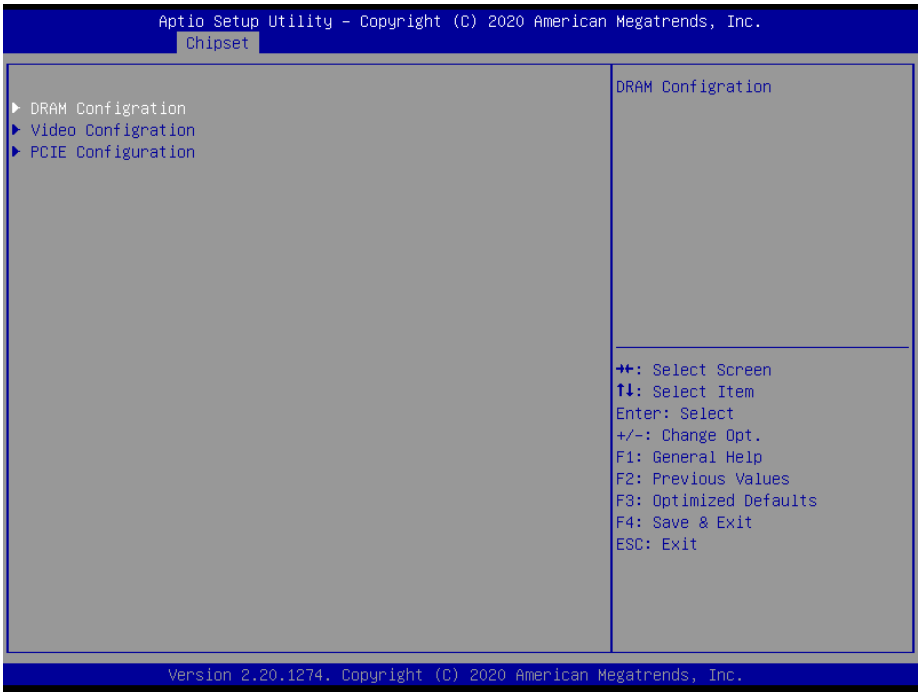


Item	Options	Description
Network Stack	Enabled**[Default]** Disabled	Enable/Disable UEFI Network Stack.
Ipv4 PXE Support	Enabled Disabled**[Default]**	Enable Ipv4 PXE Boot Support. If disabled IPV4 PXE boot option will not be created.
Ipv4 HTTP Support	Enabled Disabled**[Default]**	Enable Ipv4 HTTP Boot Support. If disabled IPV4 HTTP boot option will not be created.
Ipv6 PXE Support	Enabled Disabled**[Default]**	Enable Ipv6 PXE Boot Support. If disabled IPV6 PXE boot option will not be created.
Ipv6 HTTP Support	Enabled Disabled**[Default]**	Enable Ipv6 HTTP Boot Support. If disabled IPV6 HTTP boot option will not be created.
IPSEC Certificate	Enabled**[Default]** Disabled	Support to Enable/Disable IPSEC certificate for Ikev.
PXE boot wait time	0**[Default]** ~ 5	Wait time to press ESC key to abort the PXE boot.
Media detect count	1**[Default]** ~ 50	Number of times presence of media will be checked.

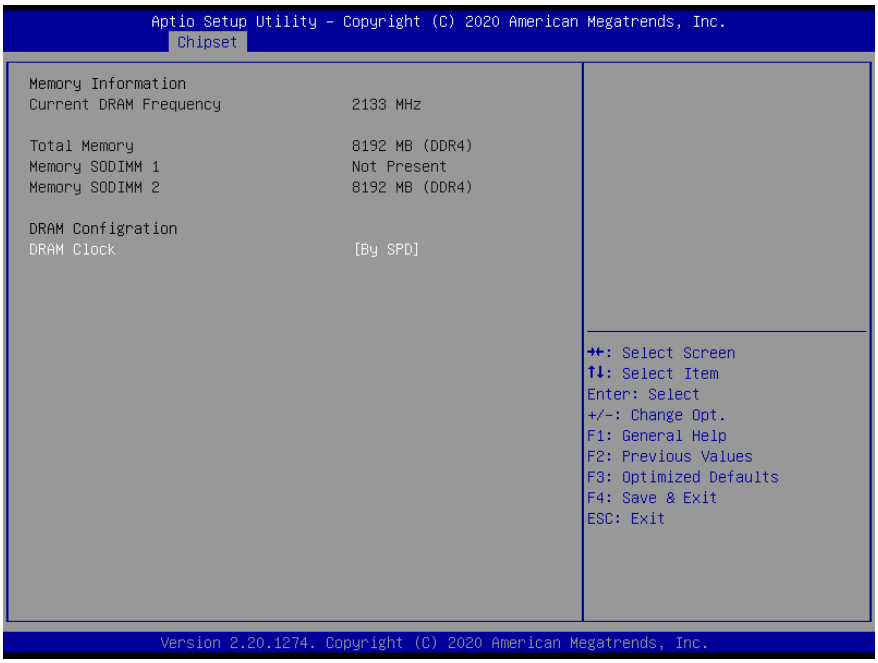
3.6.3 Chipset



3.6.3.1 North Bridge

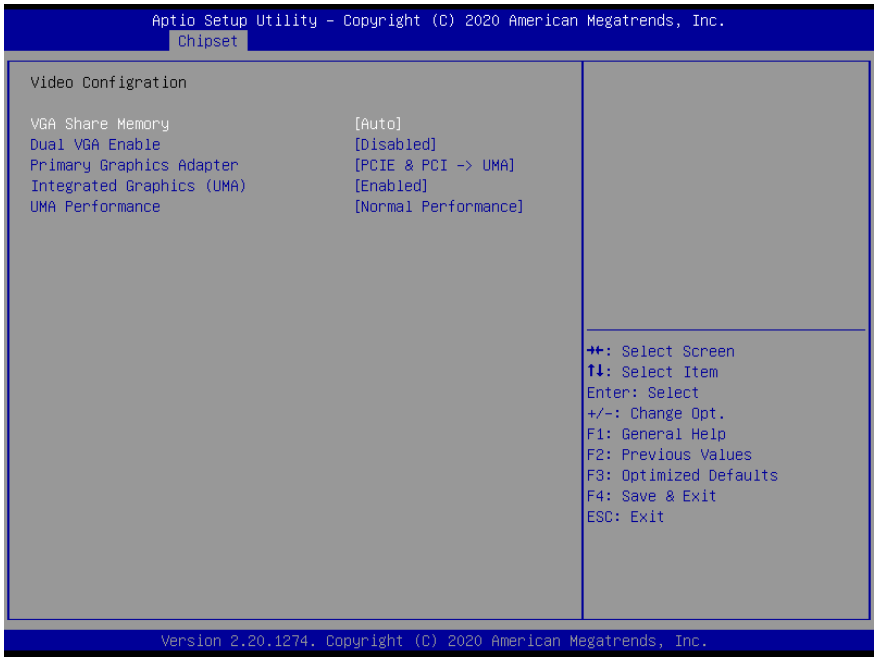


3.6.3.1.1 DRAM Configuration



Item	Option	Description
DRAM Clock	By SPD**[Default]** 1200 Mhz 1333 Mhz	DRAM Clock.

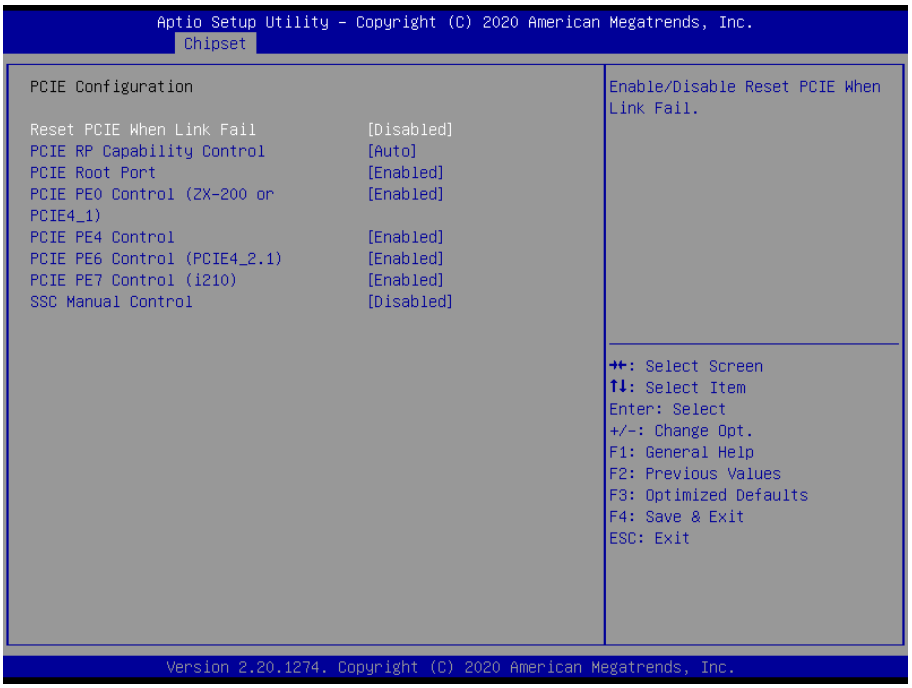
3.6.3.1.2 Video Configuration



Item	Option	Description
VGA Share Memory	64 M 128 M	VGA Share Memory.

	256 M 512 M Auto**[Default]**	
Dual VGA Enable	Disabled**[Default]** Enabled	Dual VGA Enable/Disable.
Primary Graphics Adapter	PCIE & PCI -> UMA**[Default]** UMA -> PCIE & PCI	Select Primary Graphics Adapter.
Integrated Graphics (UMA)	Disabled Enabled**[Default]**	Integrated Graphics (UMA) Enabled/Disabled
UMA Performance	Normal Performance**[Default]** High Performance	

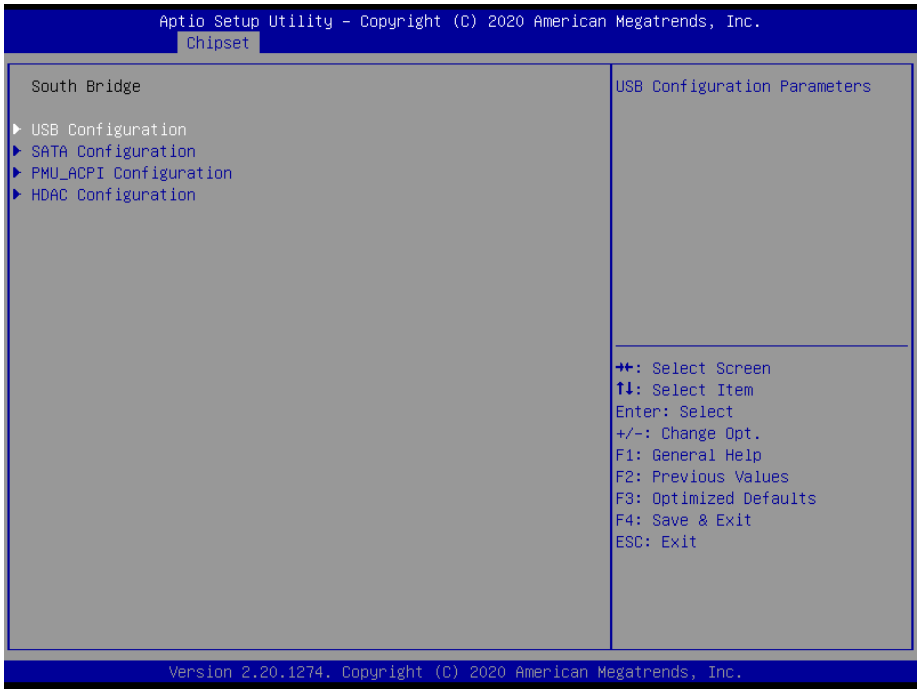
3.6.3.1.3 PCIE Configuration



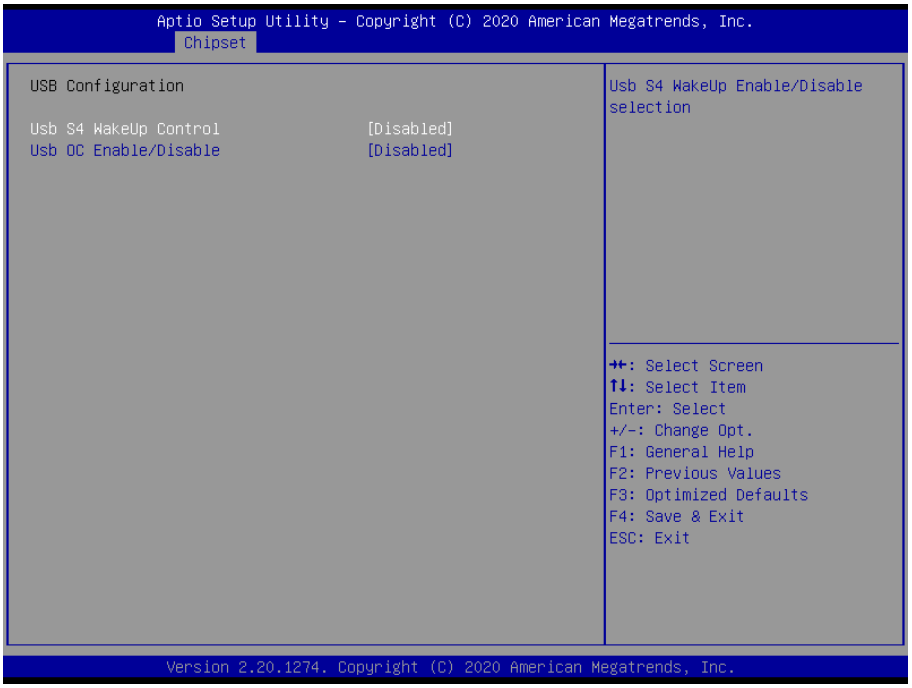
Item	Option	Description
Reset PCIE When Link Fail	Disabled**[Default]** Enabled	Enable/Disable Reset PCIE When Link Fail.
PCIE RP Capability Control	Auto**[Default]** Force Gen 1 Force Gen 2 Force Gen 3 By Port	Control PCIE RP Capability and Link-Speed; the Real Target Link-Speed will be defined in Advance -> PCI Subsystem Setting -> PCIE GEN2 Setting -> Target Link Speed.
PCIE Root Port	Disabled Enabled**[Default]**	PCIE Root Port.
PCIE PE0 Control (ZX-200 or PCIE4_1)	Disabled Enabled**[Default]**	PCIE PE0 can't be disabled when PE1/PE2/PE3 is enabled.
PCIE PE4 Control	Disabled Enabled**[Default]**	PCIE PE4 can't be disabled when PE5 is enabled.
PCIE PE6 Control (PCIE4_2.1)	Disabled Enabled**[Default]**	PCIE PE6 can't be disabled when PE7 is enabled.

PCIE PE7 Control (i210)	Disabled Enabled**[Default]**	PCIE PE7 Control (i210).
SSC Manual Control	Disabled**[Default]** Enabled	SS Manual Control enable/disable. Please turn off system if change this setting.

3.6.3.2 South Bridge

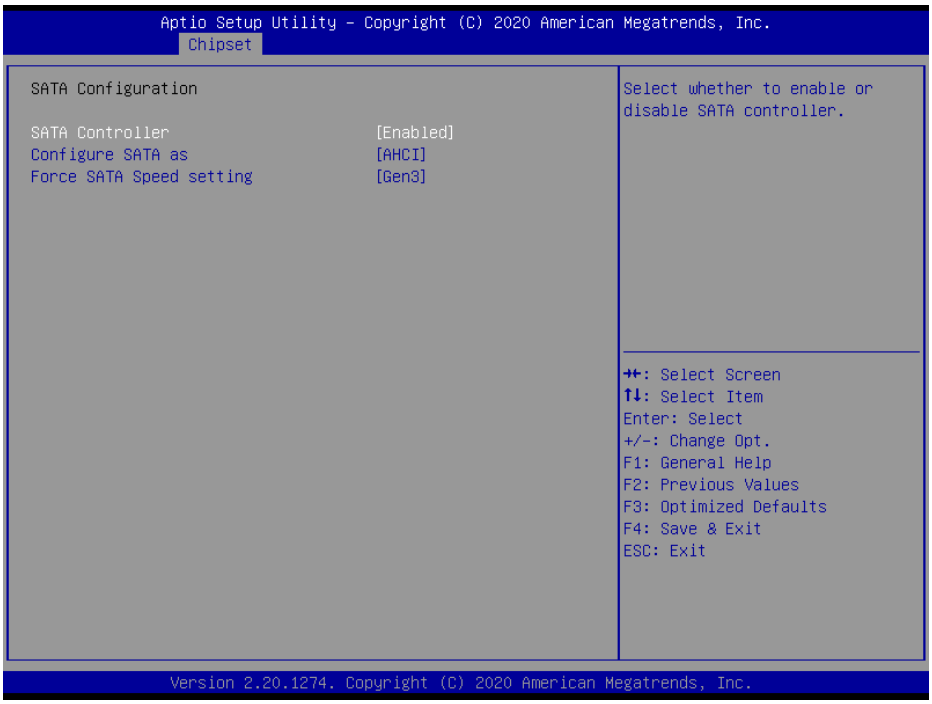


3.6.3.2.1 USB Configuration



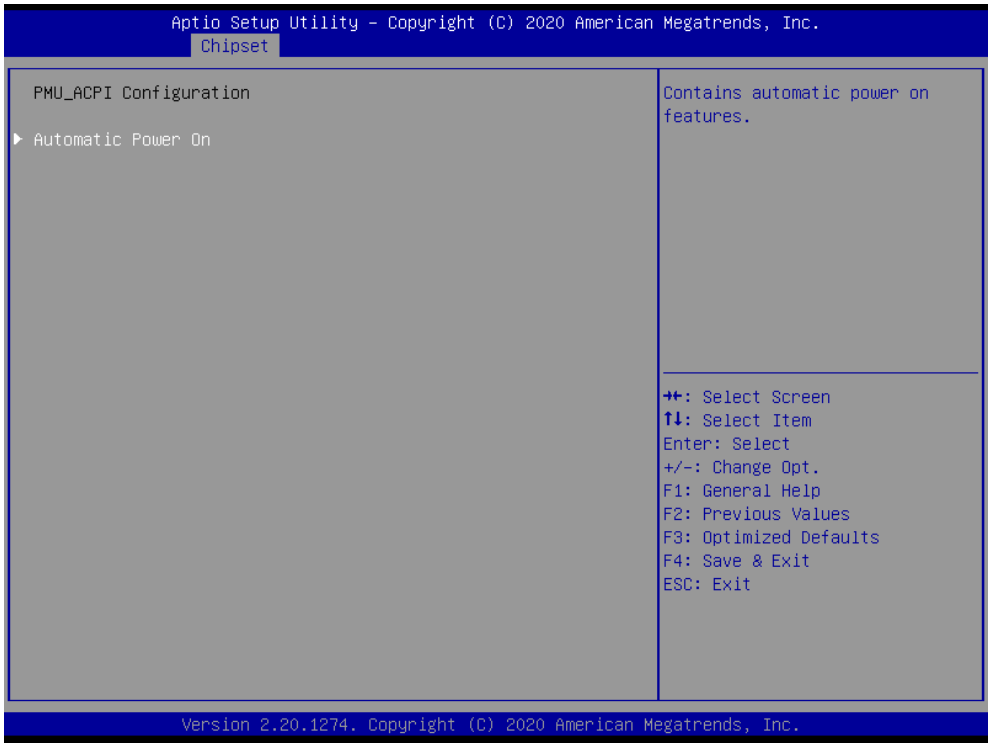
Item	Option	Description
Usb S4 Wakeup Control	Disabled**[Default]** Enabled	Usb S4 Wakeup Control Enable/Disable selection.
Usb OC Enable/Disable	Disabled**[Default]** Enabled	Usb OC Enable/Disable selection.

3.6.3.2.2 SATA Configuration

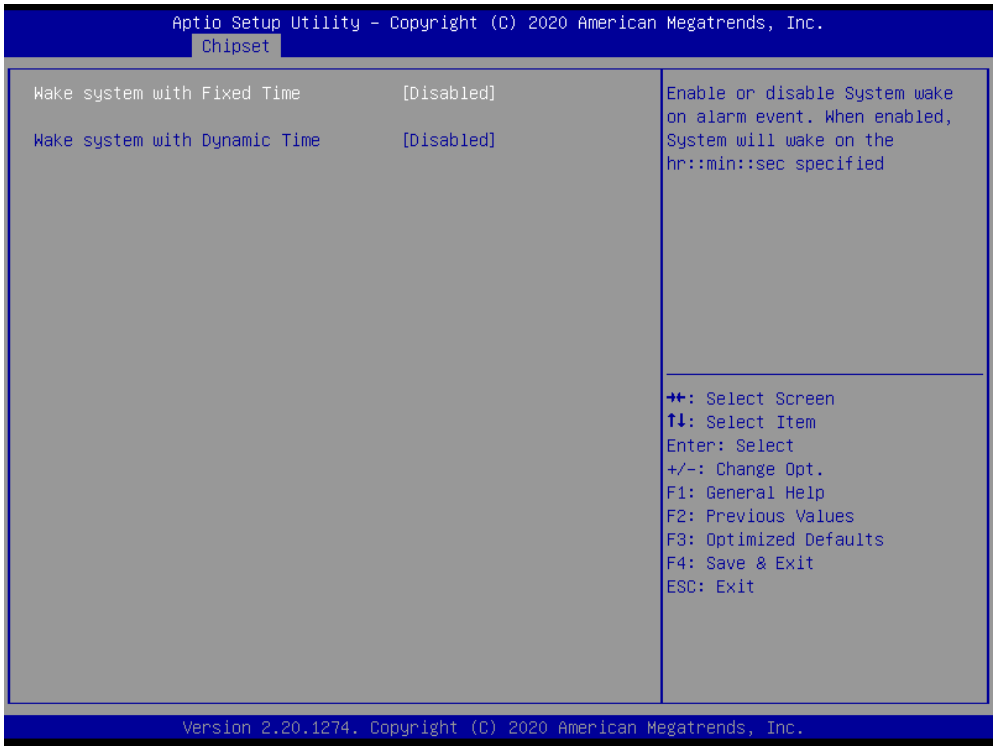


Item	Option	Description
SATA Controller	Disabled Enabled**[Default]**	Select whether to enable or disable SATA controller.
Configure SATA as	IDE AHCI**[Default]**	Select IDE/AHCI/RAID Mode. NOTE: Device driver support is required for AHCI or RAID. Depending on how the hard disk image was installed, changing this setting may prevent the system from booting.
Force SATA Speed setting	Gen1 Gen2 Gen3**[Default]**	Gen1/Gen2/Gen3.

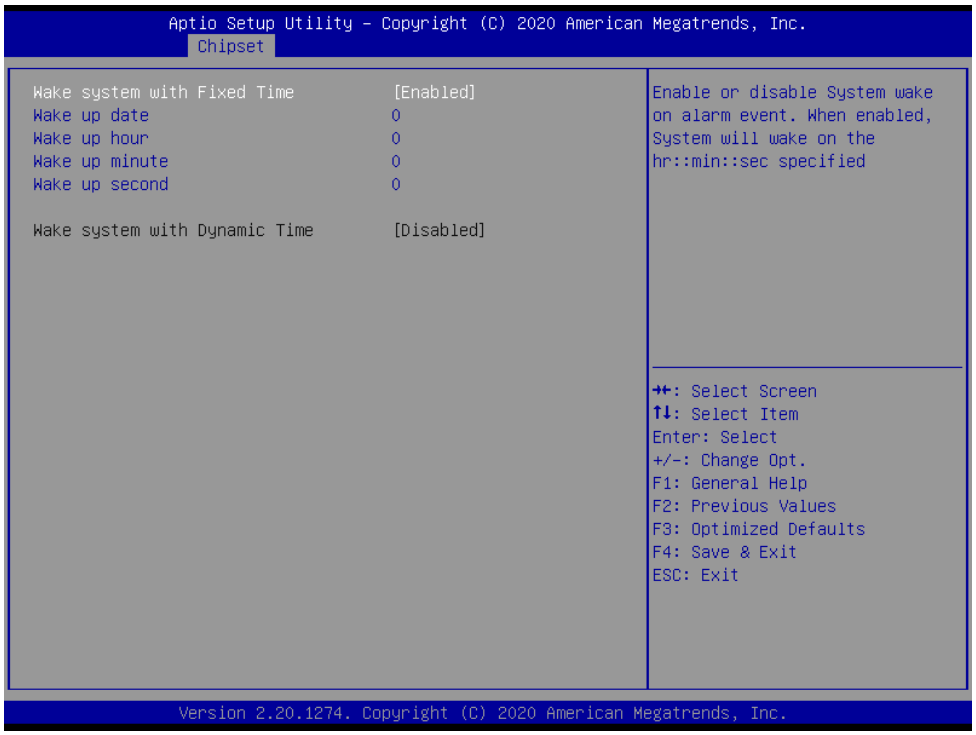
3.6.3.2.3 PMU_ACPI Configuration



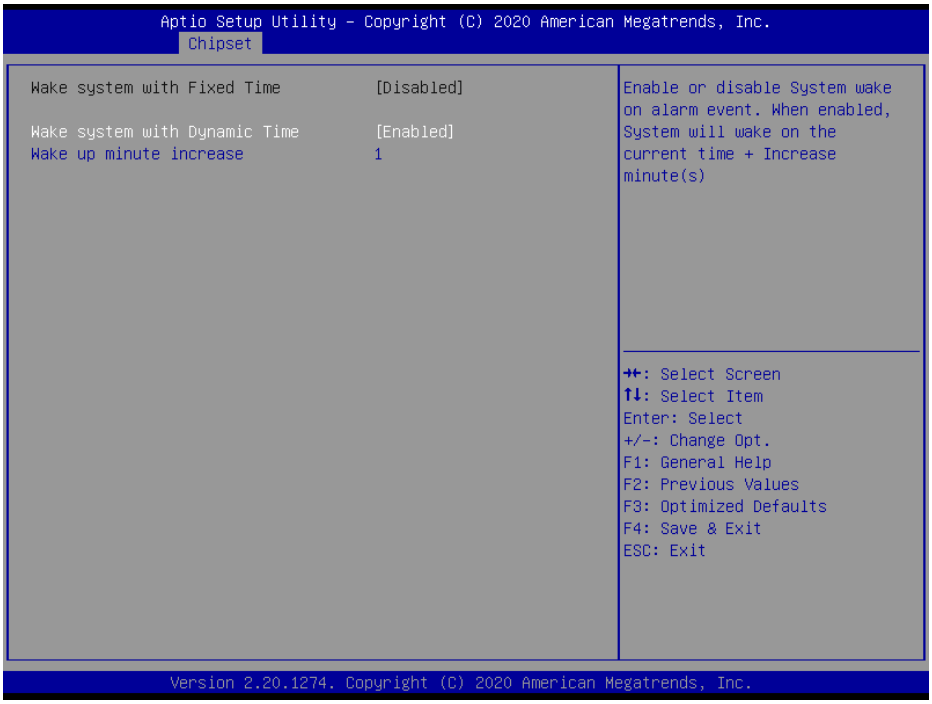
3.6.3.2.3.1 Sx RTC Wake Settings



Item	Option	Description
Wake system with Fixed Time	Disabled**[Default]** Enabled	Enable or disable System wake on alarm event. When enabled, System will wake on the hr::min::sec specified.
Wake system with Dynamic Time	Disabled**[Default]** Enabled	Enable or disable System wake on alarm event. When enabled, System will wake on the current time + Increase minute(s).

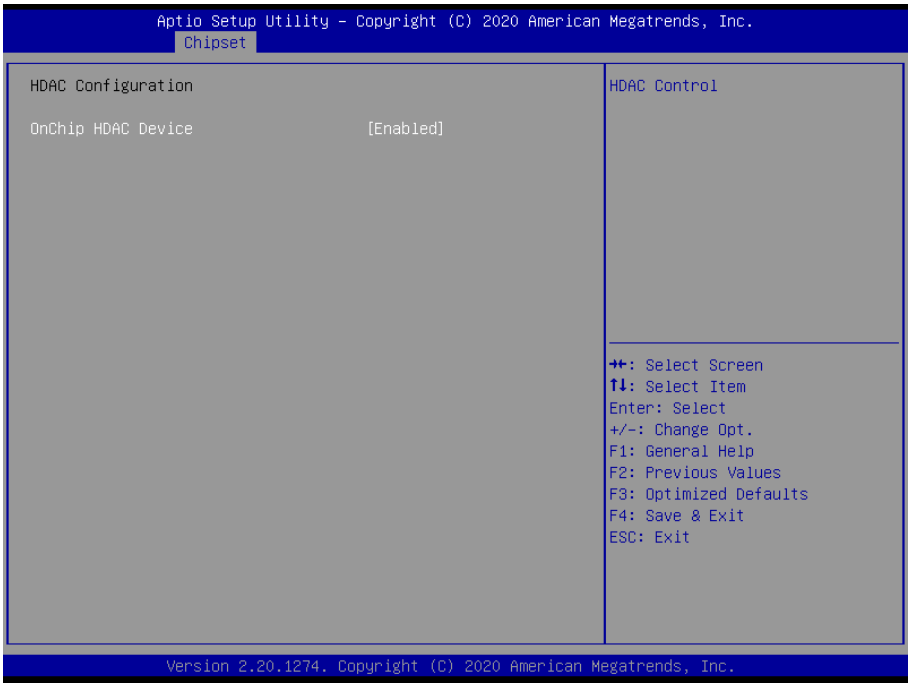


Item	Option	Description
Wake system with Fixed Time	Disabled Enabled**[Default]**	Enable or disable System wake on alarm event. When enabled, System will wake on the hr::min::sec specified.
Wake up date	0-31	Select 0-31 For example enter 0 for every day and enter 3 for day3…..
Wake up hour	0-23	Select 0-23 For example enter 3 for 3am and enter 15 for 3pm.
Wake up minute	0-59	0-59
Wake up second	0-59	0-59
Wake system with Dynamic Time	Disabled**[Default]** Enabled	Enable or disable System wake on alarm event. When enabled, System will wake on the current time + Increase minute(s).



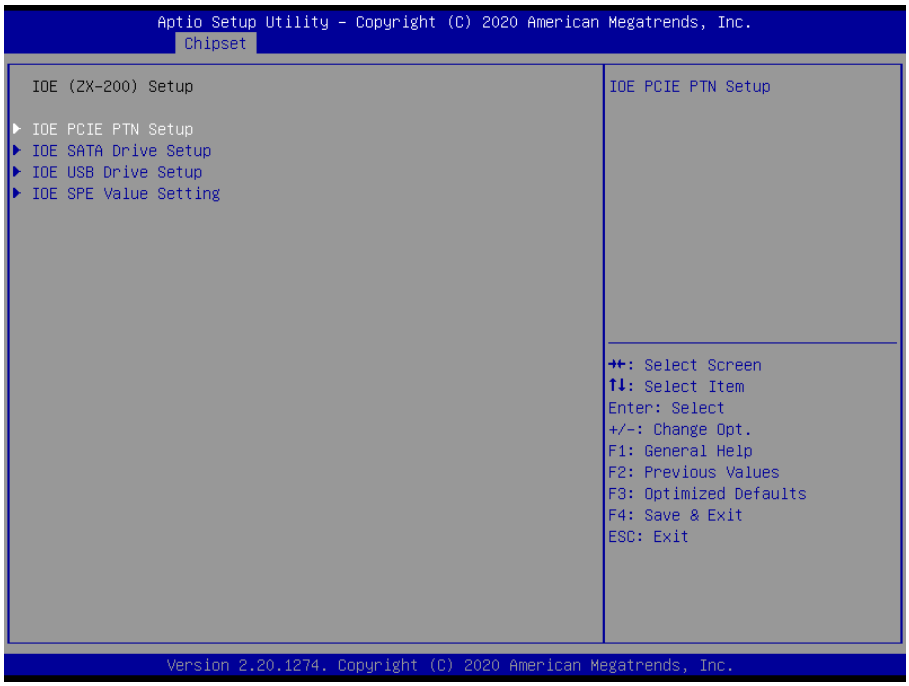
Item	Option	Description
Wake system with Dynamic Time	Disabled Enabled**[Default]**	Enable or disable System wake on alarm event. When enabled, System will wake on the hr::min::sec specified.
Wake up minute increase	1-5	1-5.

3.6.3.2.4 HDAC Configuration

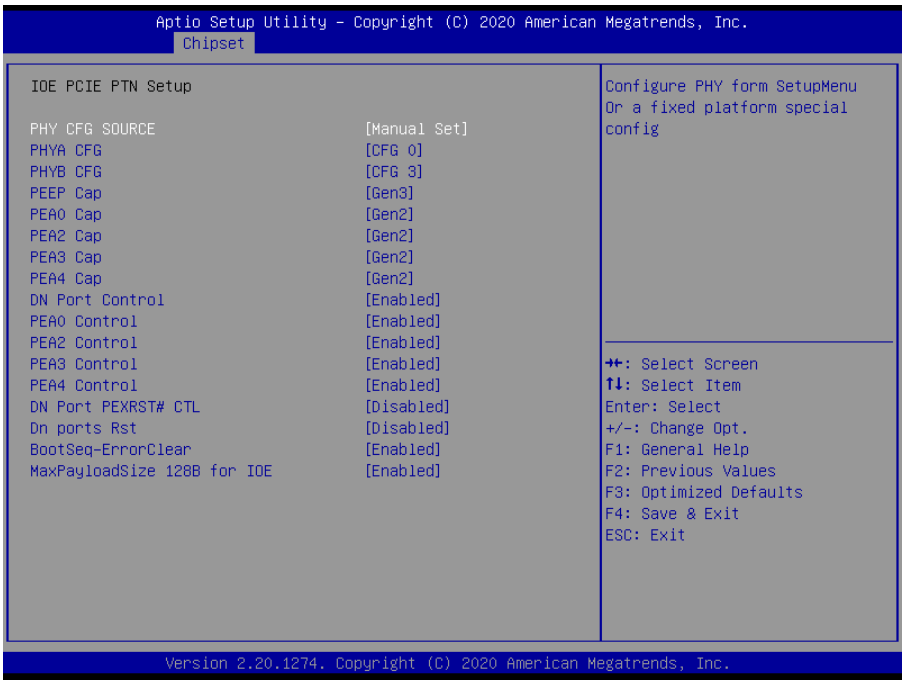


Item	Option	Description
OnChip HDAC Device	Disabled Enabled**[Default]**	HDAC Control.

3.6.3.3 IOE (ZX-200) Setup



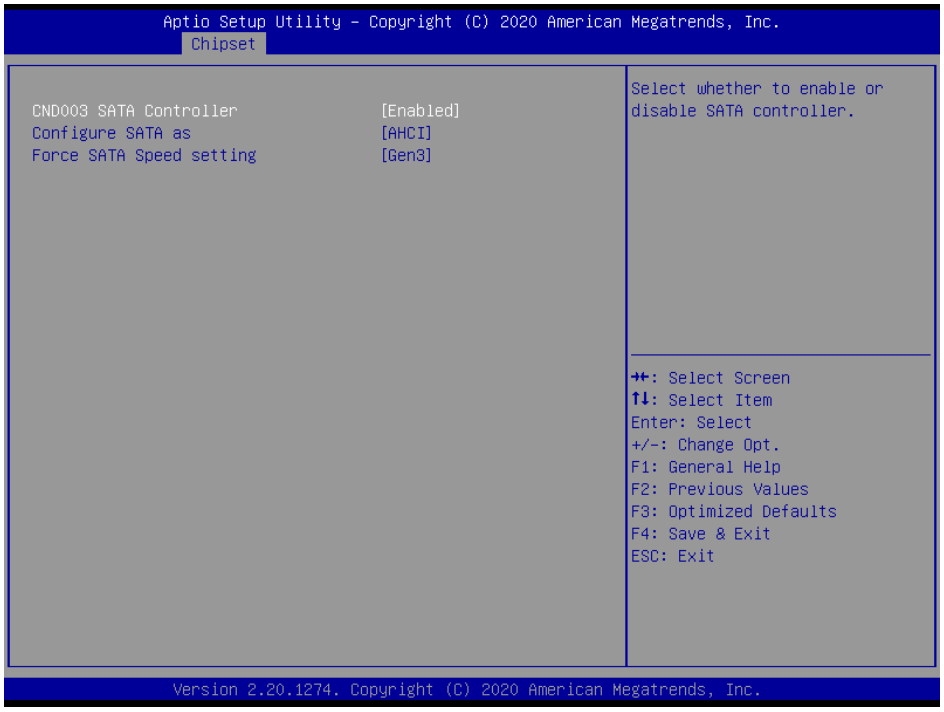
3.6.3.3.1 IOE PCIE PTN Setup



Item	Option	Description
PHY CFG SOURCE	Manual Set**[Default]** Fixed	Configure PHY form SetupMenu Or a fixed platform special config.
PHYA CFG	CFG 0**[Default]** CFG 1 CFG 2 CFG 3	CFG 0 – x1, x4 CFG 1 – x1, x2, x2 CFG 2 – x1, x2, x1, x1 CFG 3 – x1, x1, x1, x1, x1.
PHYB CFG	CFG 0 CFG 1 CFG 2 CFG 3**[Default]**	CFG 0 – x4(or SATA) CFG 1 – x4 CFG 2 – x2, x2 CFG 3 – SATA, SATA, SATA, SATA.
PEEP Cap	CFG 0 CFG 1 CFG 2 CFG 3**[Default]**	PEEP Cap.
PEA0 Cap	CFG 1 CFG 2**[Default]**	PEA0 Cap.
PEA2 Cap	CFG 1 CFG 2**[Default]**	PEA2 Cap.
PEA3 Cap	CFG 1 CFG 2**[Default]**	PEA3 Cap.
PEA4 Cap	CFG 1 CFG 2**[Default]**	PEA4 Cap.
DN Port Control	Disabled Enabled**[Default]**	To control the PEXRST of DN ports.
PEA0 Control	Disabled Enabled**[Default]**	PEA0 Control.

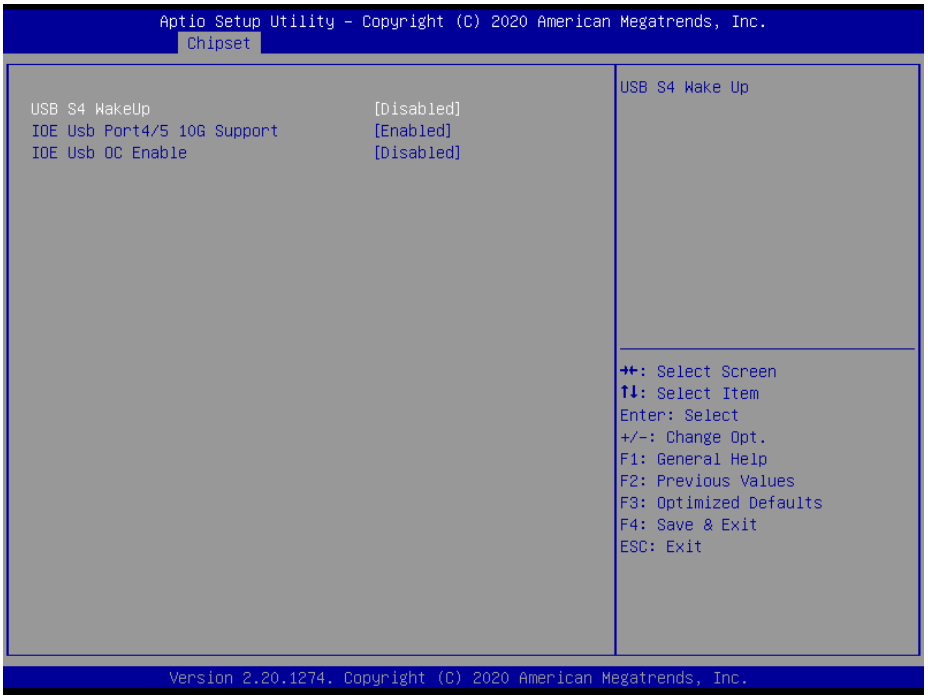
PEA2 Control	Disabled Enabled**[Default]**	PEA2 Control.
PEA3 Control	Disabled Enabled**[Default]**	PEA3 Control.
PEA4 Control	Disabled Enabled**[Default]**	PEA4 Control.
DN Port PEXRST# CTL	Disabled**[Default]** Enabled	To control the PEXRST of DN ports.
Dn ports Rst	Disabled**[Default]** Enabled	Dn ports Rst.
BootSeq-ErrorClear	Disabled Enabled**[Default]**	Enable to clear AER error status for PEXRST in IOE Boot Sequence.
MaxPayloadSize 128B for IOE	Auto Enabled**[Default]**	The implement for this is to change the MaxPayloadSize Supported field of PEEP to Max128B.

3.6.3.3.2 IOE SATA Drive Setup



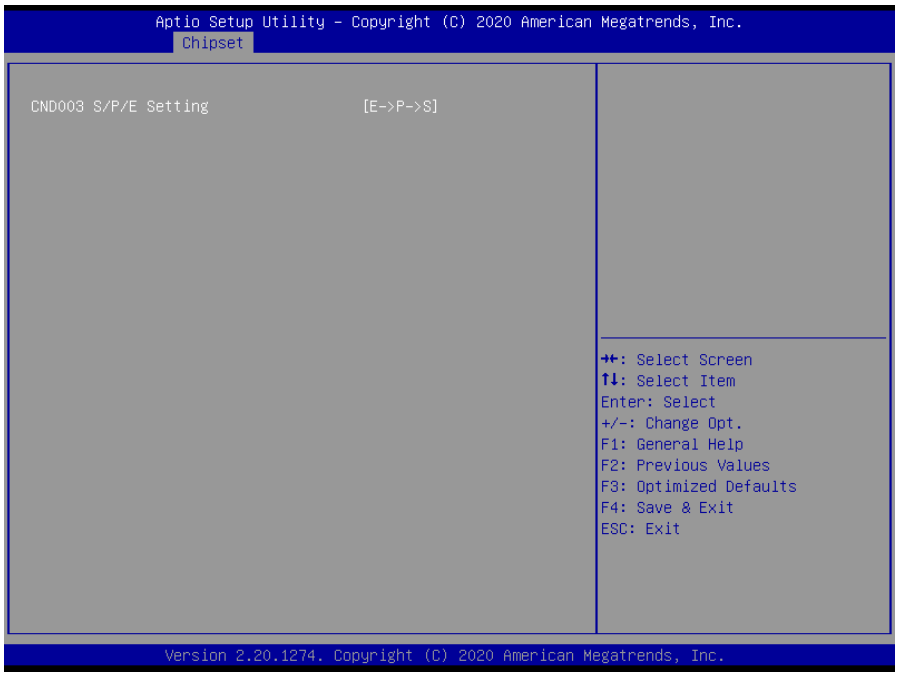
Item	Option	Description
CND003 SATA Controller	Disabled Enabled**[Default]**	Select whether to enable or disable SATA controller.
Configure SATA as	IDE AHCI**[Default]**	Select IDE/AHCI/RAID Mode. NOTE: Device driver support is required for AHCI or RAID. Depending on how the hard disk image was installed, changing this setting may prevent the system from booting.
Force SATA Speed setting	Gen1 Gen2 Gen3**[Default]**	Gen1/Gen2/Gen3.

3.6.3.3.3 IOE USB Drive Setup



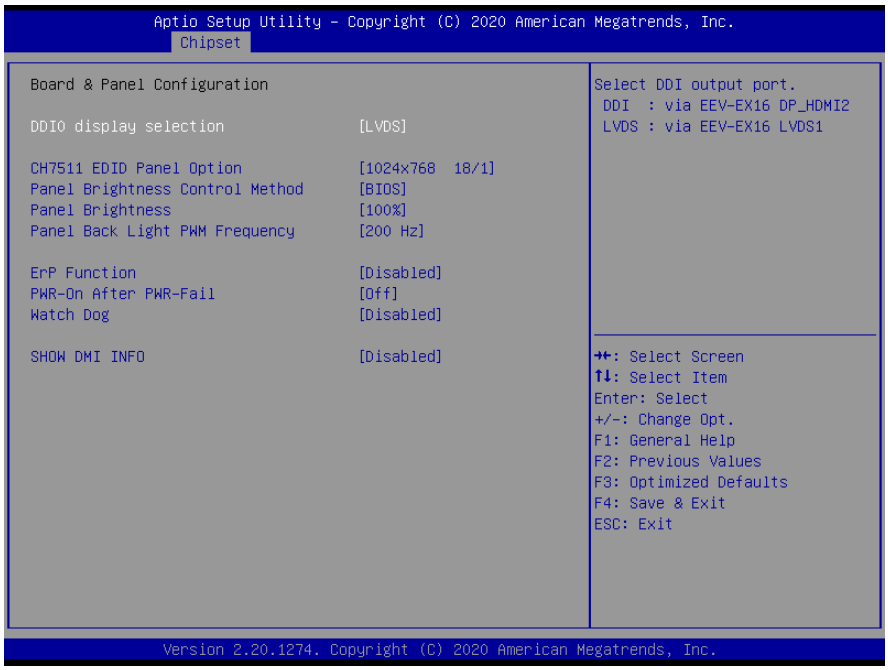
Item	Option	Description
USB S4 WakeUp	Disabled**[Default]** Enabled	USB S4 Wake Up.
IOE Usb Port4/5 10G Support	Disabled Enabled**[Default]**	IOE Usb Port4/5 10G Support.
IOE Usb OC Enable	Disabled**[Default]** Enabled	IOE Usb OC Enable.

3.6.3.3.4 IOE SPE Value Setting



Item	Option	Description
CND003 S/P/E Setting	Manual S P->S E->P->S**[Default]**	CND003 S/P/E Setting.

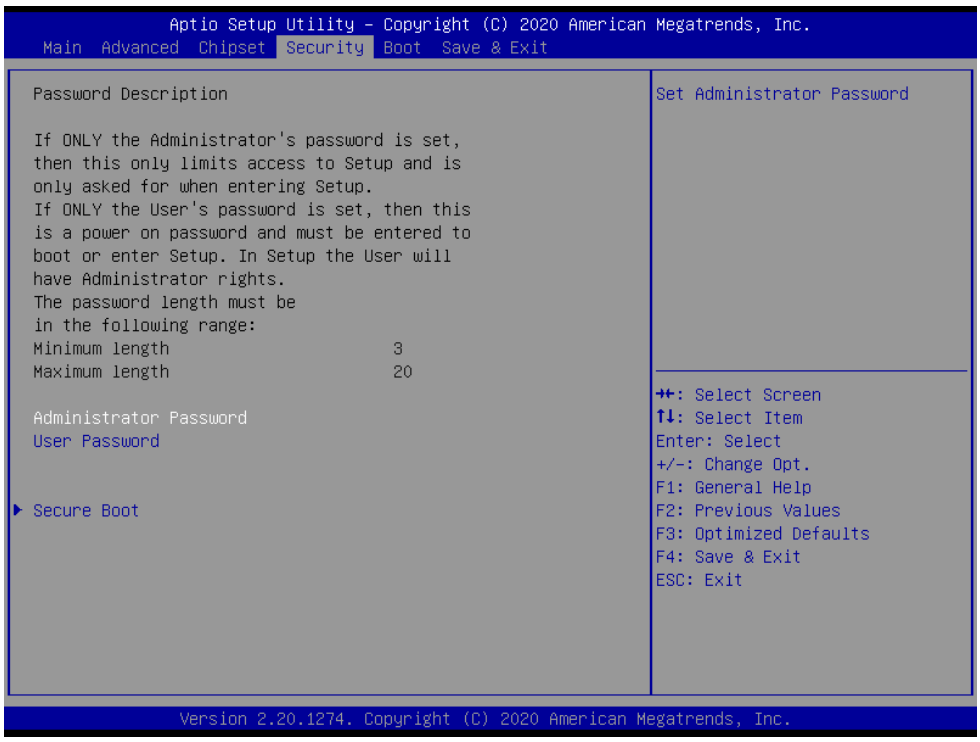
3.6.3.4 Board & Panel Configuration



Item	Option	Description
DDIO display selection	DDI LVDS**[Default]**	Select DDI output port. DDI: via EEV-EX16 DP_HDMI2 LVDS: via EEV-EX16 LVDS1.
CH7511 EDID Panel Option	1024x768 24/1 800x600 18/1 1024x768 18/1**[Default]** 1366x768 18/1 1024x600 18/1 1280x800 18/1 1920x1200 24/2 1920x1080 18/2 1280x1024 24/2 1440x900 18/2 1600x1200 24/2 1366x768 24/1 1920x1080 24/2 1680x1050 24/2	Port1-EDP to LVDS (Chrotel 7511) Panel EDID Option.
Panel Brightness Control Method	BIOS**[Default]** OS Driver	Panel Brightness Control Method. 1.BIOS 2.OS Driver.
Panel Brightness	00% 25%	Select Panel(eDP/LVDS) back light PWM duty.

	50% 75% 100%**[Default]**	
Panel Back Light PWM Frequency	200 Hz**[Default]** 300 Hz 400 Hz 500 Hz 700 Hz 1 kHZ 2 kHZ 3 kHZ 5 kHZ 10 kHZ 20 kHZ	Select Panel(eDP/LVDS) back light PWM Frequency.
ErP Function	Disabled**[Default]** Enabled	ErP Function (Deep S5).
PWR-On After PWR-Fail	Off**[Default]** On Last state	Power-loss Recovery on ATX mode. Depends on the module board setting of SW1: SW1 1-4 off-ATX mode SW1 1-4 off-AT mode On AT mode, this function is not effect and always power on.
Watch Dog	Disabled**[Default]** 30 sec 40 sec 50 sec 1 min 2 min 10 min 30 min	Select WatchDog.
SHOW DMI INFO	Disabled**[Default]** Enabled	SHOW DMI INFO.

3.6.4 Security



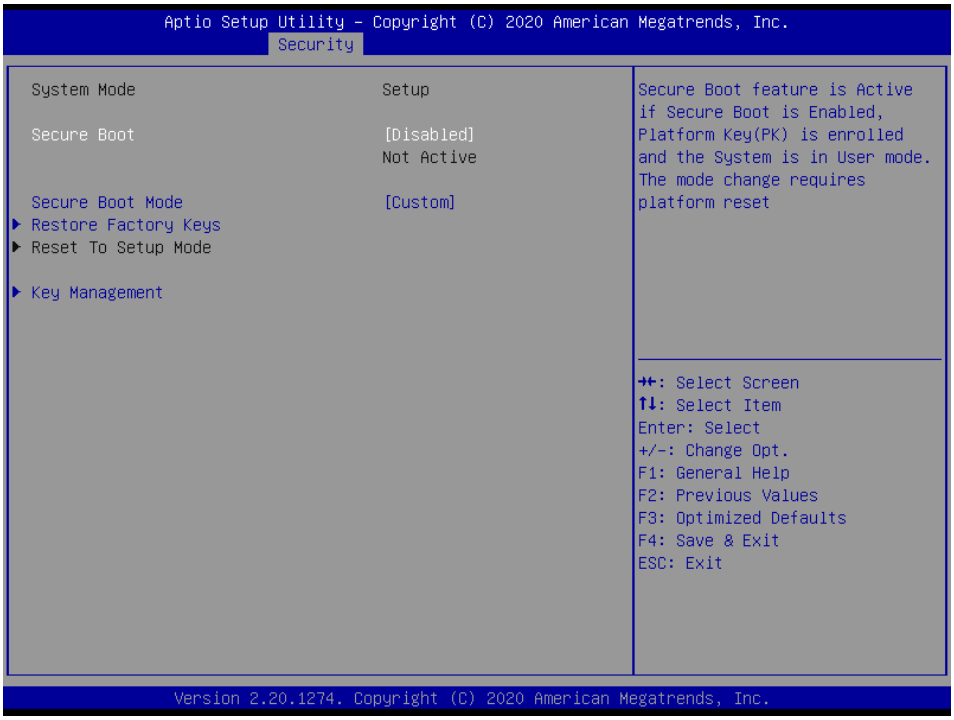
- **Administrator Password**

Set setup Administrator Password

- **User Password**

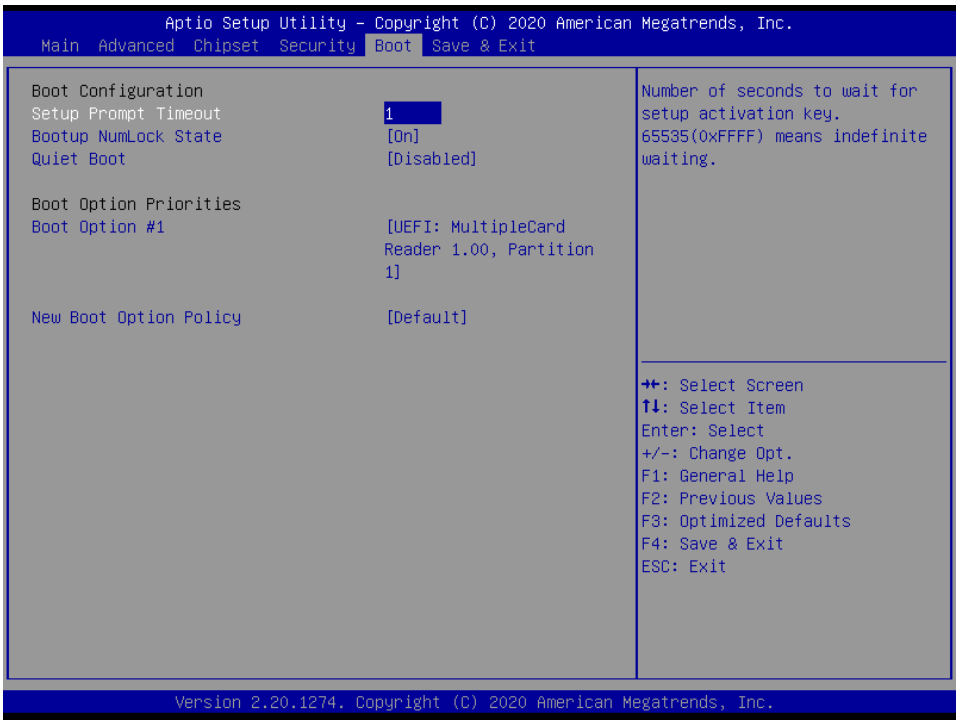
Set User Password

3.6.4.1 Secure Boot



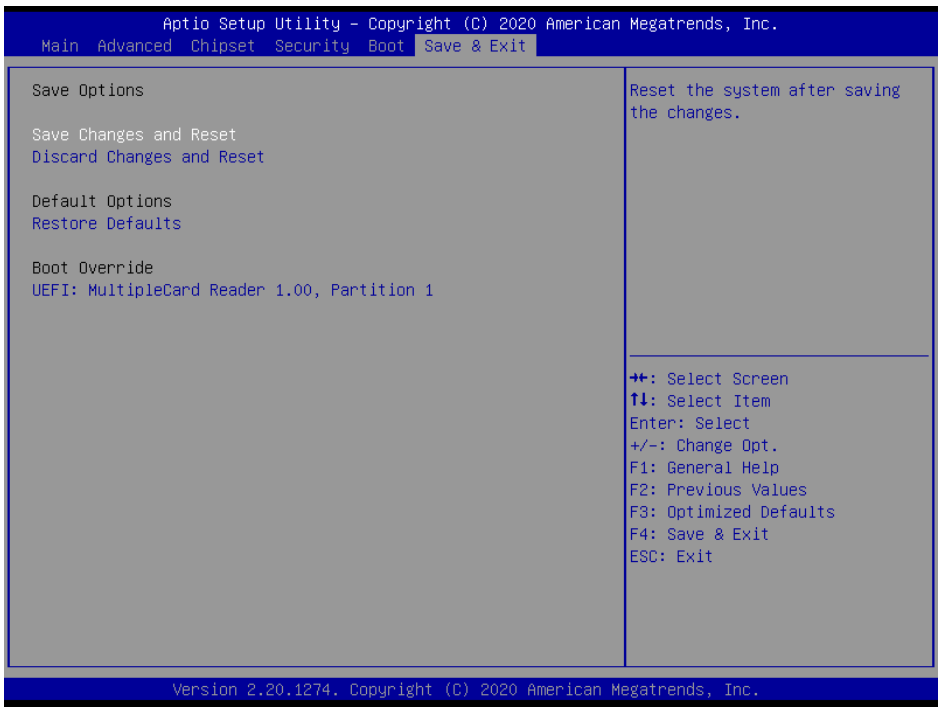
Item	Option	Description
Secure Boot	Disabled**[Default]** Enabled	Secure Boot feature is Active if Secure Boot is Enabled, Platform Key(PK) is enrolled and the System is in User mode. The mode chagne requires platform reset.
Secure Boot Mode	Standard Custom**[Default]**	Secure Boot mode selector: Standard/Custom.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

3.6.5 Boot



Item	Option	Description
Setup Prompt Timeout	1~ 65535	Number of seconds to wait for setup activation key. 65535(0xFFFF) means indefinite waiting.
Bootup NumLock State	On**[Default]** Off	Select the Keyboard NumLock state
Quiet Boot	Disabled**[Default]** Enabled	Enables or disables Quiet Boot option
New Boot Option Policy	Default**[Default]** Place First Place Last	Controls the placement of newly detected UEFI boot options.
Boot Option #1	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

Any changes made to BIOS settings during this session of the BIOS setup program are discarded. The setup program then exits and reboots the controller.

3.6.6.3 Restore Defaults

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.

4. Drivers Installation

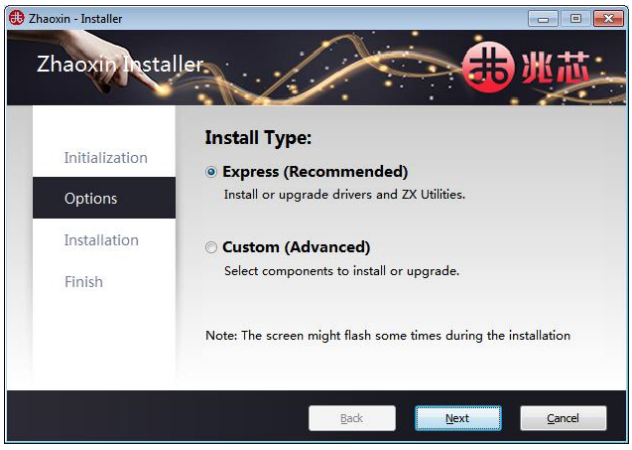
Note: Installation procedures and screen shots in this section are for your reference and may not be exactly the same as shown on your screen.

4.1 Install VGA Driver

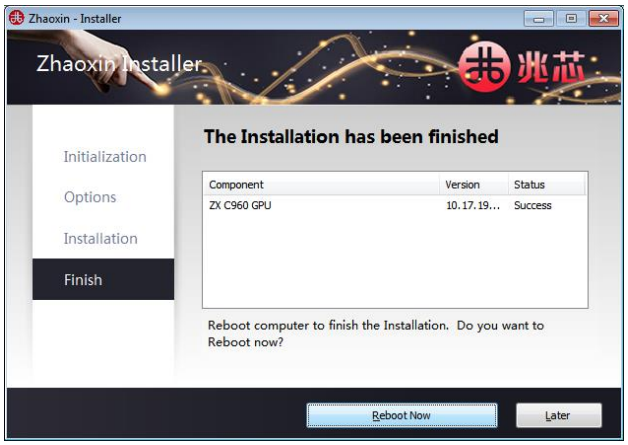
All drivers can be found on the Avalue Official Website:

http://www.avalue.com.tw.

Note: The installation procedures and screen shots in this section are based on Windows 7 operation system.



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



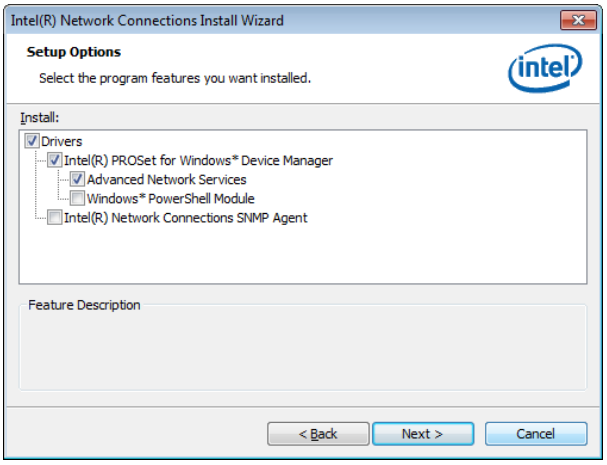
Step 2.

Click **Reboot Now** to complete setup.

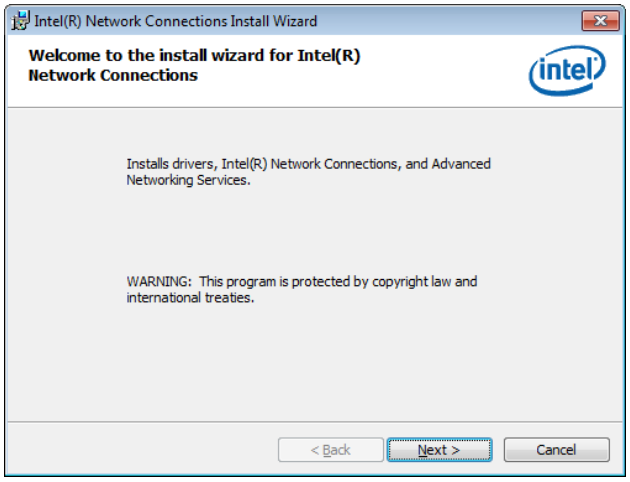
4.2 Install Ethernet Driver

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

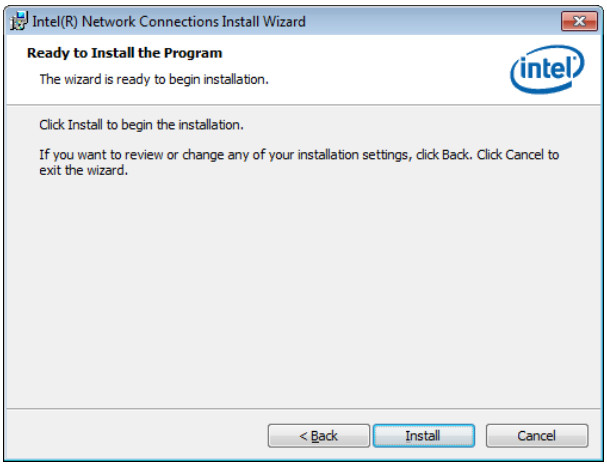
Note: The installation procedures and screen shots in this section are based on Windows 7 operation system.



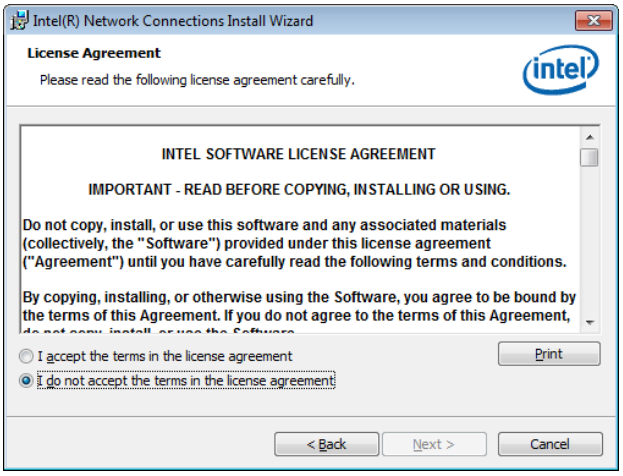
Step 3. Click **Next** to continue setup.



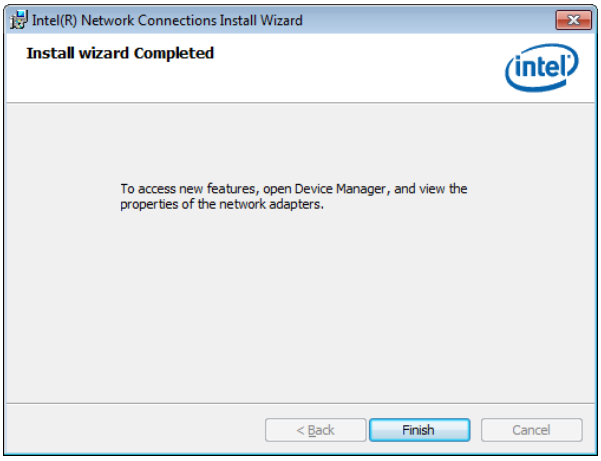
Step 1. Click **Next**.



Step 4. Click **Install**.



Step 2. Click **Next**.



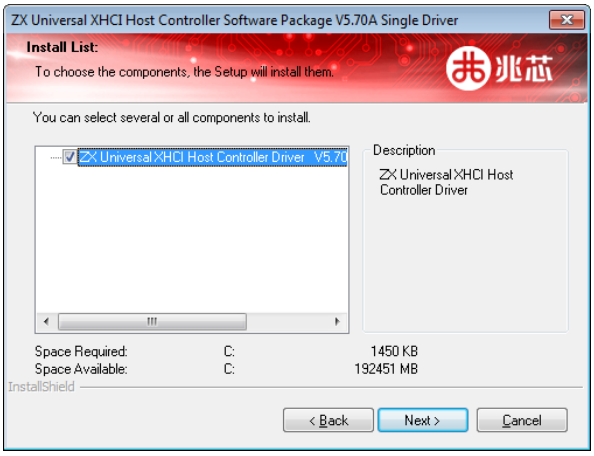
Step 5. Click **Finish** to complete the setup.

4.3 Install USB3.0 Driver

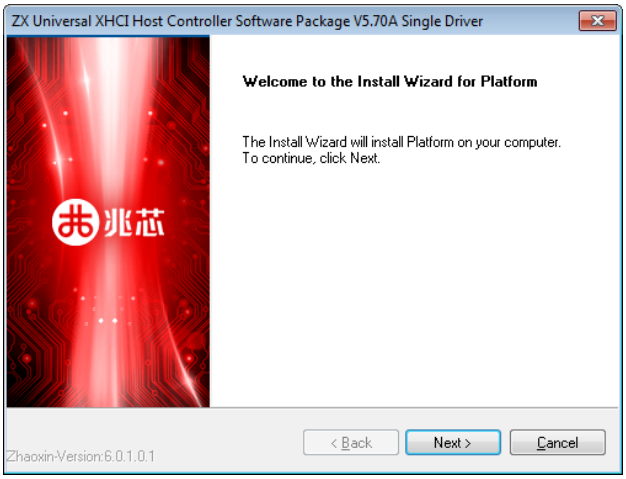
All drivers can be found on the Avalue Official Website:

http://www.avalue.com.tw.

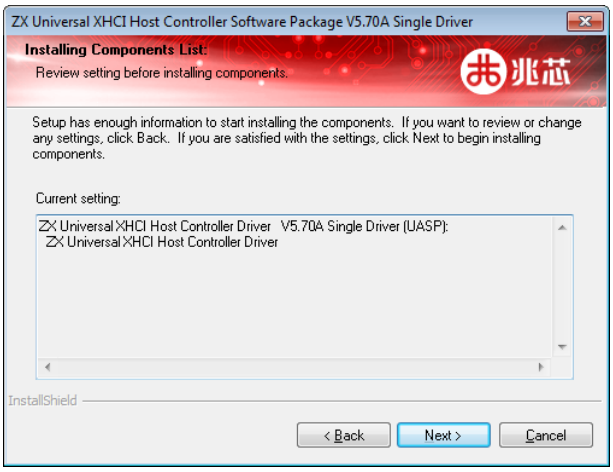
Note: The installation procedures and screen shots in this section are based on Windows 7 operation system.



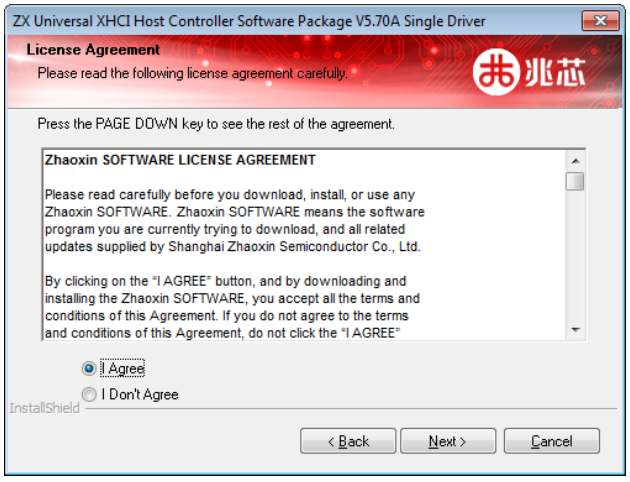
Step 3. Click **Next**.



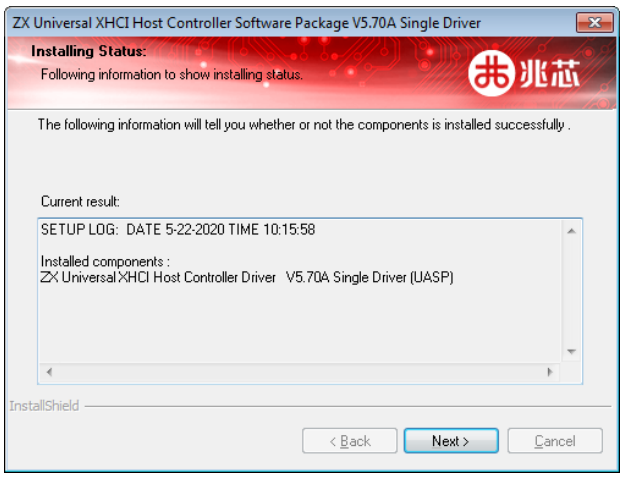
Step 1. Click **Next** to continue installation.



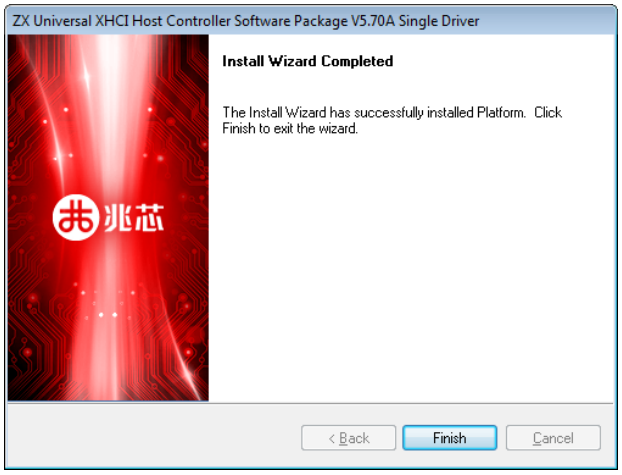
Step 4. Click **Next**.



Step 2. Click **Next**.

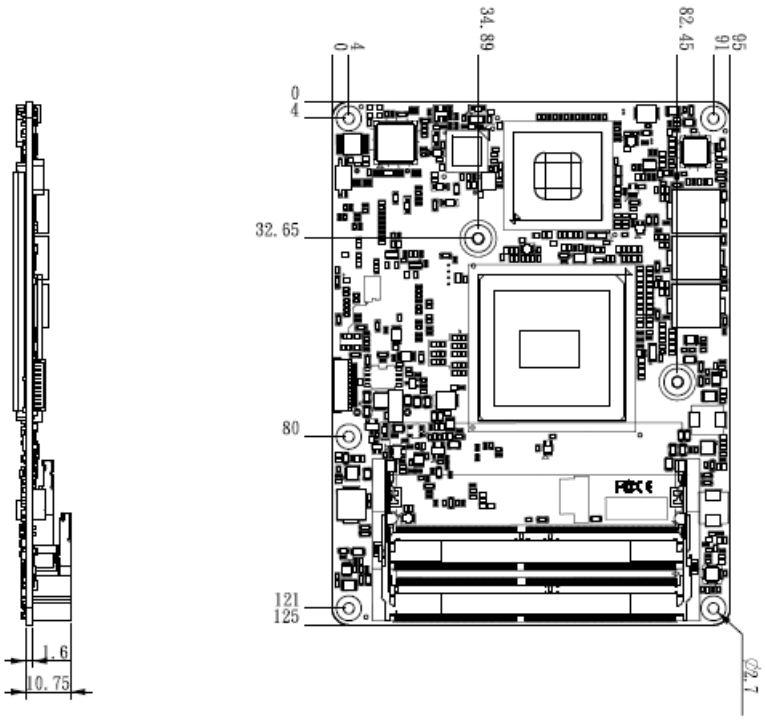


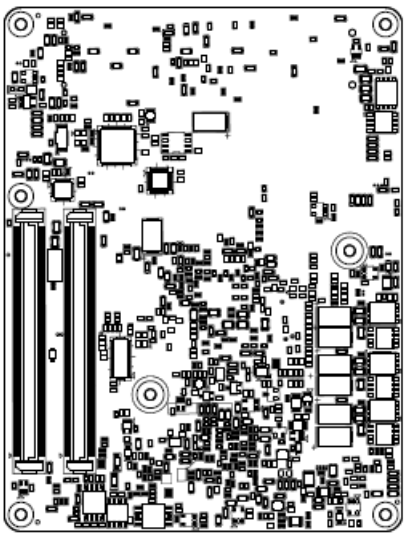
Step 5. Click **Next**.



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

5. Mechanical Drawing





Unit: mm