

EMX-KBLU2P

6th/7th Gen Intel® Core™ SoC i7/i5/i3 & Celeron® BGA
Onboard Processor Thin Mini ITX Motherboard

User's Manual



4th Ed –25 January 2022

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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 UNDESIRE 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.

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Notice

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

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

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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 EMX-KBLU2P motherboard
- 1 x SATA cable
- 1 x SATA power cable
- 1 x I/O shield
- 1 x Heatsink



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

1.3 Document Amendment History

Revision	Date	By	Comment
1 st	October 2018	Avalue	Initial Release
2 nd	November 2019	Avalue	Update System Specifications
3 rd	February 2021	Avalue	Update Setting Jumpers & Connectors
4 th	January 2022	Avalue	Update System Specifications

1.4 Manual Objectives

This manual describes in details Avalue Technology EMX-KBLU2P 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 EMX-KBLU2P 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	Onboard 6th/7th Gen Intel® Core™ SoC i7/i5/i3 & Celeron® BGA Processor
BIOS	AMI uEFI BIOS, 128Mbit SPI Flash ROM
I/O Chip	EC IT8528E
System Memory	Two 260-pin DDR4 2133/2400 MHz SO-DIMM socket, supports up to 32GB Max (non ECC only)
Watchdog Timer	H/W Reset, 1sec. – 65535sec./min. 1sec. or 1min. step
EEPROM	AMI uEFI BIOS, 128Mbit SPI Flash ROM
H/W Status Monitor	CPU temperature monitoring Voltages monitoring CPU fan speed control
Expansion	1 x M.2 Type B 3042/2242/2260/2280 (with 2 x PCIe x 1 (default) or 1 x PCIe x 2 (By OEM BIOS ME SET), USB 2.0, SATA Signal) with 1 x SIM card slot, support WWAN+GNSS or SSD. 1 x M.2 Type A 2230 support WiFi module, 1 x PCIe x 1, USB 2.0 Signal) 1 x PCIe x 1
S3/S4	Yes (S0/S3/S4/S5)
I/O	
USB	4 x USB 3.0, 4 x USB 2.0
GPIO	16-bits GPIO
Display	
Chipset	Intel® Processor Graphics
Resolution	1 x HDMI 1.4b: 3840 x 2160 @ 30 Hz, 2560 x 1600 @ 30 Hz 2 x DP: DisplayPort 1.2a : 4096x2160 @ 60Hz (1 x HDMI/DP, 1 x DP++) 2CH 18/24bits LVDS 1920 x 1080 (Chrontel. CH7511B eDP to LVDS Converter) Co-lay eDP 1.3: 4096x2160 BOM optional
Multiple Display	Triple Display
HDMI	1 x HDMI (HDMI1 share with DP1)
LCD Interface	Dual channel 18/24-bits LVDS (Chrontel CH7511B eDP to LVDS) or eDP (optional)
Audio	
AC97 Codec	Realtek ALC888S HD Audio Decoding Controller
Audio Amp	TI TPA3113D2PWP Stereo Class-D 6W x 2
Ethernet	
LAN Chip	1 x Intel® I219LM Gigabit Ethernet PHY 1 x Intel® I210IT PCIe Gigabit Ethernet
Ethernet	Gigabit Ethernet

Interface	
Internal I/O Connectors	
Fan	1 x 1 x 4 pin, pitch 2.54mm CPU fan connector with smart fan function supported
System 1 I2C	1 x 1 x 5 pin, pitch 2.00mm, +3.3S Level
Buzzer	Onboard
CMOS Battery	1 x horizontal type battery connector (Battery cable 170mm length)
Power ON	1 x 2 x 5 pin, pitch 2.54mm connector for front panel 1 1 x 2 x 5 pin, pitch 2.54mm connector for front panel 2
Audio	1 x 2 x 5 pin, pitch 2.54mm connector for front Audio
External I/O Connector	<p>Storage:</p> <p>1 x M.2 Type B 3042/2242/2260/2280 (with 2 x PCIe x 1 (default) or 1 x PCIe x 2 (By OEM BIOS ME Setting), USB 2.0, SATA Signal) with 1 x SIM card slot, support WWAN+GNSS or SSD.</p> <p>1 x M.2 Type A 2230 support WiFi module, 1 x PCIe x 1, USB 2.0 Signal)</p> <p>2 x SATA III</p> <p>2 x SATA power connectors</p> <p>COM:</p> <p>COM 1 & COM2</p> <p>COM 1 & COM2 support 2 x RS422/485 connector, RS422/485 by BIOS setting</p> <p>2 x 2 x 3 pin, pitch 2.00mm connector for support RS422/485 connector, Pin 5 with / +5V Supported</p> <p>COM3~6:</p> <p>4 x 2 x 5 pin, pitch 2.00mm connector for COM2~6: support RS-232 connector, Pin 9 with / +5V & +12V Supported</p> <p>2 x 2 x 5 pin, pitch 2.54mm connector for 4 USB 2.0</p> <p>1 x 2 x 10 pin, pitch 2.00mm connector for GPIO: 16 bits & +3.3S Level SMBus</p> <p>1 x 2 x 4 pin, pitch 2.00mm connector for BIOS SPI</p> <p>1 x 2 x 5 pin, pitch 2.00mm connector for EC SPI</p> <p>1 x 2 x 5 pin, pitch 2.0mm connector for LPC</p> <p>1 x horizontal type battery connector (Battery cable 170mm length)</p> <p>1 x 2 x 5 pin, pitch 2.54mm connector for front panel 1</p> <p>1 x 2 x 5 pin, pitch 2.54mm connector for front panel 2</p> <p>1 x 2 x 20 pin, pitch 1.25mm connector for LVDS (matching connector DF13-40DS-1.25C)</p> <p>1 x 2 x 10 pin, pitch 1.25mm connector for eDP(matching connector is DF13-20DS-1.25C)</p> <p>1 x 1 x 5 pin, pitch 2.00mm Wafer connector for LCD inverter backlight connector (5V/12V) (matching connector PHR-5)</p> <p>1 x 1 x 3 pin, pitch 2.54mm connector LCD backlight brightness adjustment (PWM/DC)</p>

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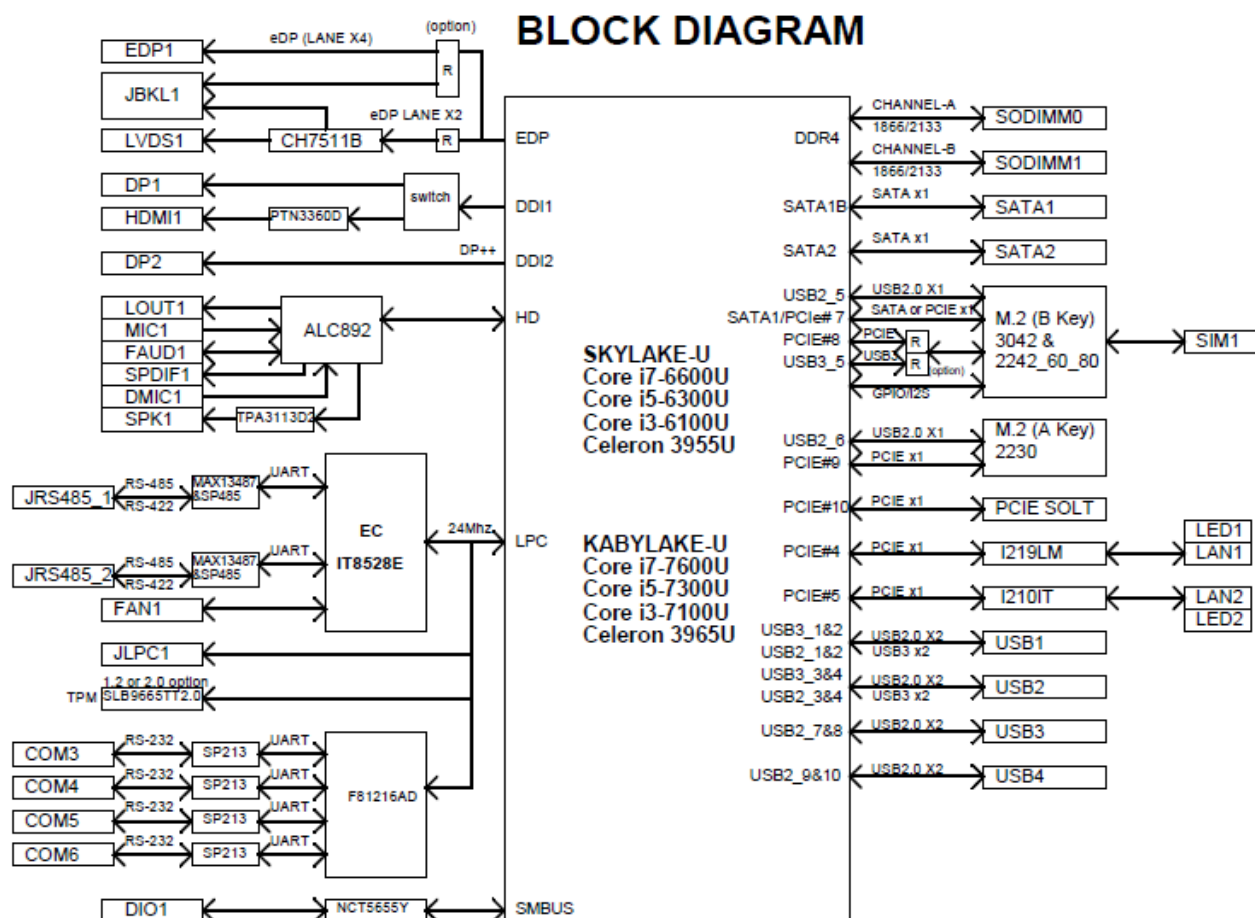
	1 x 2 x 5 pin, pitch 2.54mm connector for front Audio 1 x 3 pin, pitch 2.54mm connector for S/PDIF 1 x 4 pin, pitch wafer 2.00mm connector for 6W x 2 Speaker 1 x 3 pin, pitch 2.00mm connector for CMOS clear 1 x 1 x 4 pin, pitch 2.54mm CPU fan connector with smart fan function supported 2 x 1 x 4 pin, pitch 2.00mm connector for LAN Activity Indicator LED 1 x 1 x 5 pin, pitch 2.54mm for Digital MIC in 1 x 2 x 2 pin, pitch 4.20mm connector for power input connector 1 x 1 x 3 pin, pitch 2.54mm connector for AT/ATX mode Fanless Operating
Rear I/O Connectors	
USB	4 x USB3.0
LAN	1 x Intel® I219LM Gigabit Ethernet PHY 1 x Intel® I210IT PCIe Gigabit Ethernet
HDMI	1 x HDMI (HDMI1 share with DP1)
LED	2 x 1 x 4 pin, pitch 2.00mm connector for LAN Activity Indicator LED
Rear Side External I/O Connector	2 x RJ-45 4 x USB 3.0 1 x DP 1 x HDMI 1 x DP++ 1 x Mic-In and 1 x Line-out 1 x DC Jack lockable connector type
Mechanical & Environmental	
Power Requirement	DC in +12V~24V
ACPI	Single power ATX Support S0, S3, S4, S5 ACPI 5.0 Compliant
Power Type	AT / ATX mode Switchable Through Jumper
Operating Temp.	-20~ 70°C (-68 ~ 158°F) with heatsink, under testing 0.5 m/s air speed (0.2 m/s air speed testing supports -20~ 60°C)
Storage Temp.	-40 ~ +75°C
Operating Humidity	0%~90% relative humidity, non-condensing
Size (L x W)	6.7" x 6.7" (170mm x 170mm)
Weight	0.40 kg
OS Support	Win10, Linux (Intel 7th CPU only be supported by Linux kernel after 4.7)



Note: Specifications are subject to change without notice.

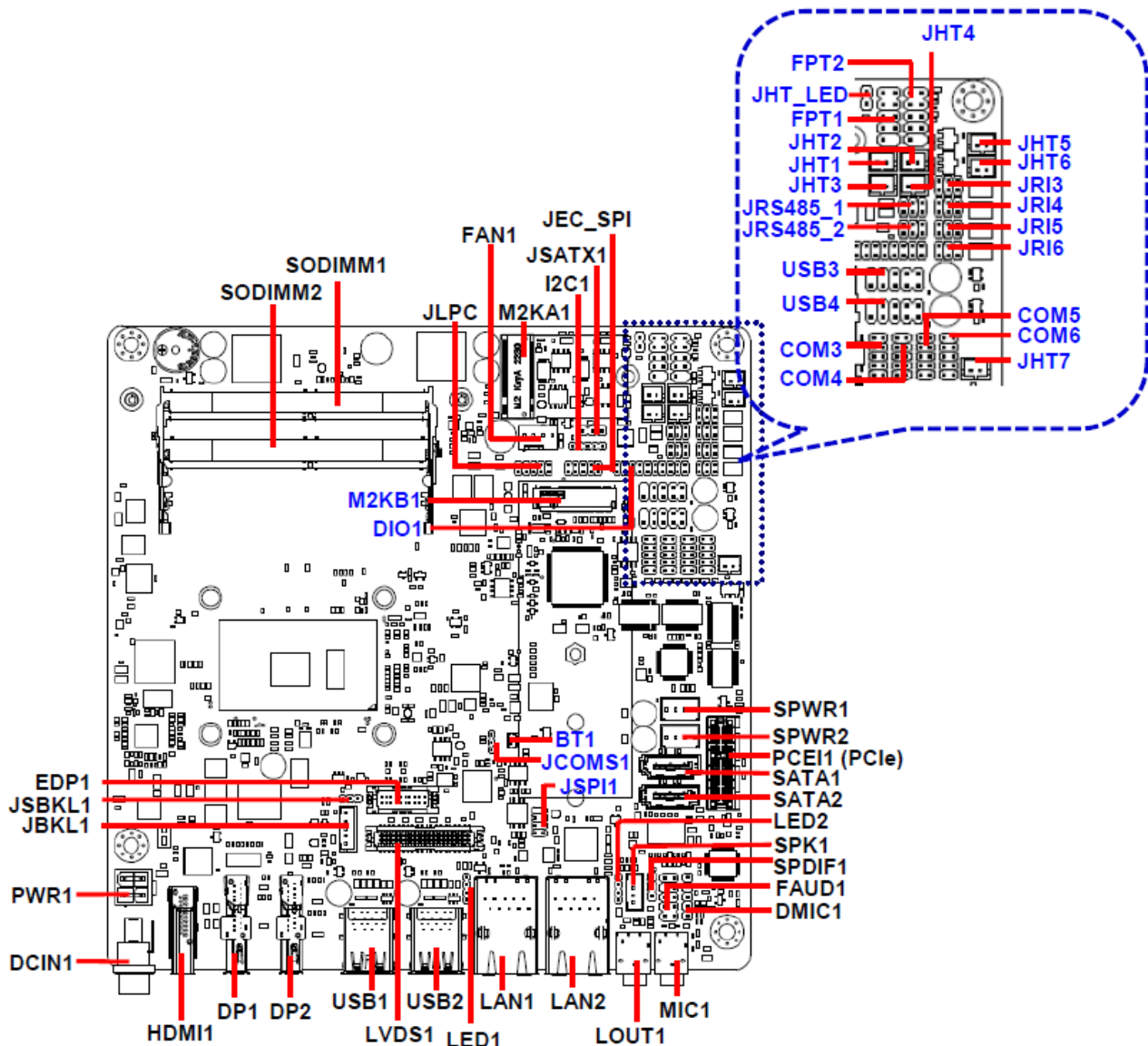
1.6 Architecture Overview—Block Diagram

The following block diagram shows the architecture and main components of EMX-KBLU2P.



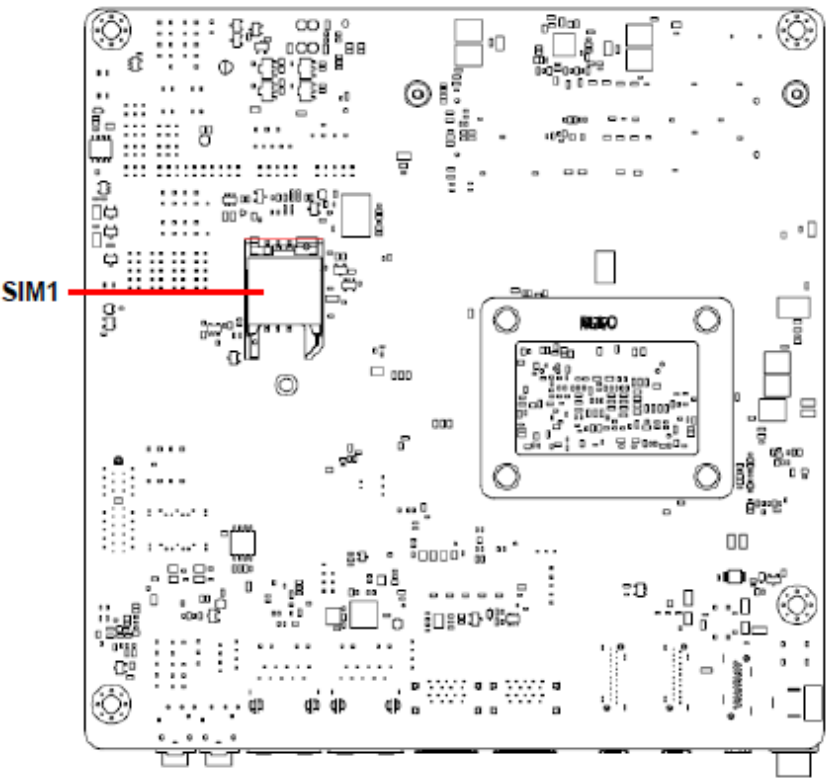
2. Hardware Configuration

2.1 Product Overview



Note:

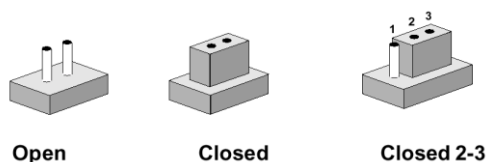
1. If M.2 Type B 3042/2242/2260/2280 using PCIe x2 device, it requires OEM BIOS ME setting; hence PCI1 slot is not workable.
2. HDMI1 & DP1 cannot function simultaneously , user can only choose to use HDMI1 or DP1.



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.



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



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
JRI3/4/5/6	Serial port 3/4/5/6 pin9 signal select	3 x 2 header, pitch 2.00mm
JSBKL1	LVDS Back Light power selection	3 x 1 header, pitch 2.00mm
JSATX1	AT/ATX Power Mode Select	3 x 1 header, pitch 2.54mm
JCOMS1	Clear CMOS	3 x 1 header, pitch 2.00mm

Connectors

Label	Function	Note
FPT1	Miscellaneous setting connector 1	5 x 2 header, pitch 2.54mm
FPT2	Miscellaneous setting connector 2	5 x 2 header, pitch 2.54mm
SODIMM1/2	206-pin DDR4 SO-DIMM socket	
FAUD1	Front Audio connector	5 x 2 header, pitch 2.54mm
JBKL1	LCD Inverter connector	5 x 1 wafer, pitch 2.00mm

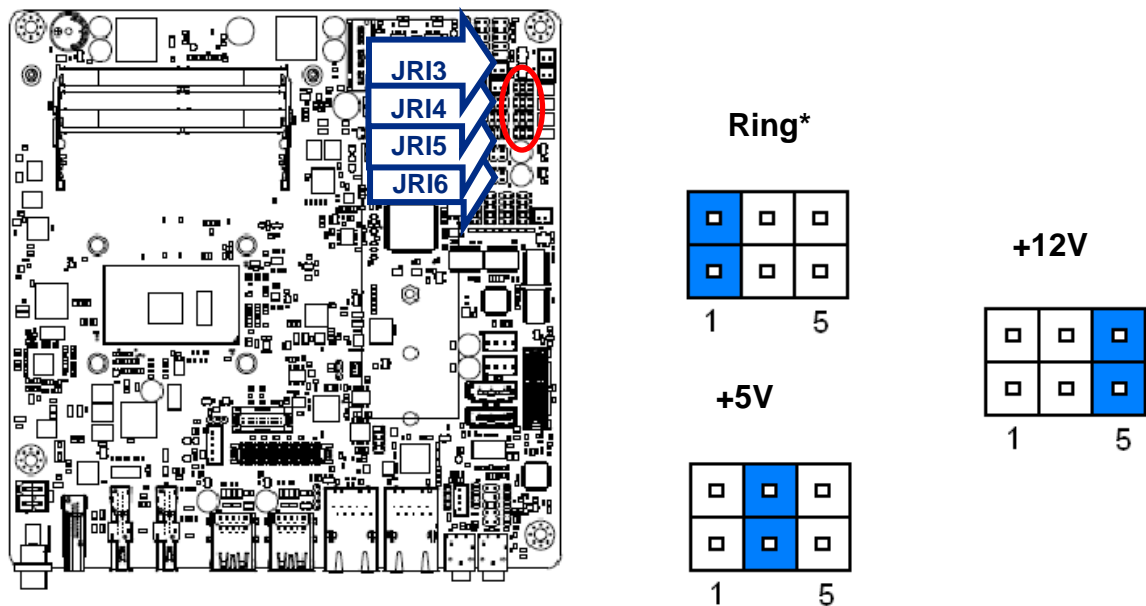
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		matching connector: PHR-5
JSPI1	SPI connector	4 x 2 header, pitch 2.00mm
JEC_SPI	EC Debug	5 x 2 header, pitch 2.00mm
COM3	Serial Port 3 connector	5 x 2 header, pitch 2.00mm
COM4	Serial Port 4 connector	5 x 2 header, pitch 2.00mm
COM5	Serial Port 5 connector	5 x 2 header, pitch 2.00mm
COM6	Serial Port 6 connector	5 x 2 header, pitch 2.00mm
DIO1	General purpose I/O connector	10 x 2 header, pitch 2.00mm
SPK1	Speaker connector	4 x 1 wafer, pitch 2.00mm
LVDS1	LVDS Connector	20 x 2 wafer, pitch 1.25mm matching connector: DF13-40DS-1.25C
USB1/2	USB connector 1/2	
USB3	USB connector 3	5 x 2 header, pitch 2.54mm
USB4	USB connector 4	5 x 2 header, pitch 2.54mm
SPDIF1	Sony/Philips Digital Interface	3 x 1 header, pitch 2.54mm
LAN1/2	RJ-45 Ethernet 1/2	
PCEI1	PCIe connector	
LED1	LAN LED indicator	4 x 1 header, pitch 2.00mm
LED2	LAN LED indicator	4 x 1 header, pitch 2.00mm
BT1	Battery connector	2 x 1 wafer, pitch 1.25mm
M2KA1	M.2 2230 Type A Slot	
M2KB1	M.2 3042/2242/2260/2280 Type B Slot	
DP1/2	DP connector 1/2	
EDP1	eDP_Panel connector	10 x 2 wafer, pitch 1.25mm
JRS485_1	Serial Port 1 RS485/422 Mode connector	3 x 2 header, pitch 2.00mm
JRS485_2	Serial Port 2 RS485/422 Mode connector	3 x 2 header, pitch 2.00mm
JLPC	LPC connector	5 x 2 header, pitch 2.00mm
DCIN1	DC Power-in connector	DC power plug 5.5 x 2.5 x 7.5mm
PWR1	Power connector	2 x 2 wafer, pitch 4.20mm
SATA1/2	Serial ATA connector 1/2	
SPWR1/2	SATA Power connector 1/2	4 x 1 wafer, pitch 2.54mm
I2C1	I2C connector	5 x 1 header, pitch 2.00mm
HDMI1	HDMI connector	

LOUT1	Line-out audio jack	
MIC1	Mic-in audio jack	
DMIC1	Mic-in connector	5 x 1 header, pitch 2.54mm
SIM1	SIM card slot	
JHT_LED	LED Indicator for Heater	2 x 1 header, Pitch 2.54mm
JHT1/2/3/4	CPU Heatsink Heater Connector	
JHT5/6	Back Plate Heatsink Heater Connector	
JHT7	Audio Heatsink Heater Connector	Optional
FAN1	CPU fan connector	4 x 1 wafer, pitch 2.54mm

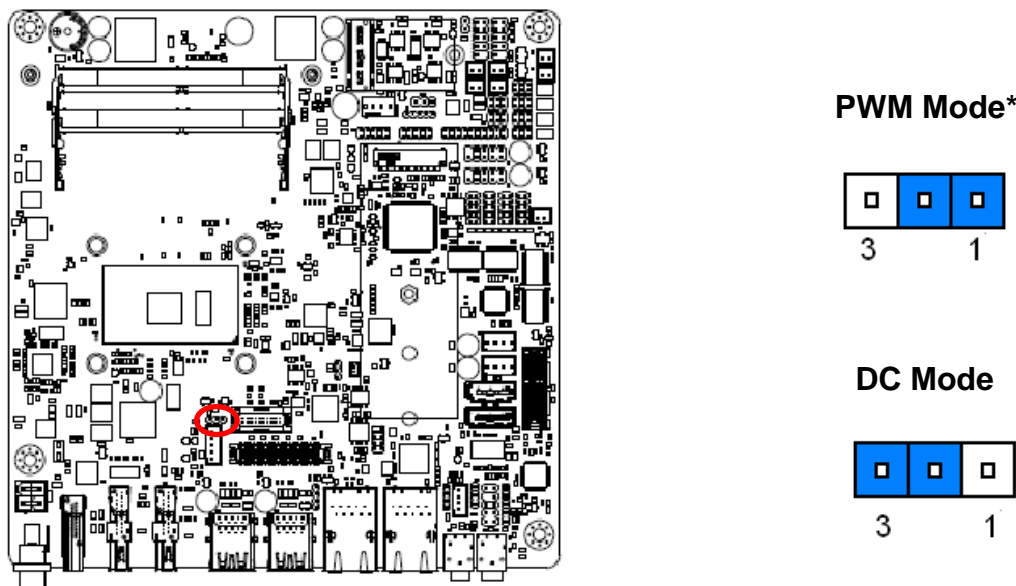
2.3 Setting Jumpers & Connectors

2.3.1 Serial port 3/4/5/6 pin9 signal select (JRI3/JRI4/JRI5/JRI6)



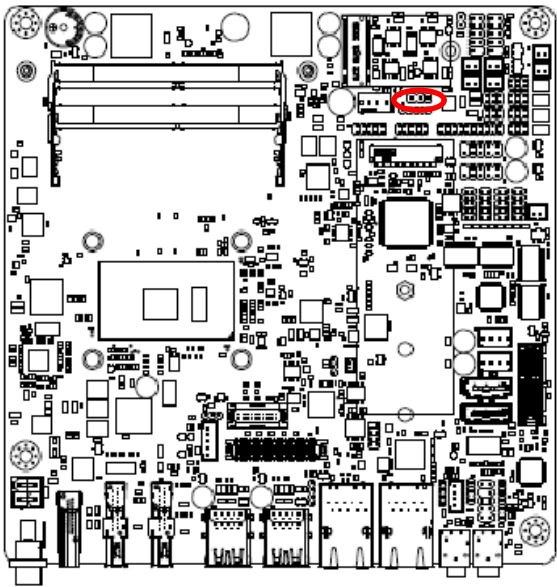
* Default

2.3.2 LVDS Back Light power selection (JSBKL1)

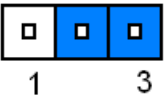


* Default

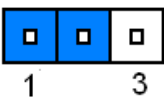
2.3.3 AT/ATX Power Mode Select (JSATX1)



AT

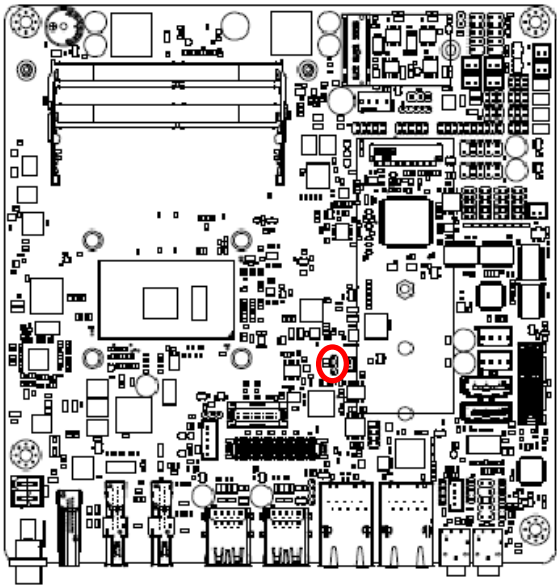


ATX*

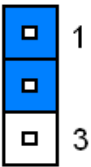


* Default

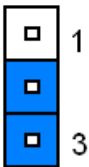
2.3.4 Clear CMOS (JCOMS1)



Protect*

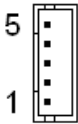
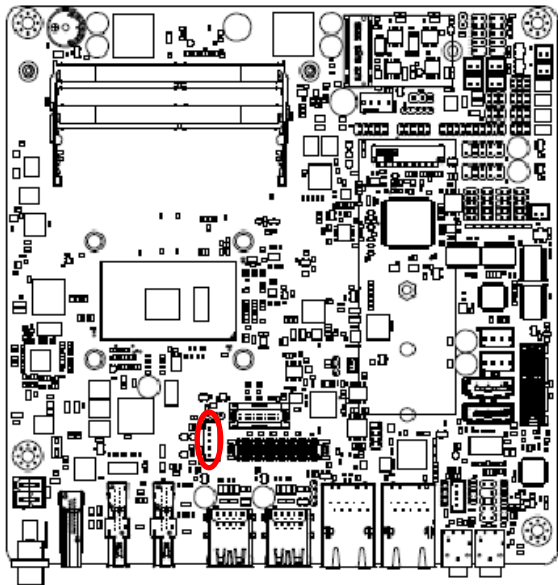


Clear CMOS



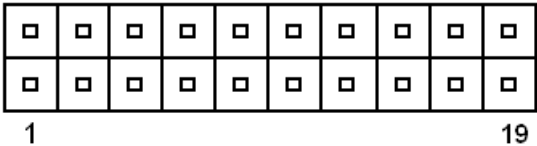
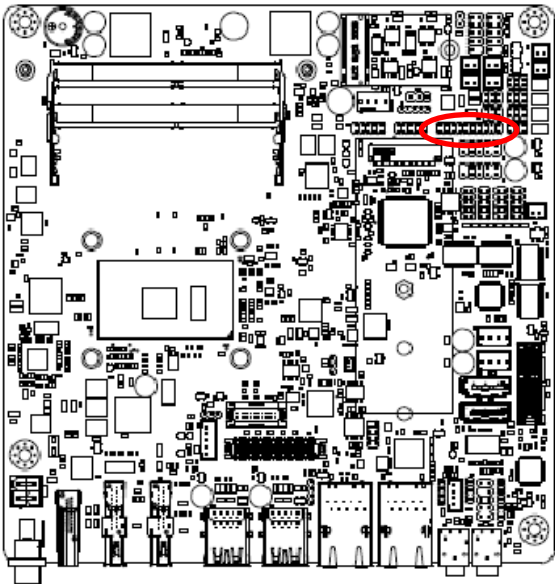
* Default

2.3.5 LCD Inverter connector (JBKL1)



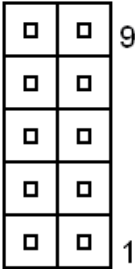
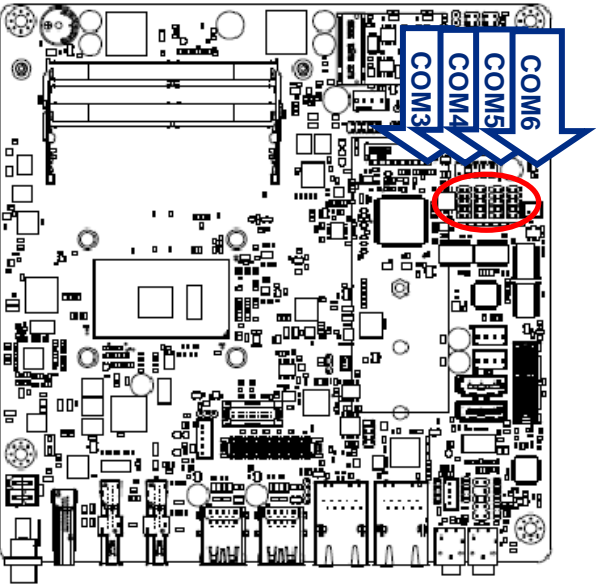
PIN	Signal
5	+5V
4	LVDS_BKLTCTL
3	LVDS_BKLT_EN
2	GND
1	+12V

2.3.6 General purpose I/O connector (DIO1)



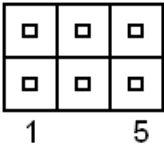
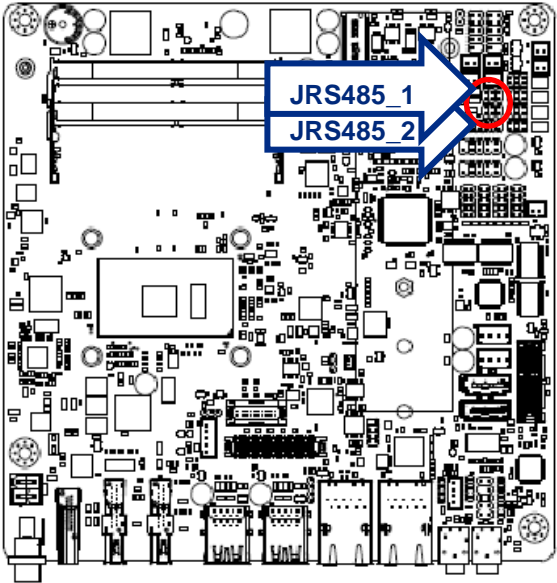
Signal	PIN	PIN	Signal
DI0	1	2	DO0
DI1	3	4	DO1
DI2	5	6	DO2
DI3	7	8	DO3
DI4	9	10	DO4
DI5	11	12	DO5
DI6	13	14	DO6
DI7	15	16	DO7
SMB_CLK_S	17	18	SMB_DATA_S
GND	19	20	+5V(Max current = 0.5A)

2.3.7 Serial port 3/4/5/6 connector (COM3-6)



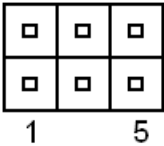
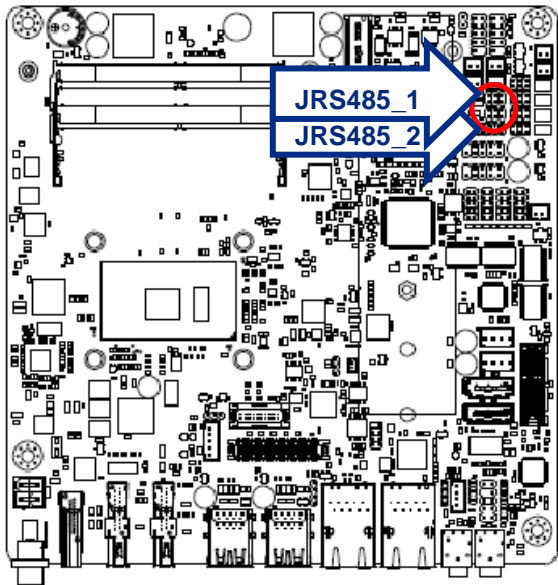
Signal	PIN	PIN	Signal
NC	10	9	RI#
CTS#	8	7	RTS#
DSR#	6	5	GND
DTR#	4	3	TXD
RXD	2	1	DCD#

2.3.8 Serial Port 1 422 Mode connector (JRS485_1/ 2)



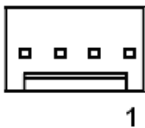
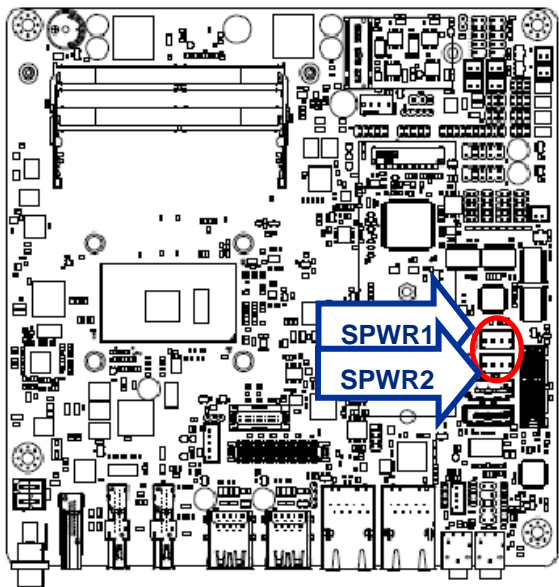
Signal	PIN	PIN	Signal
TX1-	1	2	RX1-
TX1+	3	4	RX1+
+5V (Max current = 0.5A)	5	6	GND

2.3.9 Serial Port 2 RS485 Mode connector (JRS485_1/ 2)



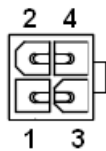
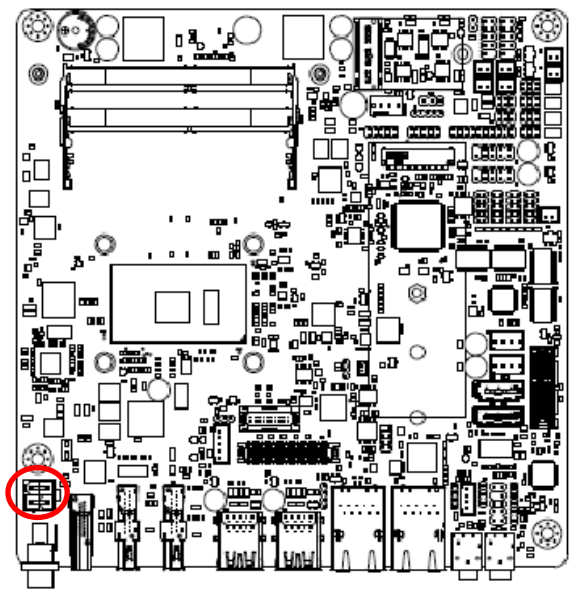
Signal	PIN	PIN	Signal
DATA-	1	2	
DATA+	3	4	
+5V (Max current = 0.5A)	5	6	GND

2.3.10 SATA Power connector 1/2 (SPWR1/2)



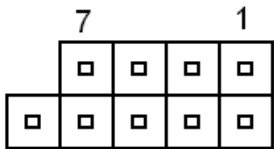
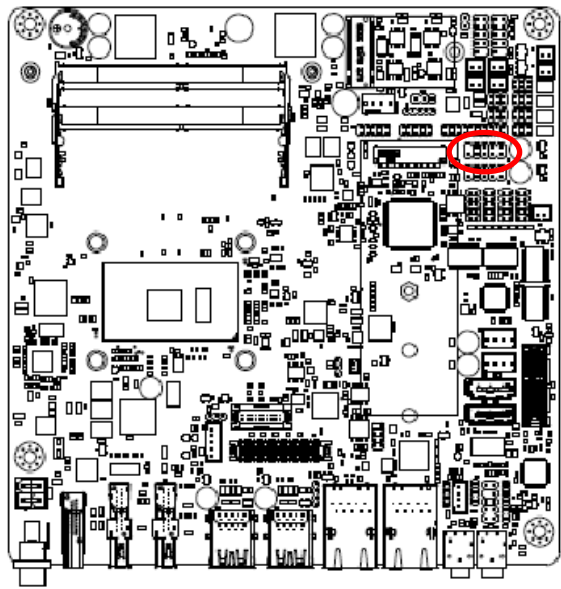
PIN	Signal
1	+V5
2	GND
3	GND
4	+V12

2.3.11 Power connector (PWR1)



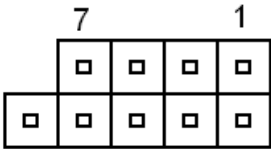
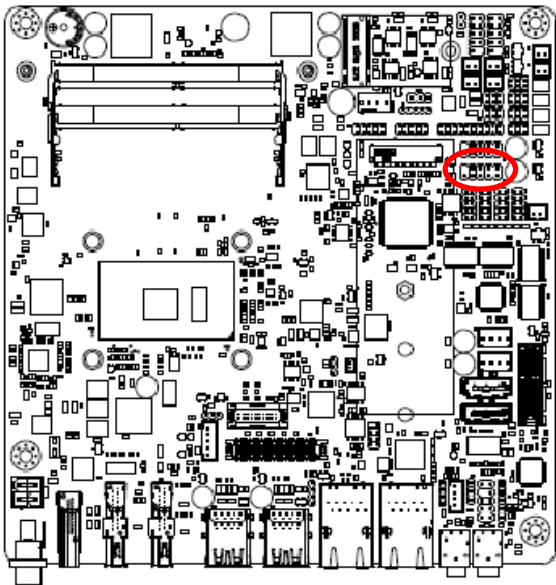
Signal	PIN	PIN	Signal
GND	2	4	+VIN
GND	1	3	+VIN

2.3.12 USB connector 3 (USB3)



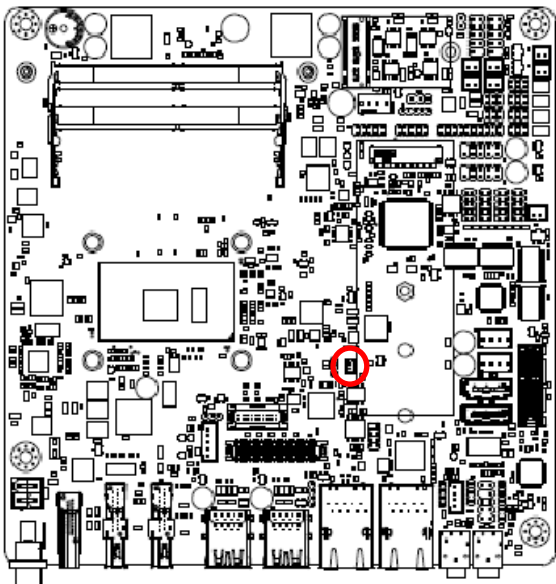
Signal	PIN	PIN	Signal
+V5A_USB7	1	2	+V5A_USB8
USB_DN7	3	4	USB_DN8
USB_DP7	5	6	USB_DP8
GND	7	8	GND
		10	NC

2.3.13 USB connector 4 (USB4)



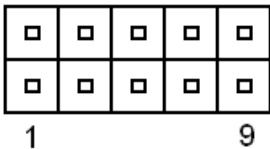
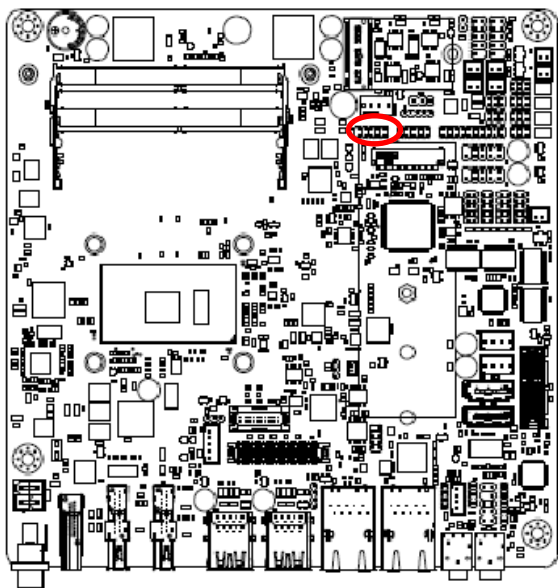
Signal	PIN	PIN	Signal
+V5A_USB9	1	2	+V5A_USB10
USB_DN9	3	4	USB_DN10
USB_DP9	5	6	USB_DP10
GND	7	8	GND
		10	NC

2.3.14 Battery connector (BT1)



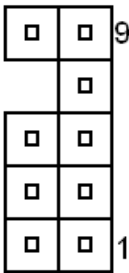
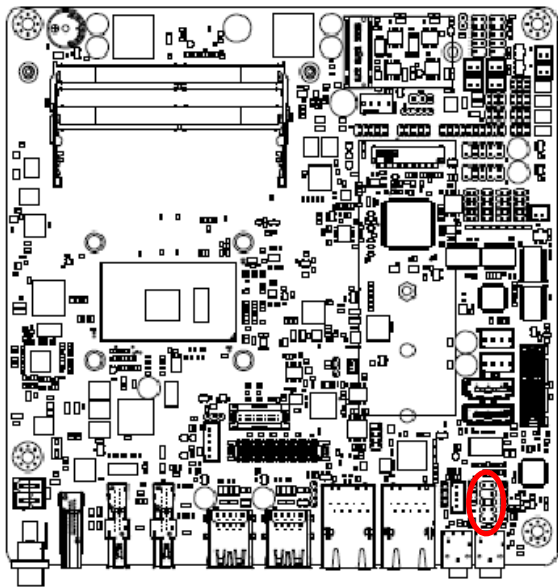
Signal	PIN
+3V	1
GND	2

2.3.15 LPC connector (JLPC)



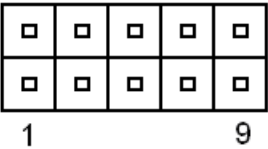
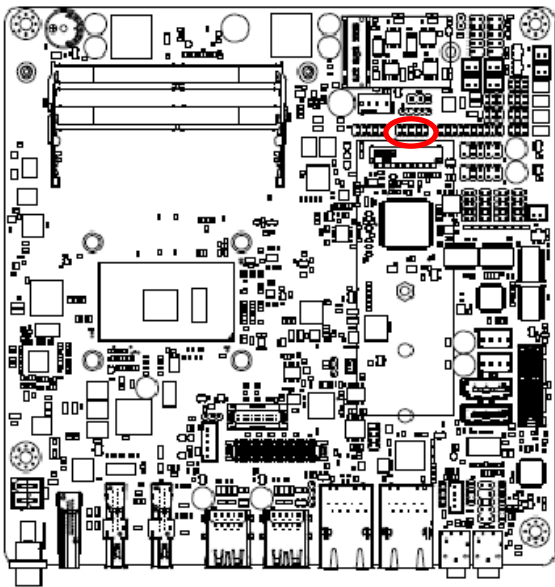
Signal	PIN	PIN	Signal
LPC_AD0	1	2	+3.3V
LPC_AD1	3	4	PCH_PLTRST#
LPC_AD2	5	6	LPC_FRAME#
LPC_AD3	7	8	LPC_CLK
LPC_SERIRQ	9	10	GND

2.3.16 Audio connector (FAUD1)



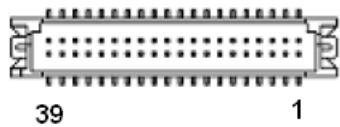
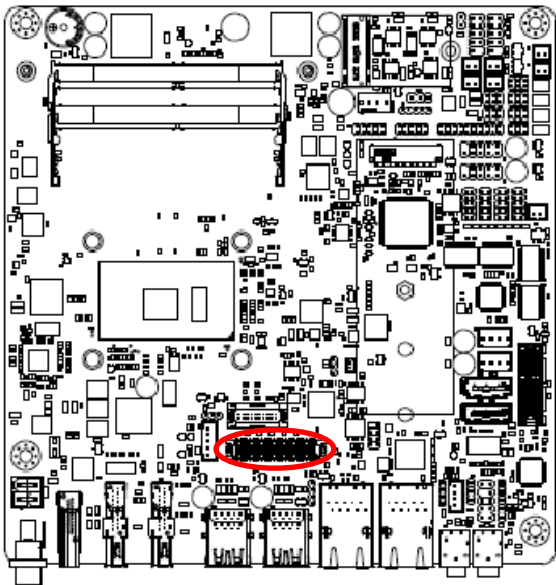
Signal	PIN	PIN	Signal
LINE2_JD	10	9	LINE2_LIN
		7	GND
MIC2_JD	6	5	LINE2_RIN
AUD_FRONT_DET	4	3	MIC2_RIN
GND	2	1	MIC2_LIN

2.3.17 EC Debug (JEC_SPI)



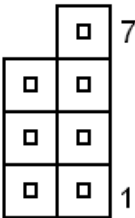
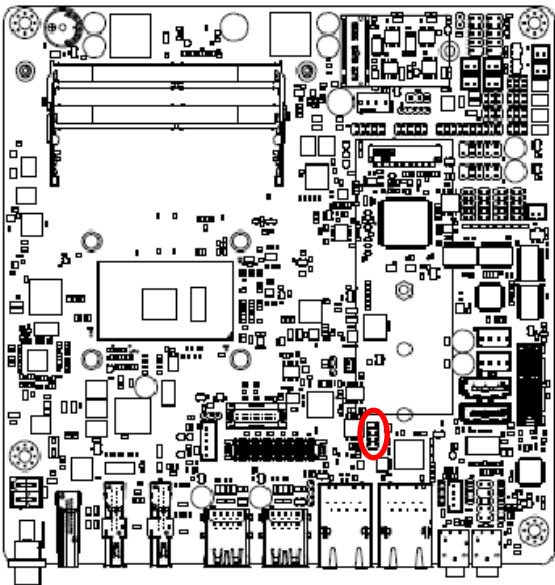
Signal	PIN	PIN	Signal
+3VSPI_EC	1	2	GND
EC_FSCE#	3	4	EC_FSCK
EC_FMISO	5	6	EC_FMOSI
EC_HOLD#	7	8	NC
EC_SMCLK	9	10	EC_SMDAT

2.3.18 LVDS connector (LVDS1)



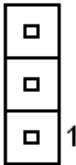
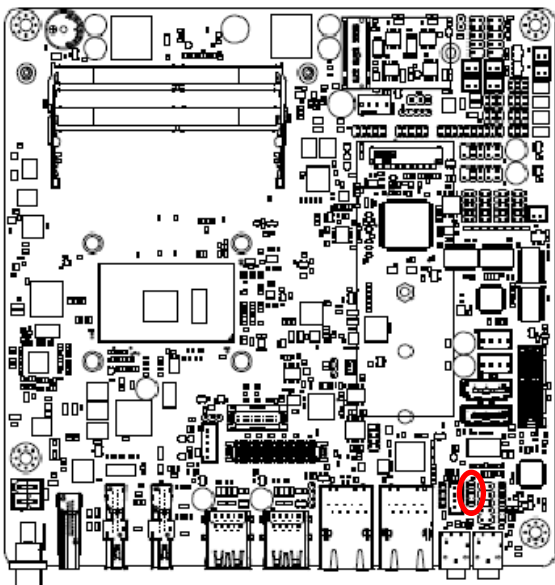
Signal	PIN	PIN	Signal
+5V	2	1	+3.3V
+5V	4	3	+3.3V
NC	6	5	NC
GND	8	7	GND
LVDS_DATA0_P	10	9	LVDS_DATA1_P
LVDS_DATA0_N	12	11	LVDS_DATA1_N
GND	14	13	GND
LVDS_DATA2_P	16	15	LVDS_DATA3_P
LVDS_DATA2_N	18	17	LVDS_DATA3_N
GND	20	19	GND
LVDS_DATA4_P	22	21	LVDS_DATA5_P
LVDS_DATA4_N	24	23	LVDS_DATA5_N
GND	26	25	GND
LVDS_DATA6_P	28	27	LVDS_DATA7_P
LVDS_DATA6_N	30	29	LVDS_DATA7_N
GND	32	31	GND
LVDS_CLK1_P	34	33	LVDS_CLK2_P
LVDS_CLK1_N	36	35	LVDS_CLK2_N
GND	38	37	GND
+12V	40	39	+12V

2.3.19 SPI connector (JSPI1)



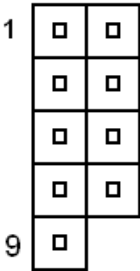
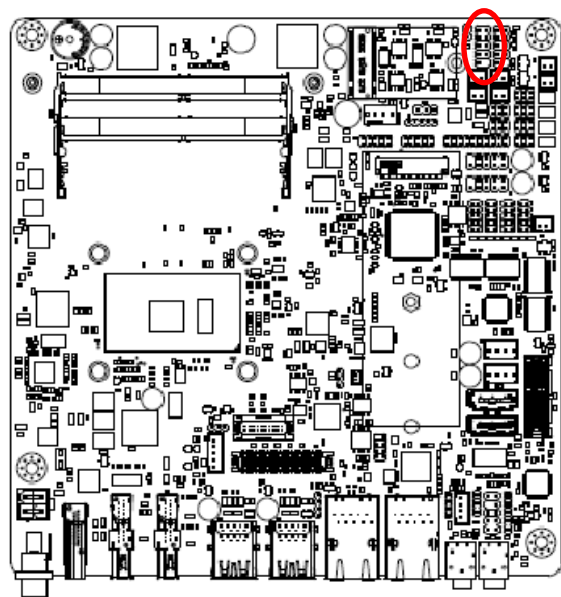
Signal	PIN	PIN	Signal
		7	HOLD#
SPI_SI	6	5	SPI_SO
SPI_CLK	4	3	SPI0_CS0#
GND	2	1	+3.3A_SPI

2.3.20 Sony/Philips Digital Interface (SPDIF1)



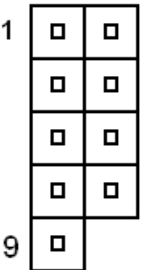
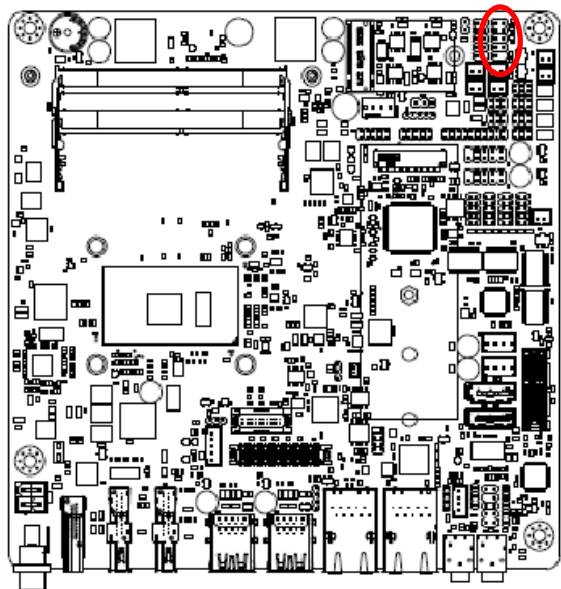
Signal	PIN
GND	3
SPDIF_OUT	2
+5V	1

2.3.21 Miscellaneous setting connector 1 (FPT1)



Signal	PIN	PIN	Signal
+HD_LED	1	2	+PWR_LED
-HD_LED	3	4	-PWE_LED
+Reset	5	6	+PWR_BNT
- Reset	7	8	-PWR_BNT
NC	9		

2.3.22 Miscellaneous setting connector 2 (FPT2)

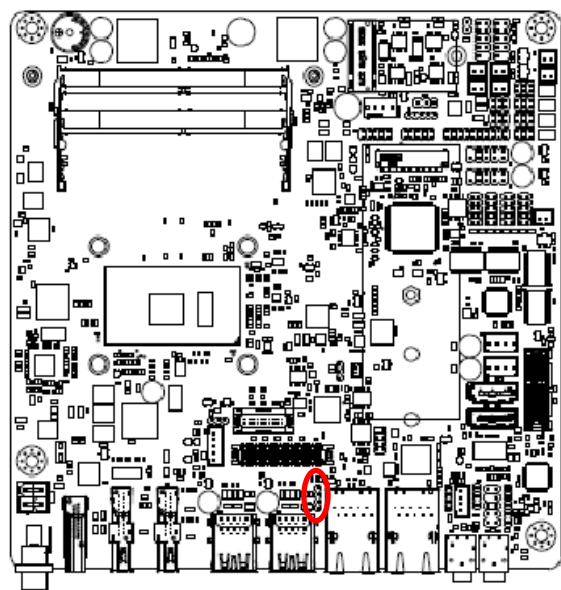


Signal	PIN	PIN	Signal
Speaker+	1	2	BLK_VR(10K)
NC	3	4	BLK_UP
NC	5	6	BLK_DN
Speaker-	7	8	GND
NC	9	10	

Note:

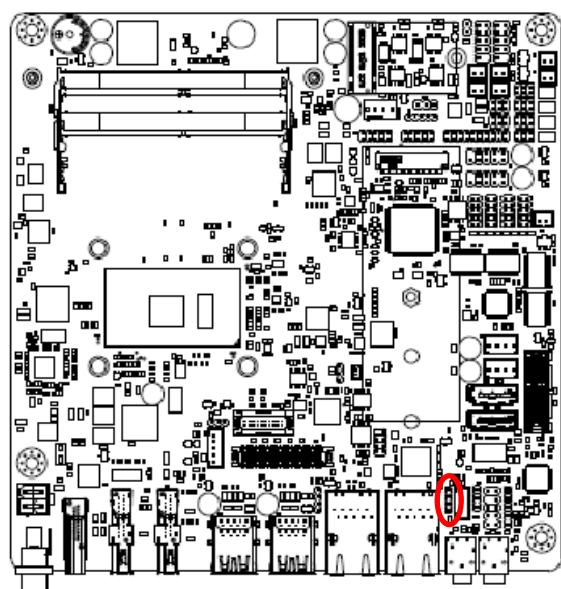
- 1. Pin2 with GND: Control LVDS Backlight by use Variable Resistor.
- 2. BLK_UP with GND/BLK_DN with GND: Step control LVDS Backlight by use button and BIOS must to be set “BR Button”. (Please refer to page.61)

2.3.23 LAN LED indicator 1 (LED1)



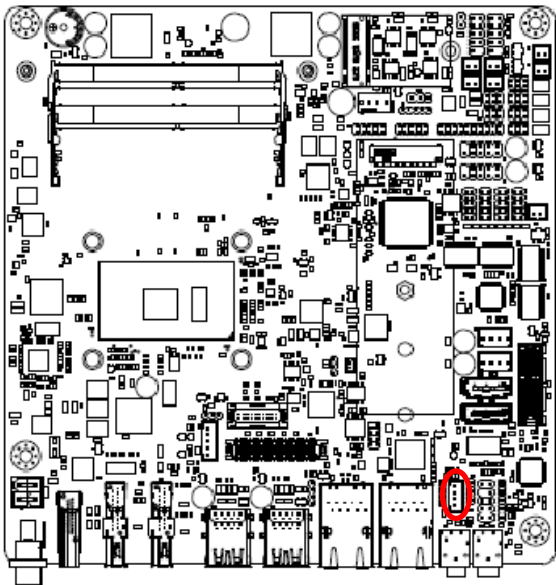
Signal	PIN
LAN1_1000#_LED	4
LAN1_100#_LED	3
LAN1_ACT_N	2
LAN1_ACT_P	1

2.3.24 LAN LED indicator 2 (LED2)



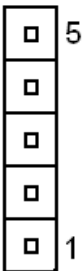
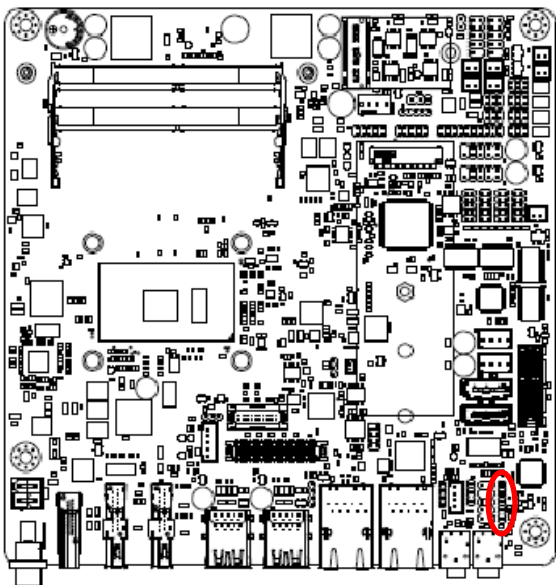
Signal	PIN
LAN2_1000#_LED	4
LAN2_100#_LED	3
LAN2_ACT_N	2
LAN2_ACT_P	1

2.3.25 Speaker connector (SPK1)



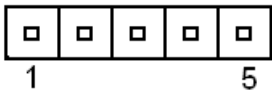
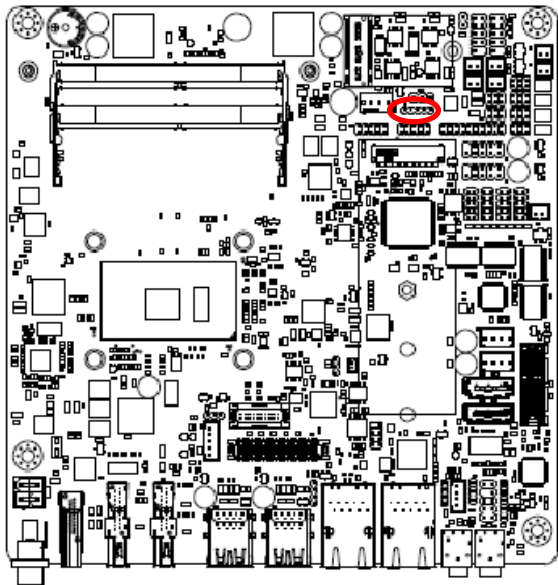
Signal	PIN
SPK_R-	4
SPK_R+	3
SPK_L-	2
SPK_L+	1

2.3.26 Mic-in connector (DMIC1)



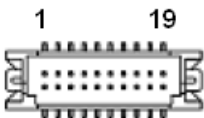
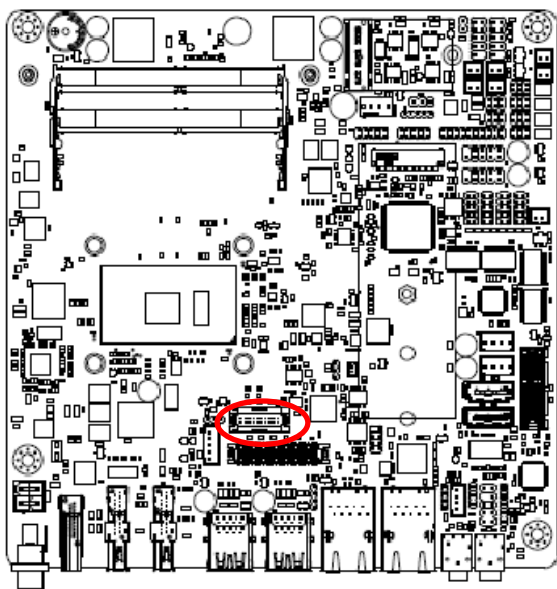
Signal	PIN
NC	5
DMIC_CLK	4
GND	3
DMIC_DATA	2
+3.3V	1

2.3.27 I2C connector (I2C1)



Signal	PIN
+3.3V	1
INT_I2C0#	2
I2C0_CLK	3
I2C0_DATA	4
GND	5

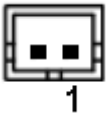
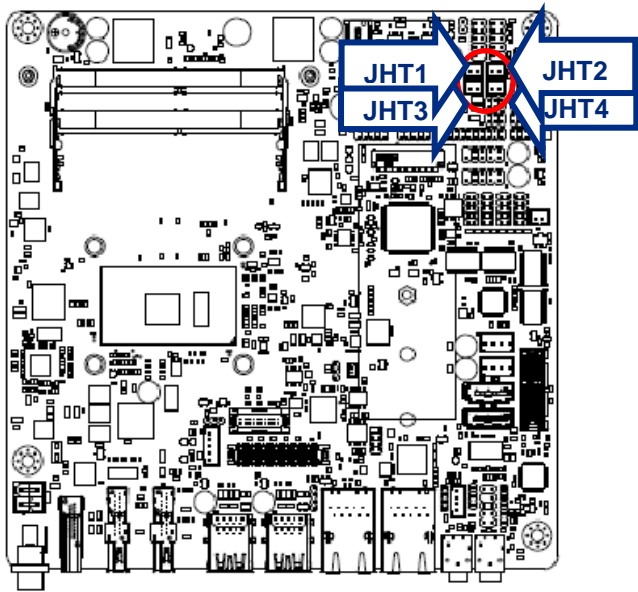
2.3.28 eDP_Panel connector (EDP1)



Signal	PIN	PIN	Signal
GND	1	2	GND
EDP_Panel_TXN0	3	4	EDP_Panel_TXN3
EDP_Panel_TXP0	5	6	EDP_Panel_TXP3
GND	7	8	NC
EDP_Panel_TXN1	9	10	GND
EDP_Panel_TXP1	11	12	EDP_Panel_AUXN
GND	13	14	EDP_Panel_AUXP
EDP_Panel_TXN2	15	16	GND
EDP_Panel_TXP2	17	18	EDP_Panel_HPD
EDP power	19	20	EDP power

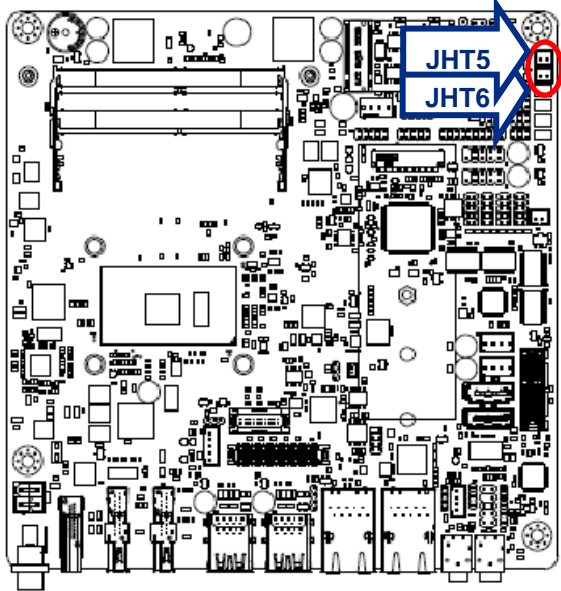
Note:
eDP power as 3.3V by default
This is a BOM optional part.

2.3.29 CPU Heatsink Heater Connector (JHT1/2/3/4)



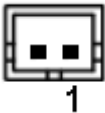
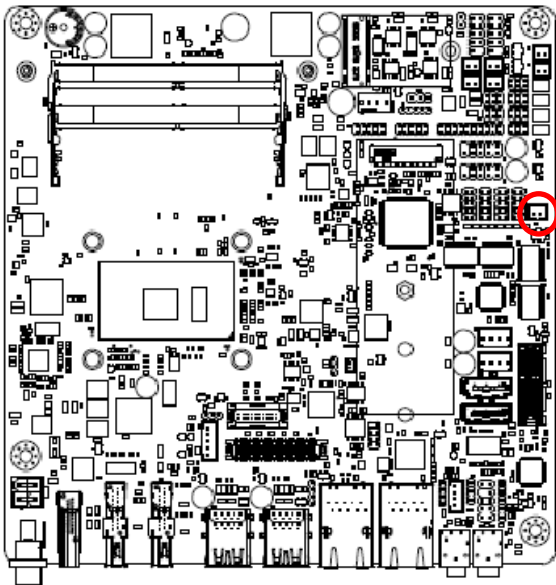
Signal	PIN
+12V	1
GND	2

2.3.30 Back Plate Heatsink Heater Connector (JHT5/6)



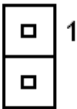
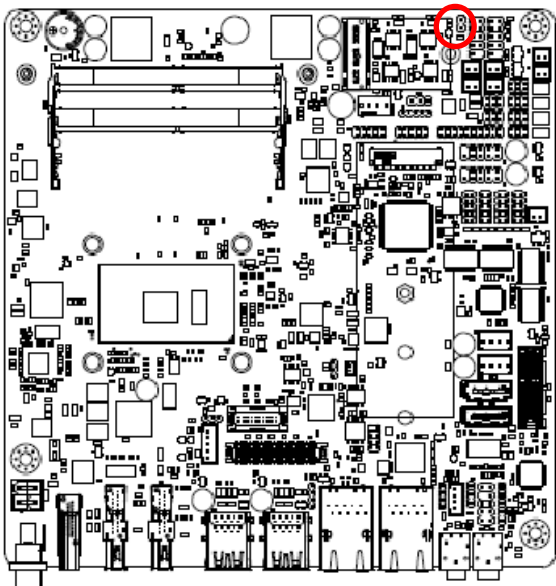
Signal	PIN
+12V	1
GND	2

2.3.31 Audio Heatsink Heater Connector (JHT7)



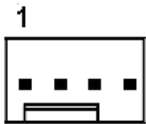
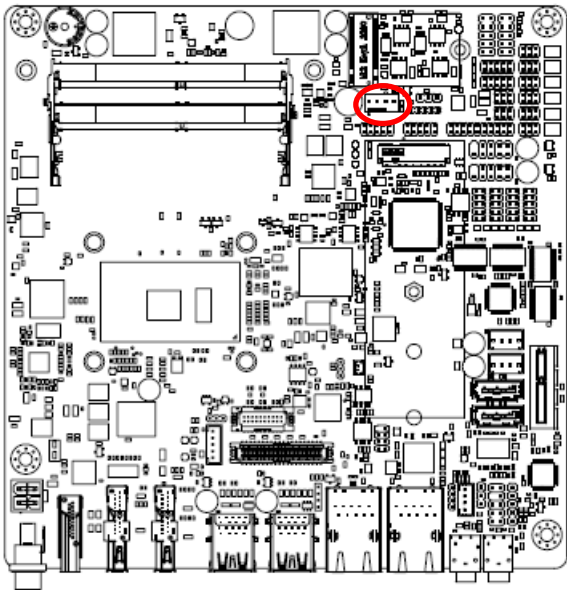
Signal	PIN
+12V	1
GND	2

2.3.32 LED Indicator for Heater (JHT_LED)



Signal	PIN
+5V	1
GND	2

2.3.33 CPU fan connector (FAN1)



Signal	PIN
GND	1
+12V	2
CPUFANIN	3
FAN_PWM0	4

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

The 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 or <F2> immediately after switching the system on, or

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

Press or <F2> 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. If you do not press the keys at the correct time and the system does not boot, an error message will be displayed and you will again be asked to.

Press F1 to Continue, DEL to enter SETUP

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
Enter	Select
+/-	Value
Esc	Exit
F1	General Help
F2	Previous Values
F3	Optimized Defaults
F4	Save & Exit Setup
<K>	Scroll help area upwards
<M>	Scroll help area downwards

- **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 <Enter> key.

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.

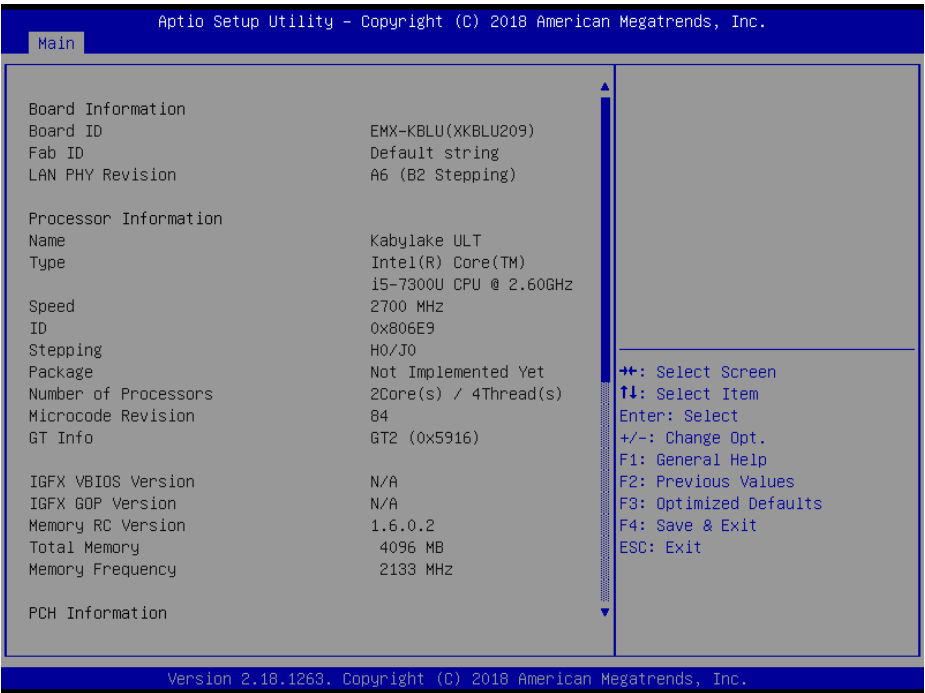
The best advice is to only alter settings which you thoroughly understand. To this end, we strongly recommend that you avoid making any changes to the chipset defaults. These defaults have been carefully chosen by both BIOS Vendor and your systems manufacturer to provide the absolute maximum performance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

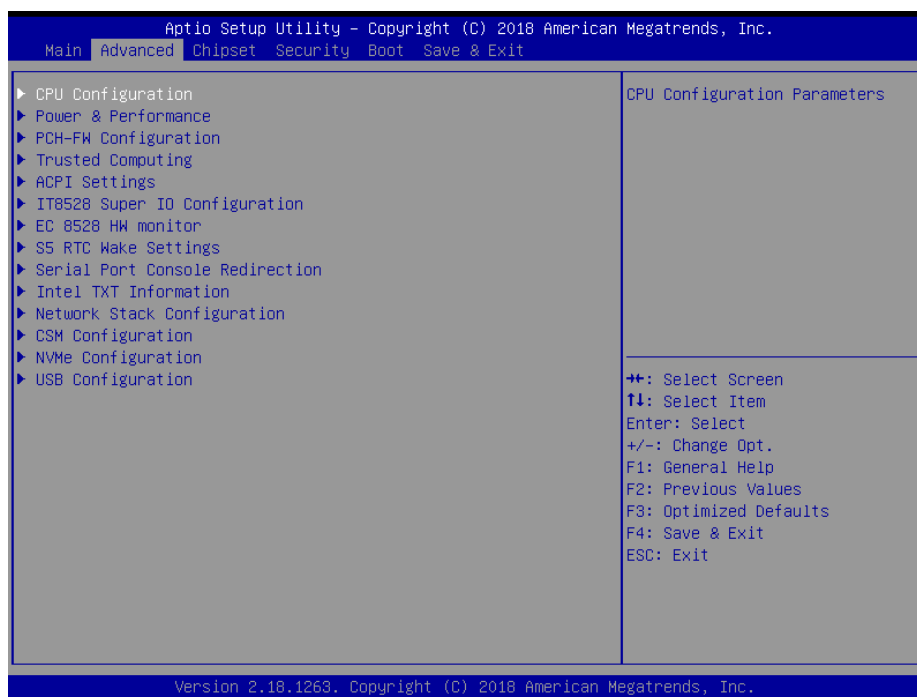


Note: The BIOS setup screens shown in this chapter are for reference purposes only, and may not exactly match what you see on your screen.

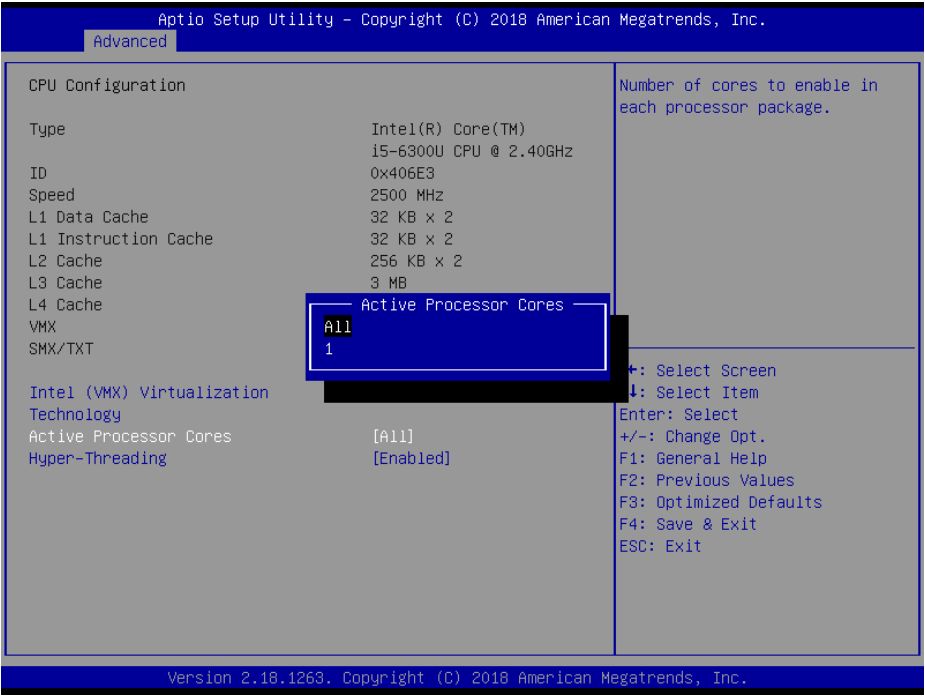
Visit the Avalue website (www.avalue.com.tw) to download the latest product and BIOS information.

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.

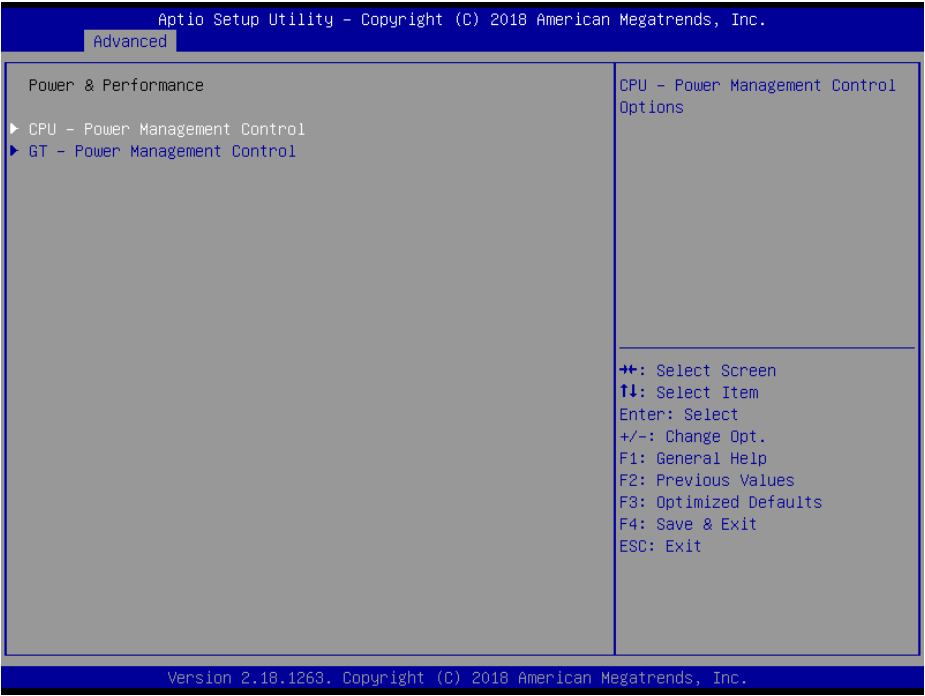


3.6.2.1 CPU Configuration

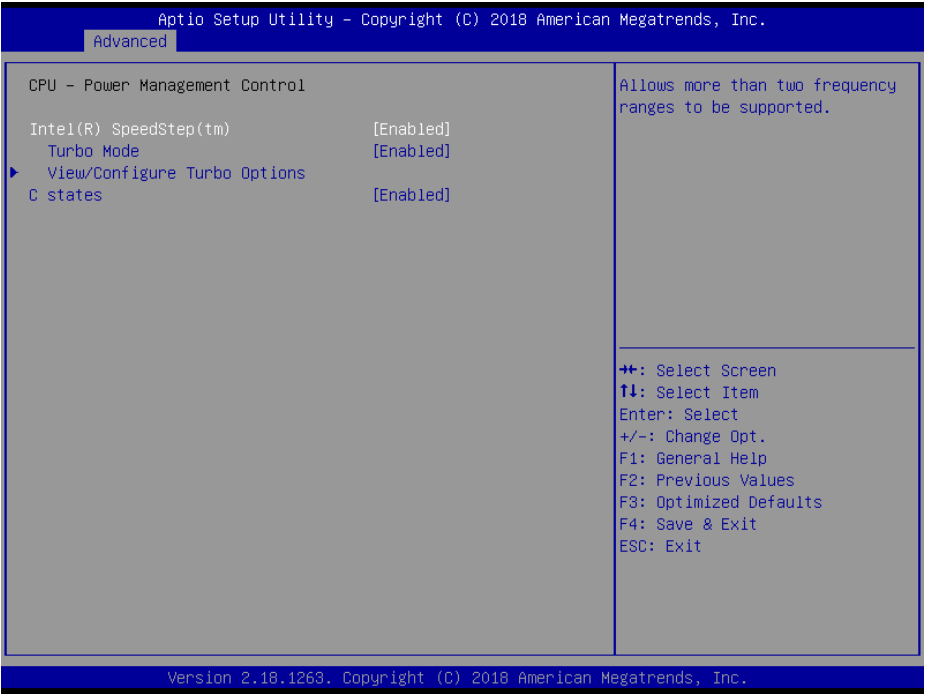


Item	Options	Description
Intel (VMX) Virtualization Technology	Disabled Enabled[Default],	When enabled, a VMM can utilize the additional hardware capabilities provided by Vanderpool Technology.
Active Processor Cores	All[Default], 1 2 3	Number of cores to enable in each processor package.
Hyper-Threading	Disabled Enabled[Default],	Enabled for Windows XP and Linux (OS optimized for Hyper-Threading Technology) and Disabled for other OS (OS not optimized for Hyper-Threading Technology).

3.6.2.2 Power & Performance



3.6.2.2.1 CPU-Power Management Control

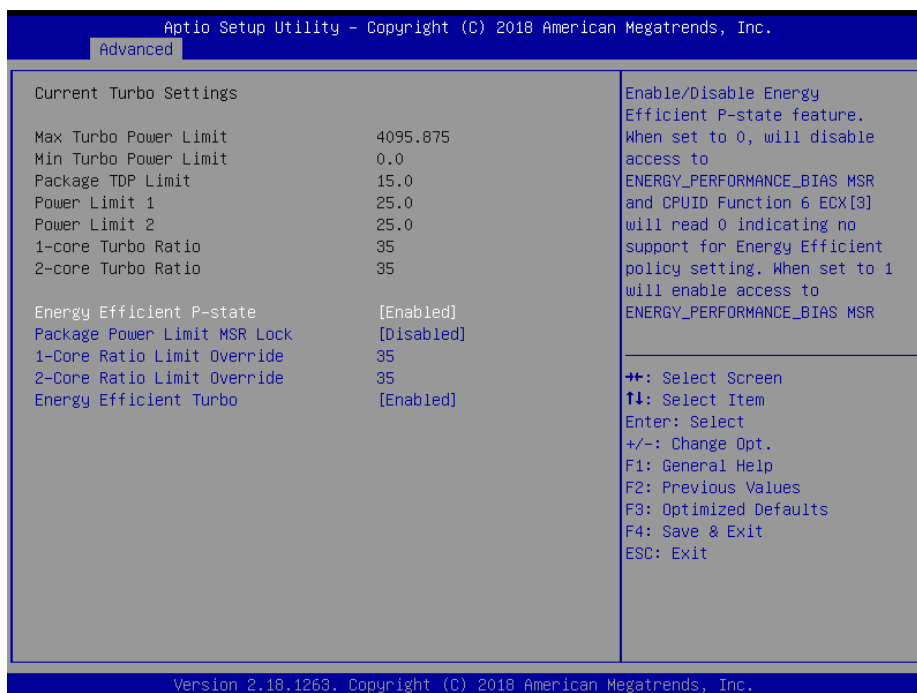


Item	Options	Description
Intel® SpeedStep™	Disabled, Enabled[Default]	Allows more than two frequency ranges to be supported.

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Turbo Mode	Disabled, Enabled[Default]	Enable/Disable processor Turbo Mode (requires EMTTM enabled too). AUTO means enabled, unless max turbo ratio is bigger than 16 – SKL A0 W/A.
C states	Disabled, Enabled[Default]	Enable/Disable CPU Power Management. Allows CPU to go to C states.

3.6.2.2.1.1 View/Configure Turbo Options



Item	Option	Description
Energy Efficient P-state	Disabled Enabled[Default]	Enable/Disable Energy Efficient P-state feature. When set to 0, will disable access to ENERGY_PERFORMANCE_BIAS MSR and CPUID Function 6 ECX[3] will read 0 indicating no support for Energy Efficient policy setting. When set to 1 will enable access to ENERGY_PERFORMANCE_BIAS MSR 1B0h and CPUID Function 6 ECX[3] will read 1 indicating Energy
Package Power Limit MSR Lock	Disabled[Default] Enabled	Enable/Disable locking of Package Power Limit settings. When enabled, PACKAGE_POWER_LIMIT MSR will be locked and a reset will be required to unlock the register.
1-Core Ratio Limit Override	0	1-Core Ratio Limit with range 0 to 83. The Minimum range may vary between Processors. This 1-Core Ratio Limit Must be greater than or equal to 2-Core Ratio Limit, 3-Core Ratio Limit, 4-Core Ratio Limit.

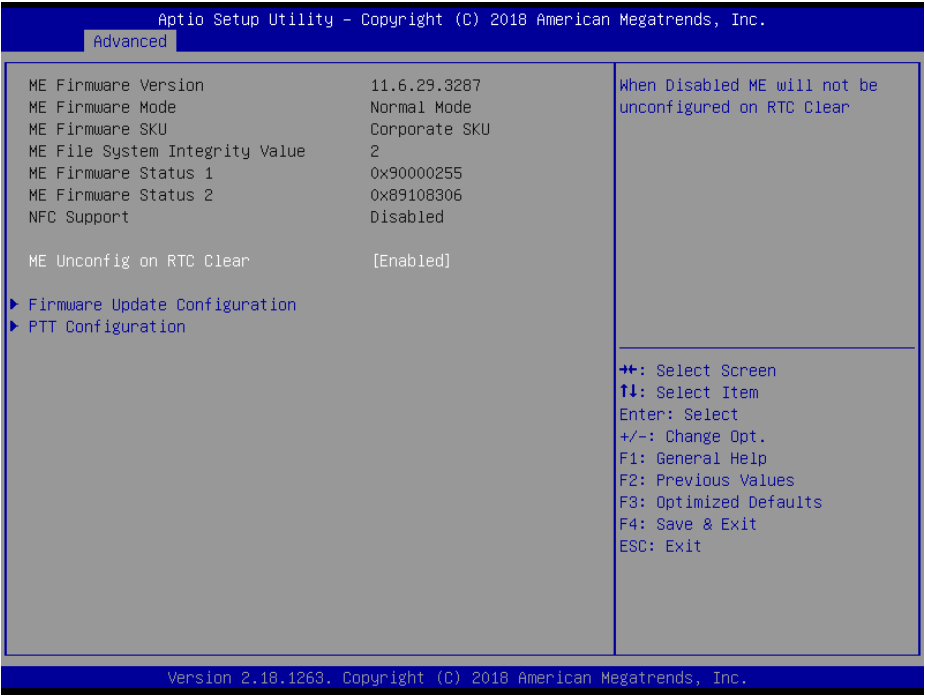
2-Core Ratio Limit Override	0	2-Core Ratio Limit with range 0 to 83. The Minimum range may vary between Processors. This 2-Core Ratio Limit Must be Less than or equal to 1-Core Ratio Limit.
Energy Efficient Turbo	Disabled Enabled[Default]	Enable/Disable Energy Efficient Turbo Feature. This feature will opportunistically lower the turbo frequency to increase efficiency. Recommended only to disable in overclocking situations where turbo frequency must remain constant. Otherwise, leave enabled.

3.6.2.2.2 GT-Power Management Control



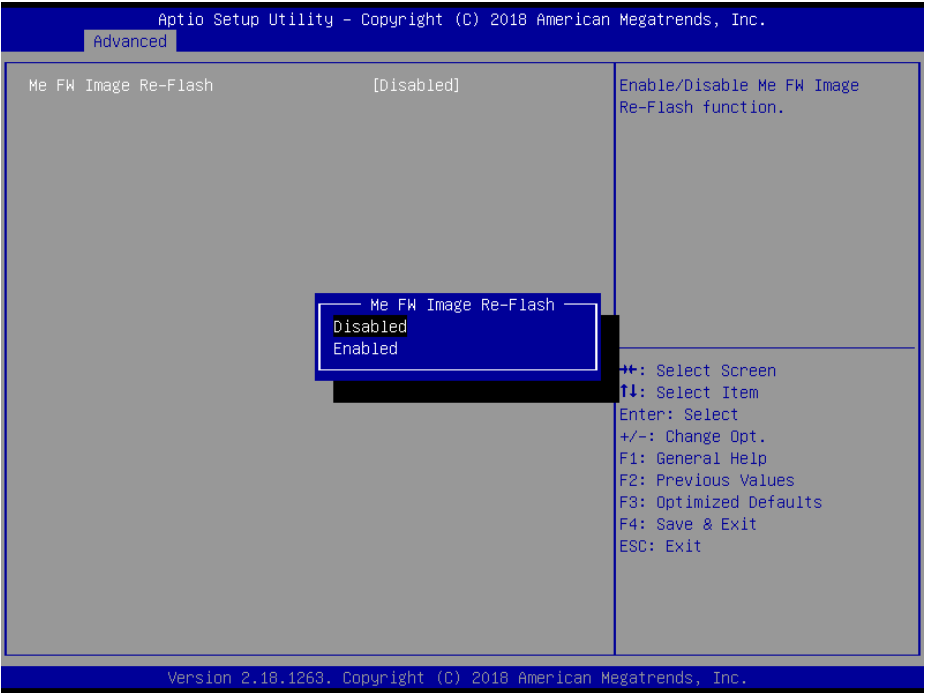
Item	Options	Description
RC6(Render Standby)	Enabled[Default] Disabled,	Check to enable render standby support.
Maximum GT frequency	Default Max Frequency[Default]/ 100Mhz/150Mhz/200Mhz/250Mhz/300Mhz/350Mhz/400Mhz/450Mhz/500Mhz/550Mhz/600Mhz/650Mhz/700Mhz/750Mhz/800Mhz/850Mhz/900Mhz/950Mhz/1000Mhz/1050Mhz/1100Mhz/1150Mhz/1200Mhz	Auto Updated.

3.6.2.3 PCH-FW Configuration



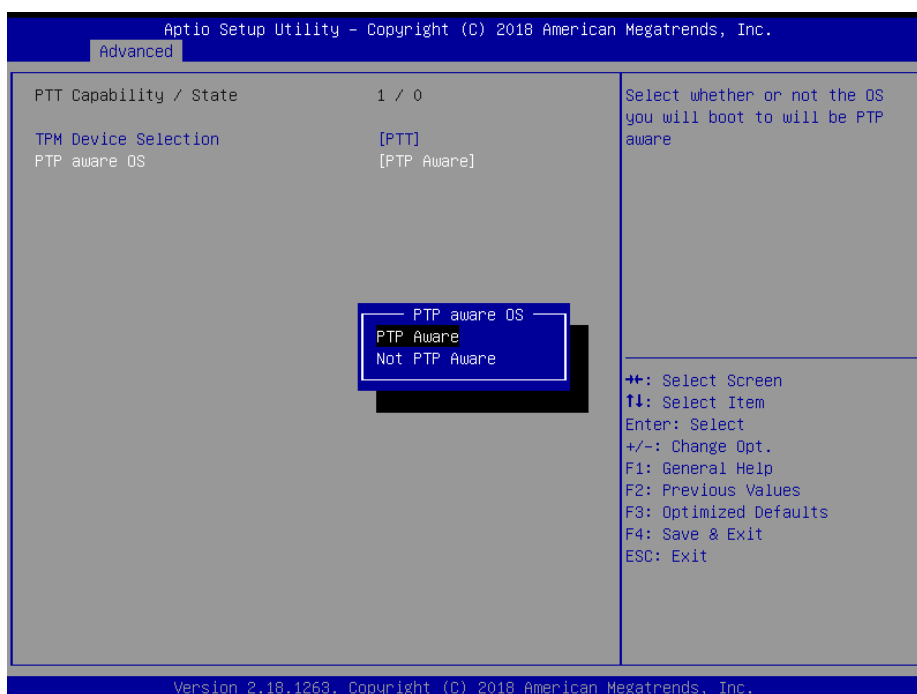
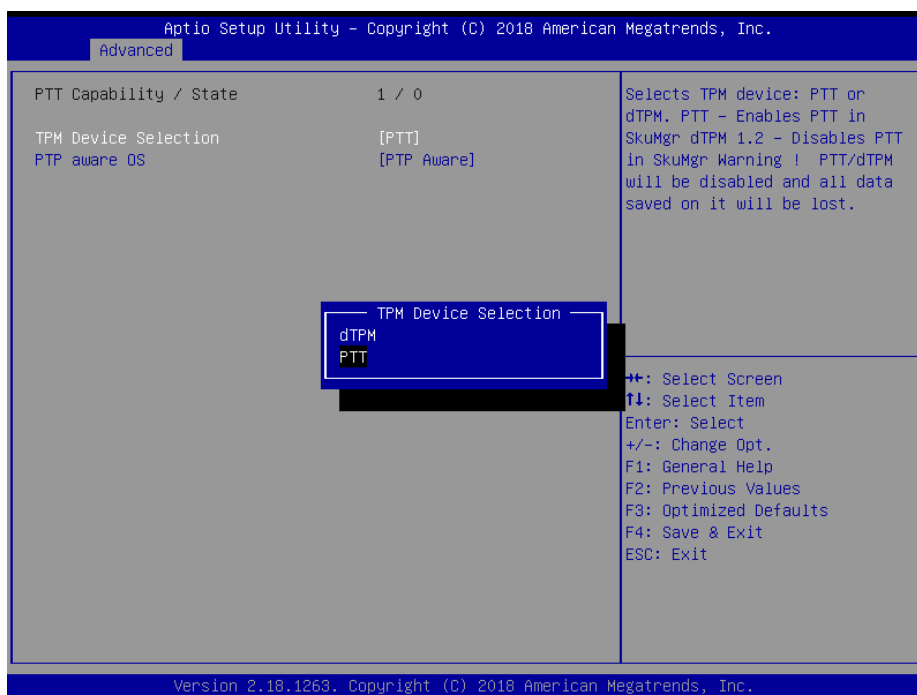
Item	Options	Description
ME Unconfig on RTC Clear	Disabled, Enabled[Default]	When Disabled ME will not be unconfigured on RTC Clear.

3.6.2.3.1 Firmware Update Configuration



Item	Options	Description
Me FW Image Re-Flash	Disabled, Enabled[Default]	Enable/ Disable Me FW Image Re-Flash function.

3.6.2.3.2 PTT Configuration

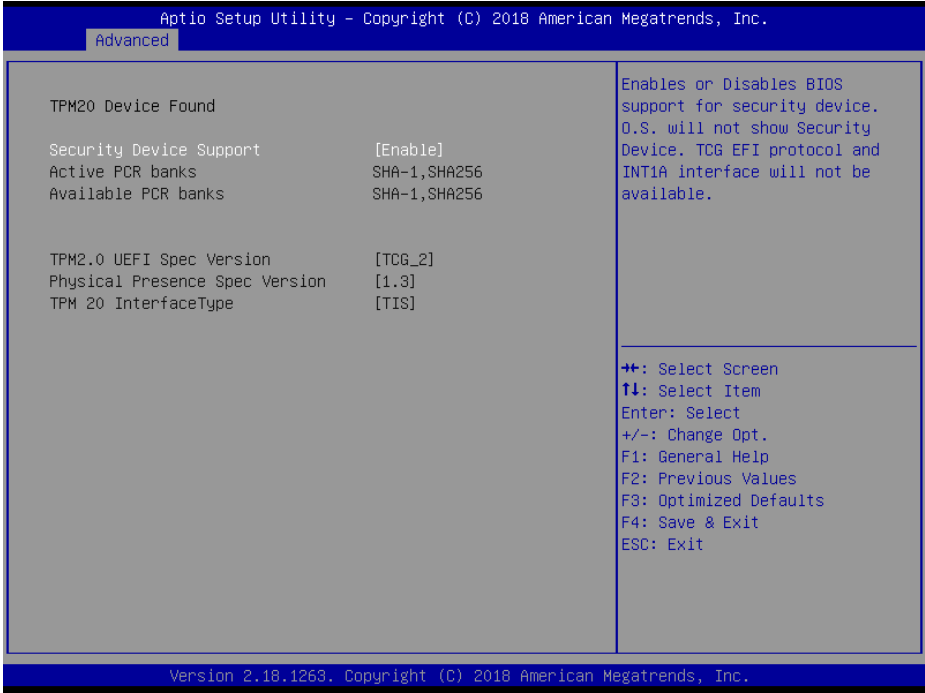


Item	Options	Description
TPM Device Selection	dTPM, PTT[Default]	Select TPM device: PTT or dTPM. PTT-Enables PTT in SkuMgr dTPM 1.2 – Disables PTT in SkuMgr Warning! PTT/dTPM will be disabled and

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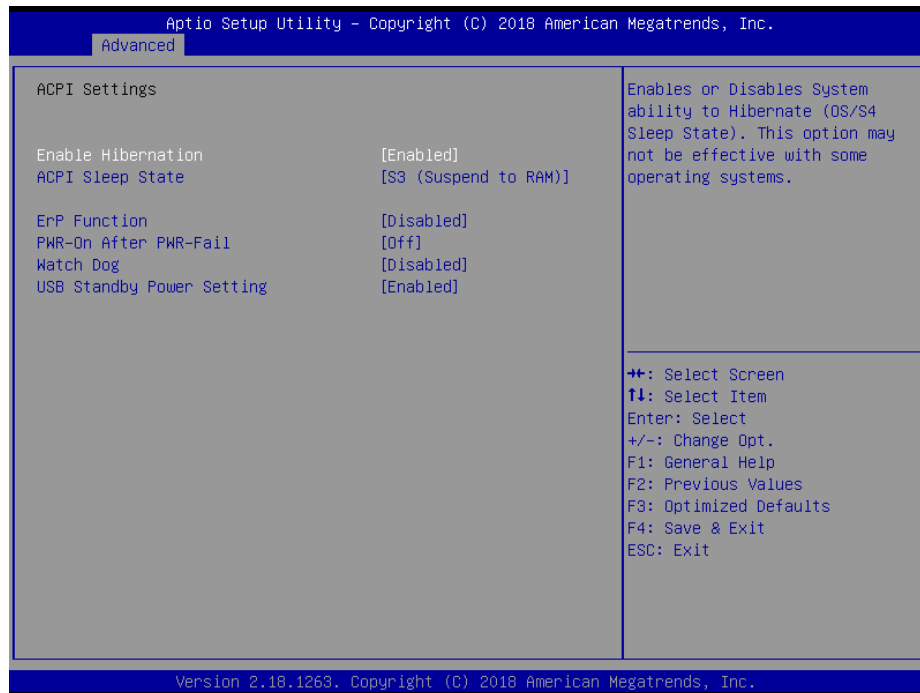
		all data saved on it will be lost.
PTP aware OS	PTP Aware[Default], Not PTP Aware	Select whether or not the OS you will boot to will be PTP aware

3.6.2.4 Trusted Computing



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

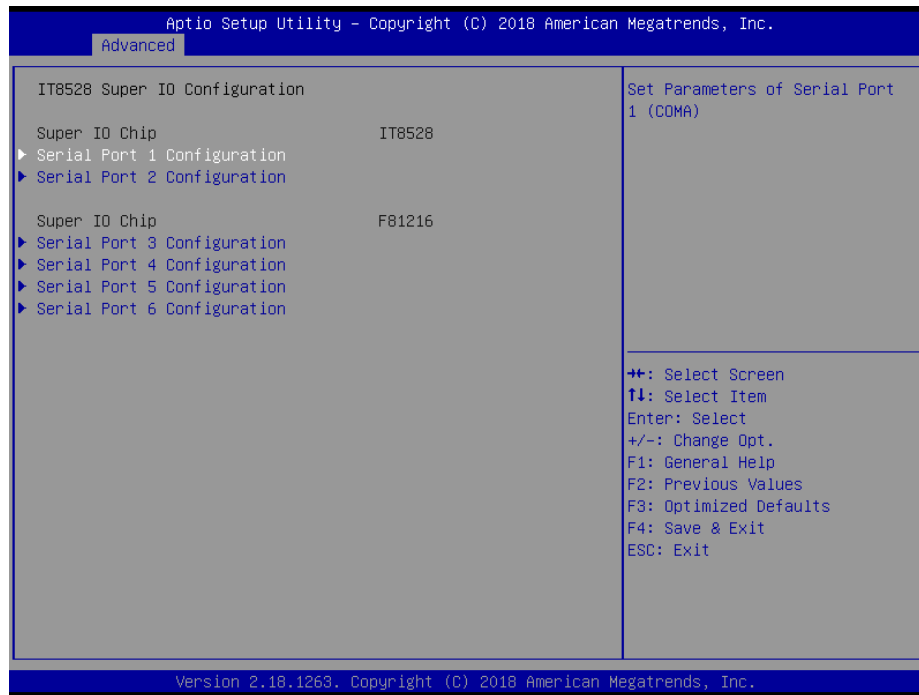
3.6.2.5 ACPI Settings



Item	Options	Description
Enable Hibernation	Disabled Enabled[Default],	Enables or Disables System ability to Hibernate (OS/S4 Sleep State). This option may not be effective with some operating systems.
ACPI Sleep State	Suspend Disabled, S3 (Suspend to RAM)[Default]	Select the highest ACPI sleep state the system will enter when the SUSPEDN button is pressed.
ErP Function	Disabled[Default] Enabled,	ErP Function (Deep S5).
PWR-On After PWR-Fail	Off[Default] On Last state	AC loss resume.
Watch Dog	Disabled[Default], 30 sec 40 sec 50 sec 1 min 2 min 10 min 30 min	Select WatchDog.
USB Standby Power Setting	Disabled Enabled[Default]	Enabled/Disabled USB Stand by Power during S3/S4/S5.

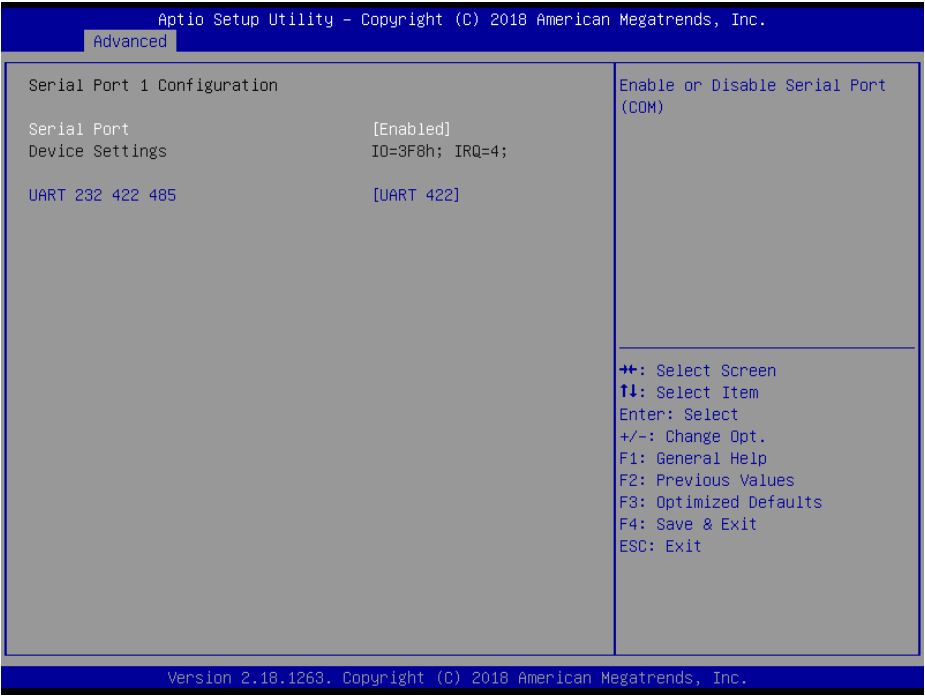
3.6.2.6 IT8528 Super IO Configuration

You can use this item to set up or change the IT8528 Super IO configuration for serial ports. Please refer to 3.6.2.6.1~ 3.6.2.6.6 for more information.



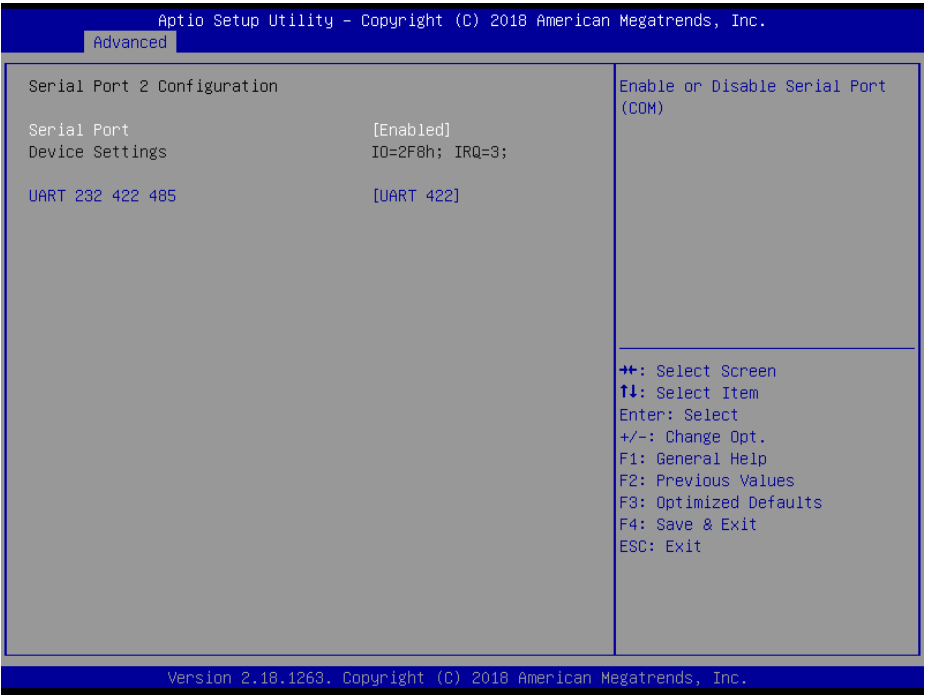
Item	Description
Serial Port 1 Configuration	Set Parameters of Serial Port 1 (COMA).
Serial Port 2 Configuration	Set Parameters of Serial Port 2 (COMB).
Serial Port 3 Configuration	Set Parameters of Serial Port 3 (COMC).
Serial Port 4 Configuration	Set Parameters of Serial Port 4 (COMD).
Serial Port 5 Configuration	Set Parameters of Serial Port 5 (COME).
Serial Port 6 Configuration	Set Parameters of Serial Port 6 (COMF).

3.6.2.6.1 Serial Port 1 Configuration



Item	Option	Description
Serial Port	Disabled Enabled[Default],	Enable or Disable Serial Port (COM).
UART 232 422 485	UART 422[Default], UART 485	Change the Serial Port as RS232/422/485.

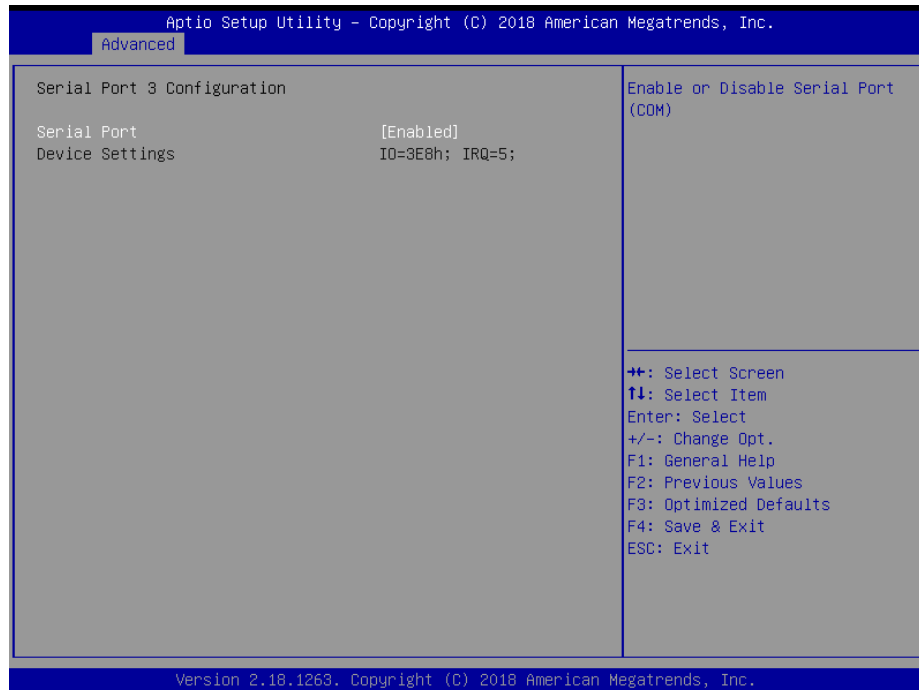
3.6.2.6.2 Serial Port 2 Configuration



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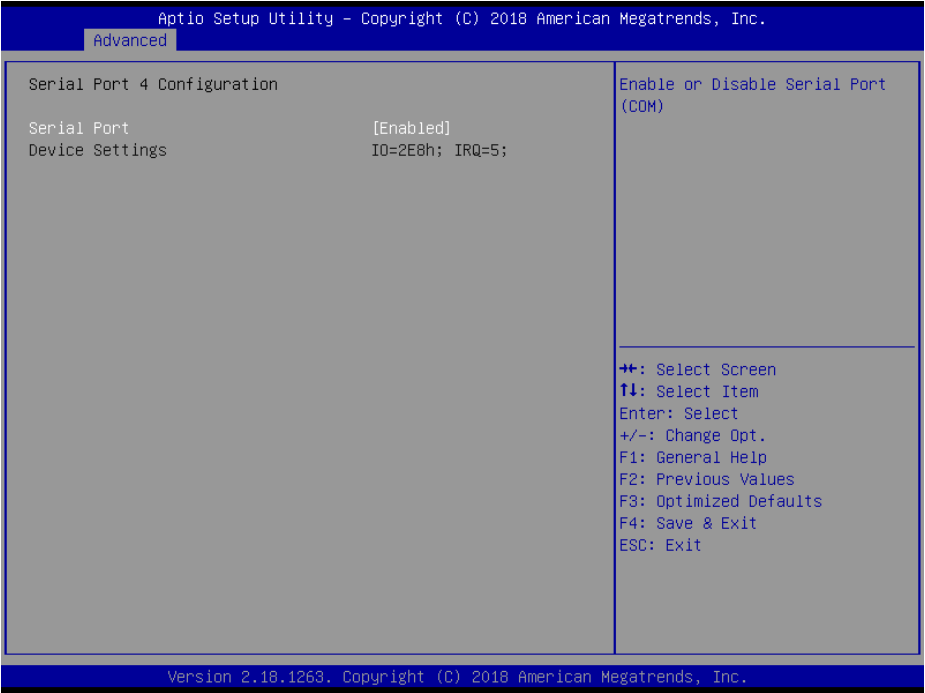
Item	Option	Description
Serial Port	Disabled Enabled[Default],	Enable or Disable Serial Port (COM).
UART 232 422 485	UART 422[Default], UART 485	Change the Serial Port as RS232/422/485.

3.6.2.6.3 Serial Port 3 Configuration



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

3.6.2.6.4 Serial Port 4 Configuration



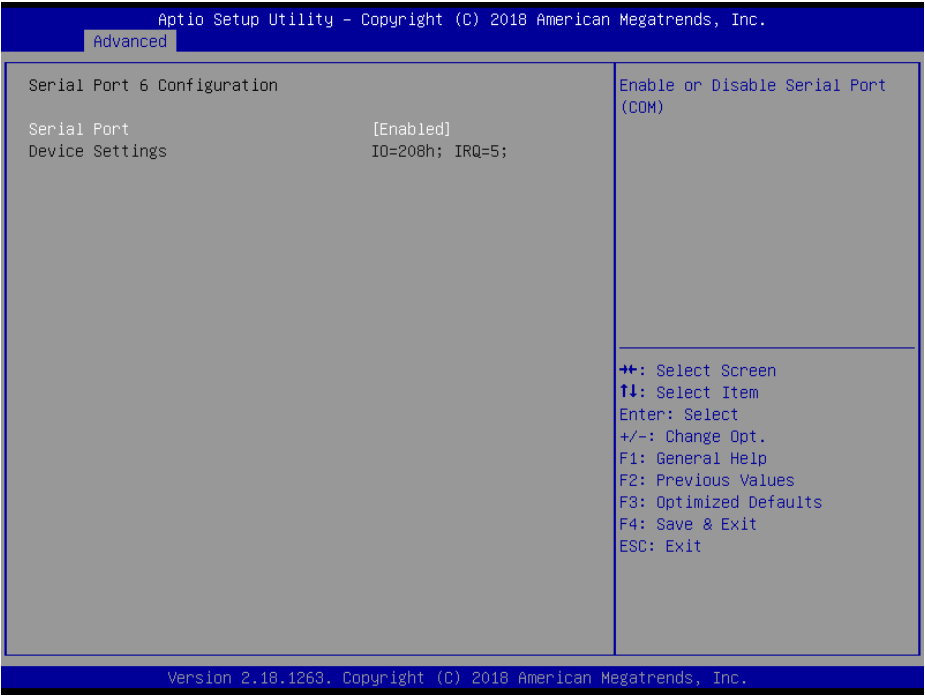
Item	Option	Description
Serial Port	Disabled Enabled[Default],	Enable or Disable Serial Port (COM).

3.6.2.6.5 Serial Port 5 Configuration



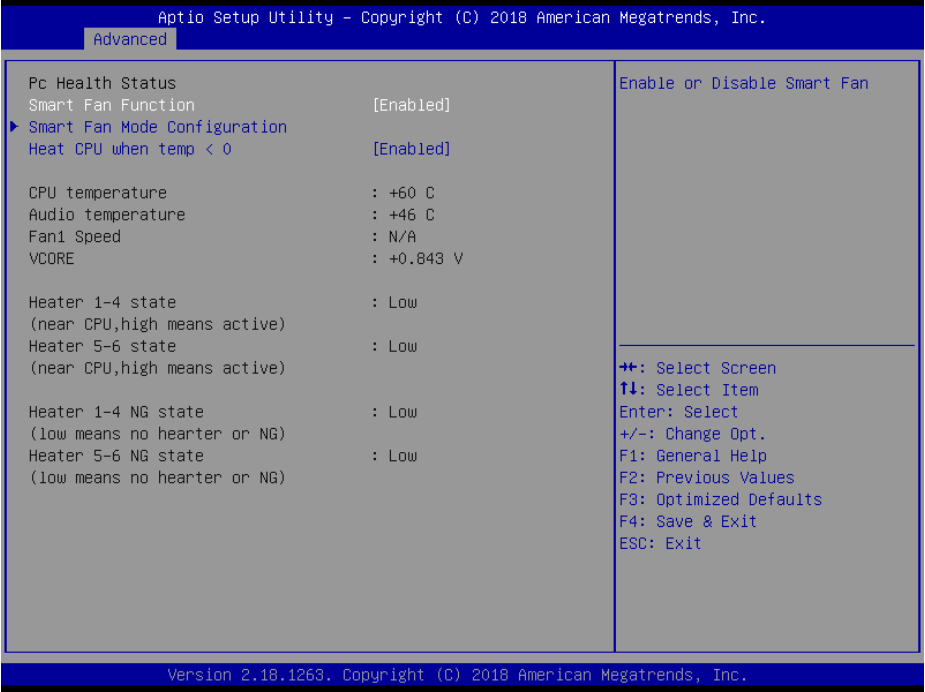
Item	Option	Description
Serial Port	Disabled Enabled[Default],	Enable or Disable Serial Port (COM).

3.6.2.6.6 Serial Port 6 Configuration



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

3.6.2.7 EC 8528 HW monitor



Item	Options	Description
Smart Fan Function	Disabled[Default], Enabled	Enable or Disable Smart Fan.
Heat CPU when temp < 0	Disabled, Enabled[Default]	Turn on heater when CPU temperature below 0degree C before system boot up.

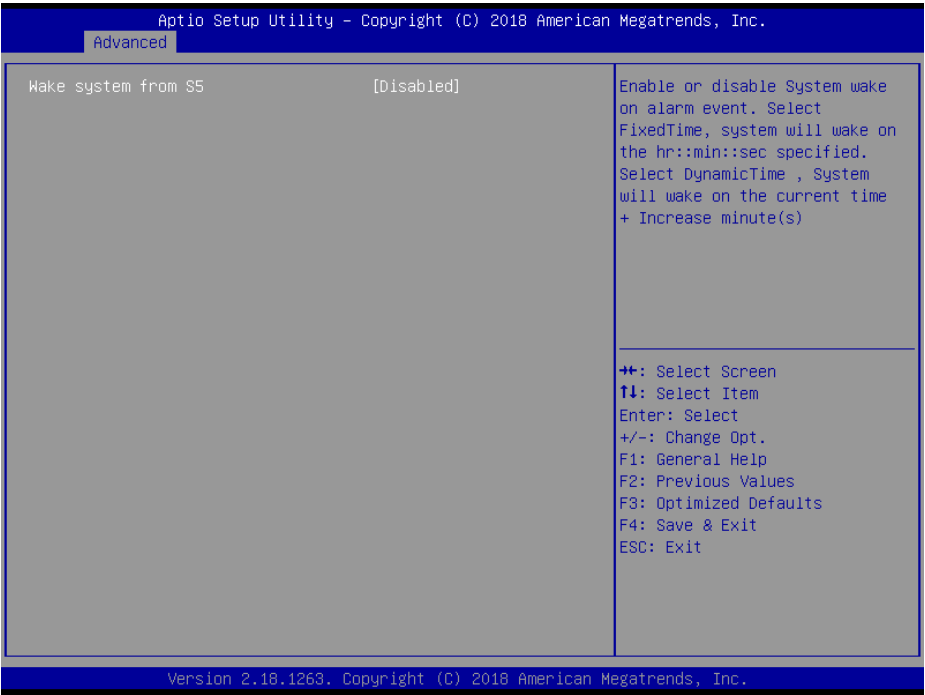
3.6.2.7.1 Smart Fan Mode Configuration



Item	Options	Description
CPU Smart Fan Mode	Manual Mode[Default]/ Mode01/Mode02/ Mode03/Mode04/ Mode05/Mode06/ Mode07/Mode08/ Mode09/Mode10/ Mode11/Mode12/ Mode13/Mode14/ Mode15/Mode16/ Mode17/Mode18/ Mode19/Mode20	CPU Smart Fan Mode Select
Fan PWM	255	Fan PWM duty

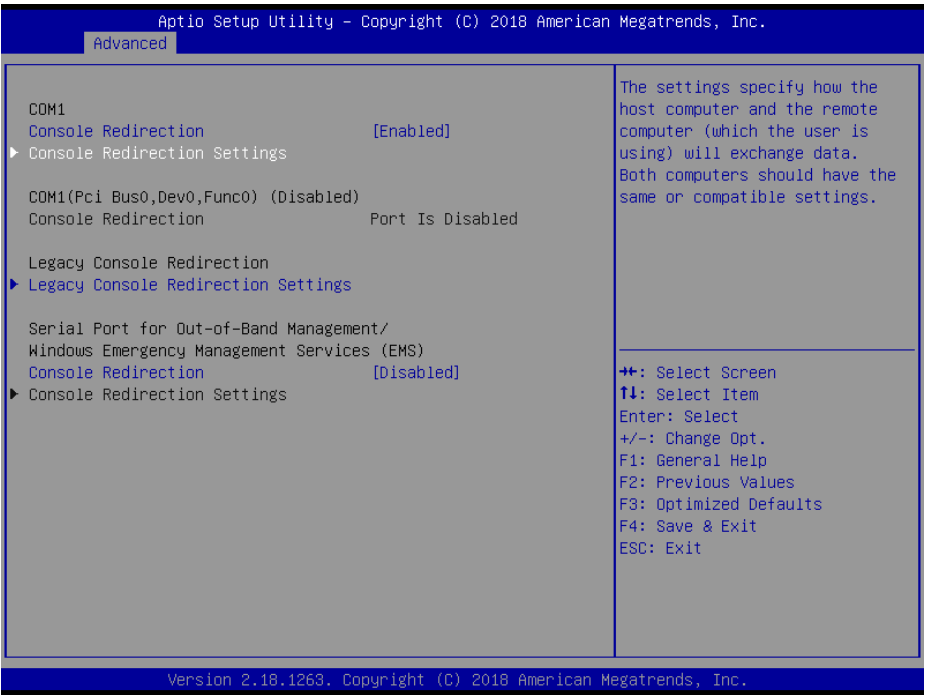
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3.6.2.8 S5 RTC Wake Settings



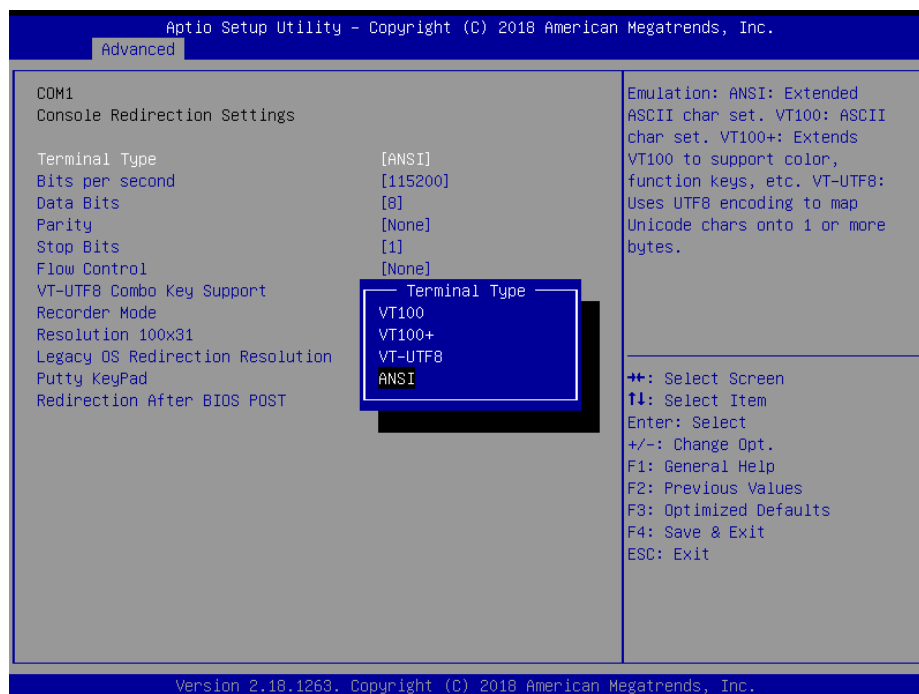
Item	Options	Description
Wake system from S5	Disabled[Default], Fixed Time Dynamic Time	Enable or disable System wake on alarm event. Select Fixed Time, system will wake on the hr::min::sec specified. Select Dynamic Time, System will wake on the current time + Increase minutes(s).

3.6.2.9 Serial Port Console Redirection



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

3.6.2.9.1 Console Redirection Settings

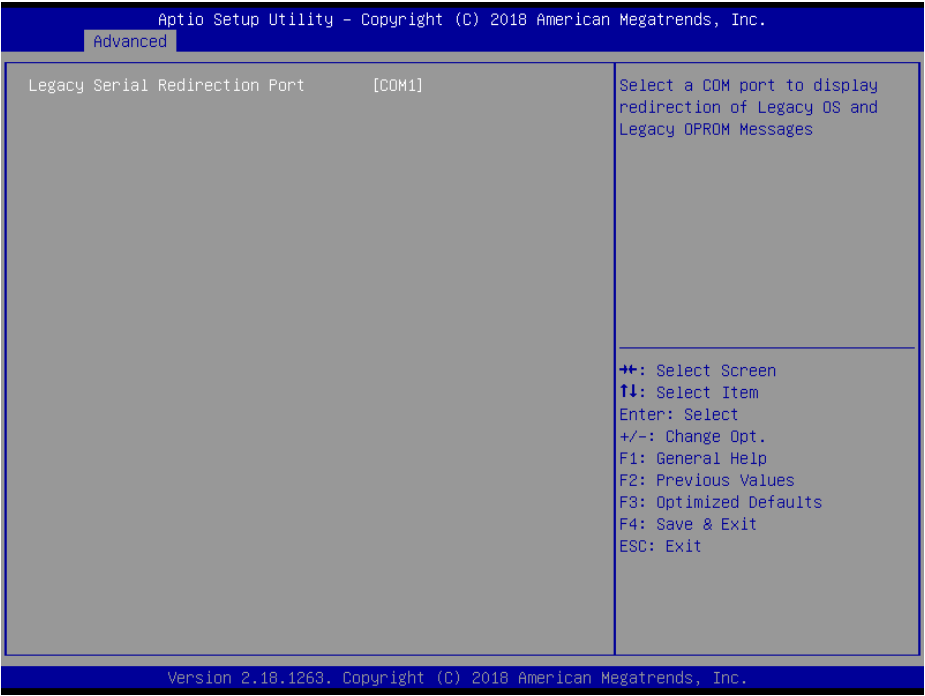


Item	Option	Description
Terminal Type	VT100 VT100+ VT-UTF8 ANSI[Default]	Emulation: ANSI: Extended ASCII char set. VT 100: ASCII char set. VT100+: Extends VT100 to support color, function keys, etc. VT-UTF8: Uses UTF8 encoding to map Unicode chars onto 1 or more bytes.
Bits per second	9600 19200 38400 57600 115200[Default]	Selects serial port transmission speed. The speed must be matched on the other side. Long or noisy lines may require lower speeds.
Data Bits	7 8[Default]	Data Bits
Parity	None[Default] Even Odd Mark Space	A parity bit can be sent with the data bits to detect some transmission errors. Even: parity bit is 0 if the num of 1's in the data bits is even. Odd: parity bit is 0 if num of 1's in the data bits is odd. Mark parity bit is always 1. Space: Parity bit is always 0. Mark and Space Parity do not allow for error detection.
Stop Bits	1[Default] 2	Stop bits indicate the end of a serial data packet. (A start bit indicates the beginning).

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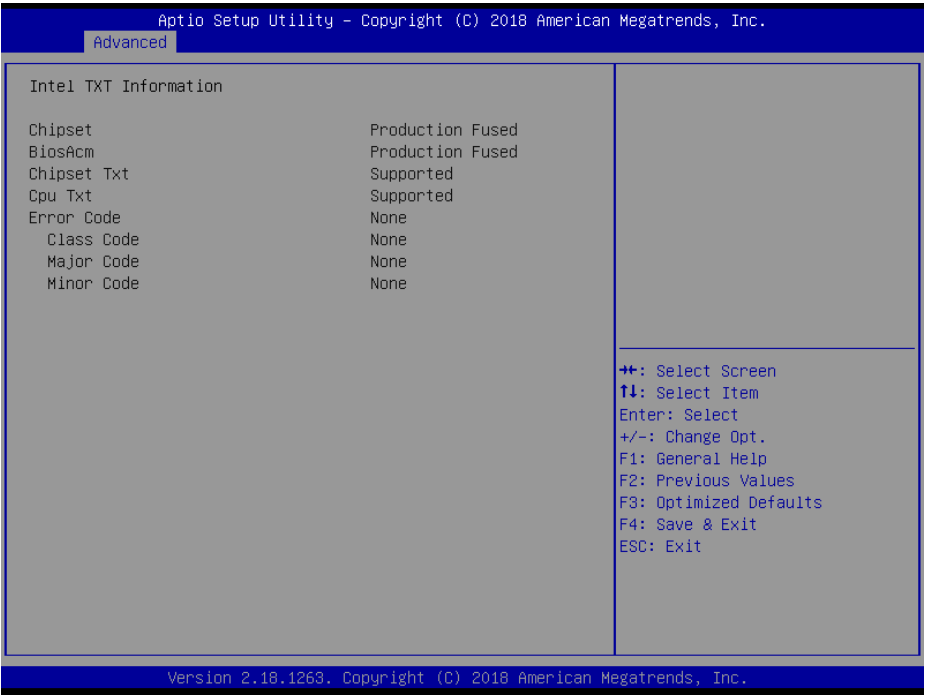
		The standard setting is 1 stop bit. Communication with slow devices may require more than 1 stop bit.
Flow Control	None[Default] Hardware RTS/CTS	Flow control can prevent data loss from buffer overflow. When sending data, if the receiving buffers are full, a 'stop' signal can be sent to stop the data flow. Once the buffers are empty, a 'start' signal can be sent to re-start the flow. Hardware flow control uses two wires to send start/stop signals.
VT-UTF8 Combo Key Support	Disabled, Enabled[Default]	Enable VT-UTF8 Combination Key Support for ANSI/VT100 terminals
Recorder Mode	Disabled[Default], Enabled	With this mode enabled only text will be sent. This is to capture Terminal data.
Resolution 100x31	Disabled[Default], Enabled	Enables or disables extended terminal resolution
Legacy OS Redirection Resolution	80x24[Default], 80x25	On Legacy OS, the Number of Rows and Columns supported redirection
Putty KeyPad	VT100[Default], LINUX XTERMR6 SCO ESCN VT400	Select Functionkey and KeyPad on Putty.
Redirection After BIOS POST	Always Enable[Default], BootLoader	The Settings specify if BootLoader is selected then Legacy console redirection is disabled before booting to Legacy OS. Default value is Always Enable which means Legaacy console Redirection is enabled for Legacy OS.

3.6.2.9.2 Legacy Console Redirection Settings

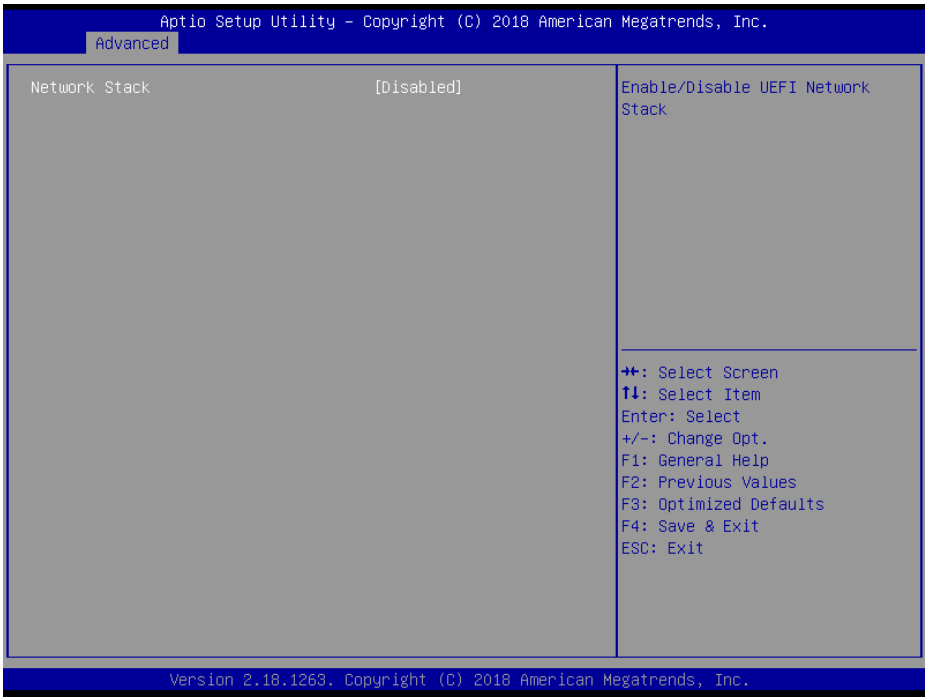


Item	Option	Description
Legacy Serial Redirection Port	COM1[Default]	Select a COM port to display redirection of Legacy OS and Legacy OPRM Messages.

3.6.2.10 Intel TXT Information

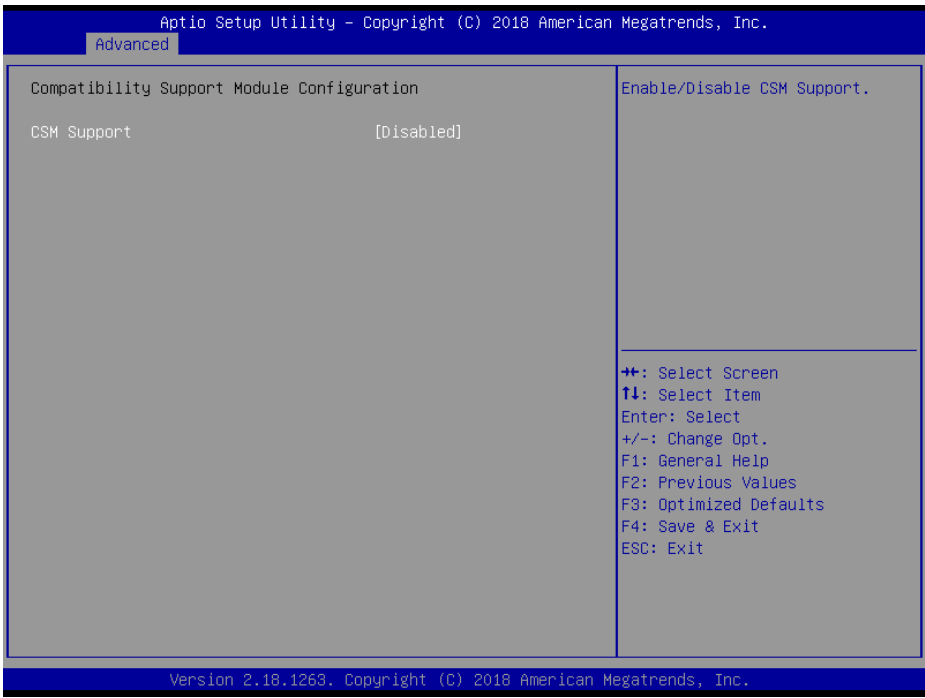


3.6.2.11 Network Stack Configuration



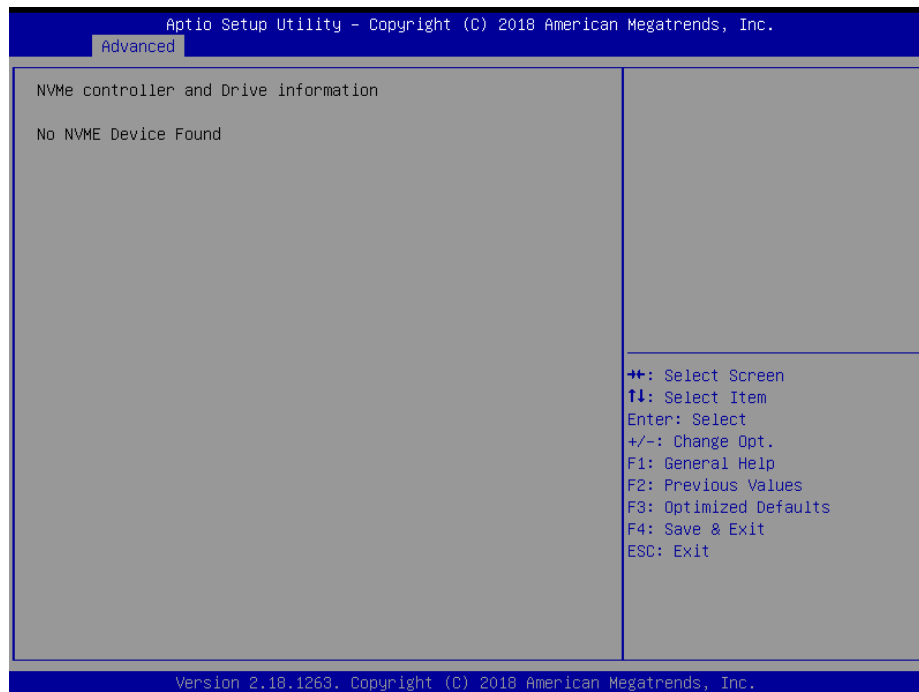
Item	Options	Description
Network Stack	Disabled[Default] Enabled	Enable/Disable UEFI Network Stack.

3.6.2.12 CSM Configuration



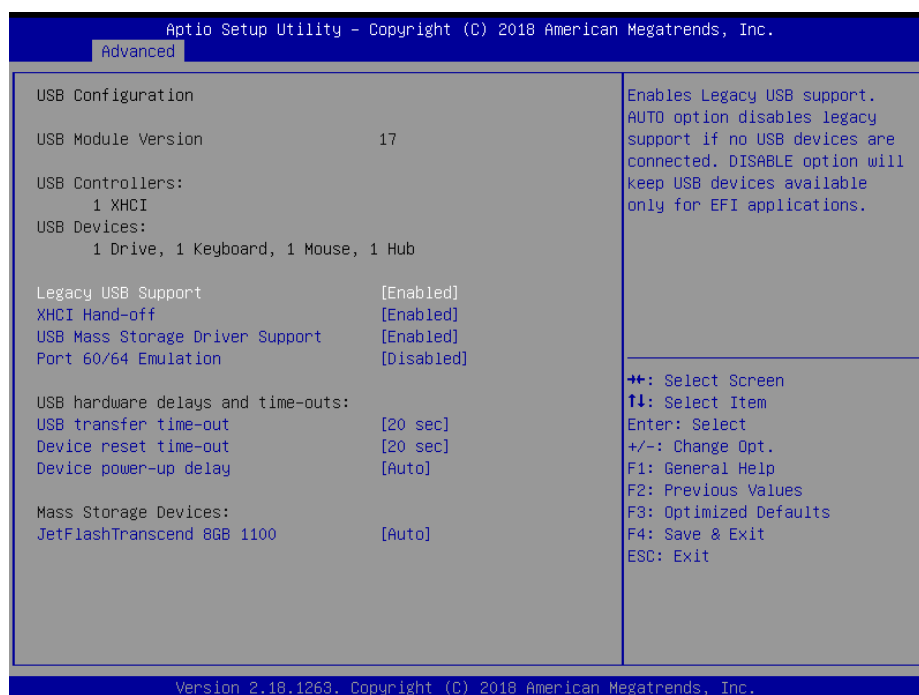
Item	Options	Description
CSM Support	Disabled[Default] Enabled	Enable/Disable CSM Support.

3.6.2.13 NVMe Configuration



3.6.2.14 USB Configuration

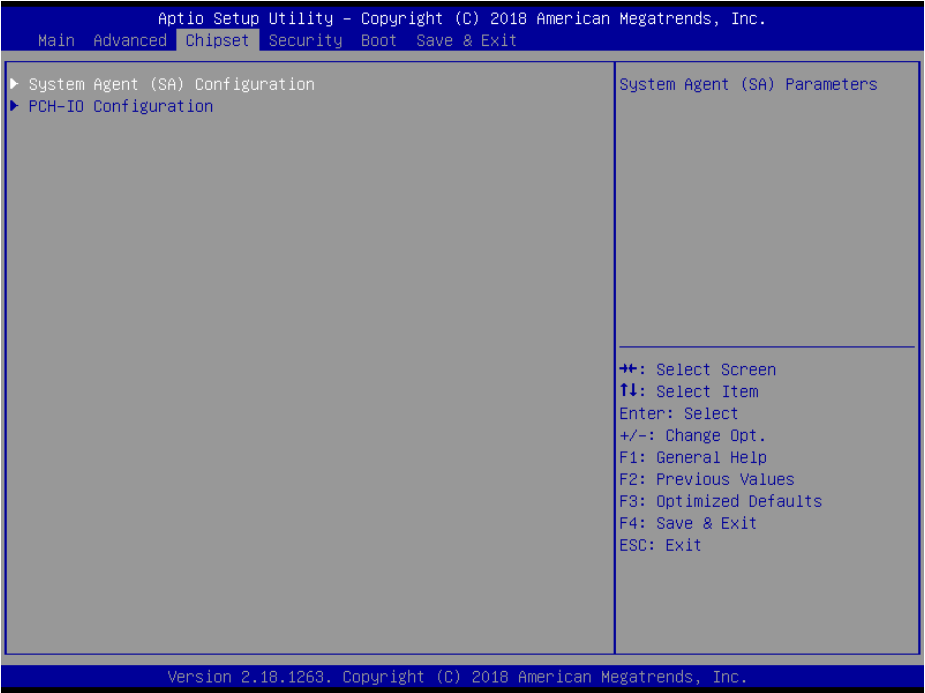
The USB Configuration menu helps read USB information and configures USB settings.



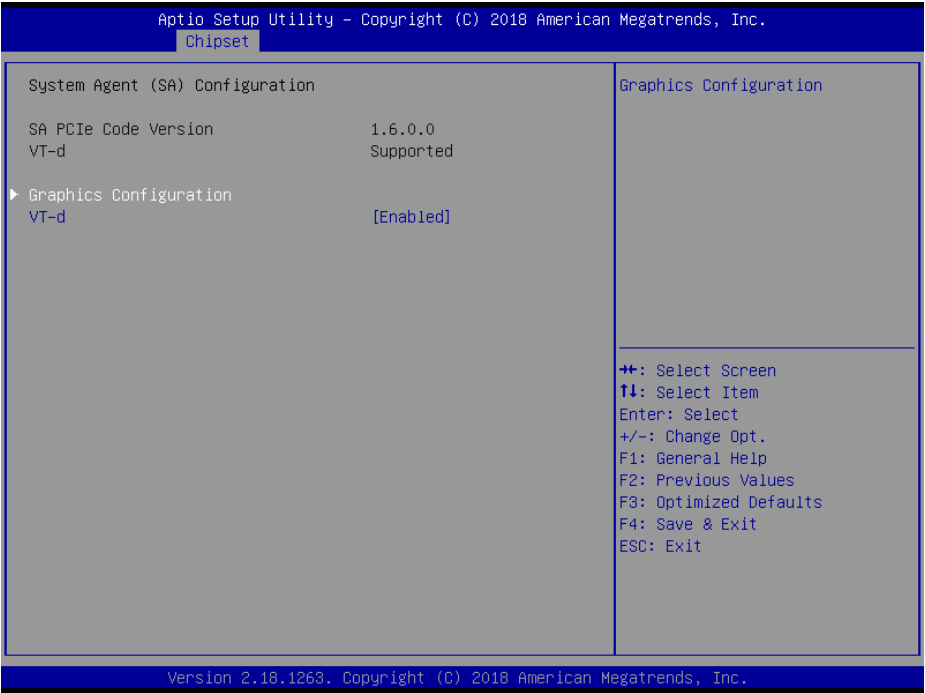
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Item	Options	Description
Legacy USB Support	Enabled [Default] Disabled Auto	Enables Legacy USB support. AUTO option disables legacy support if no USB devices are connected. DISABLE option will keep USB devices available only for EFI applications.
XHCI 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.
USB Mass Storage Driver Support	Disabled Enabled [Default]	Enable/Disable USB Mass Storage Driver Support.
Port 60/64 Emulation	Disabled Enabled [Default]	Enables I/O port 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 from Hub descriptor.
JetFlashTranscend 8GB 1100	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.

3.6.3 Chipset

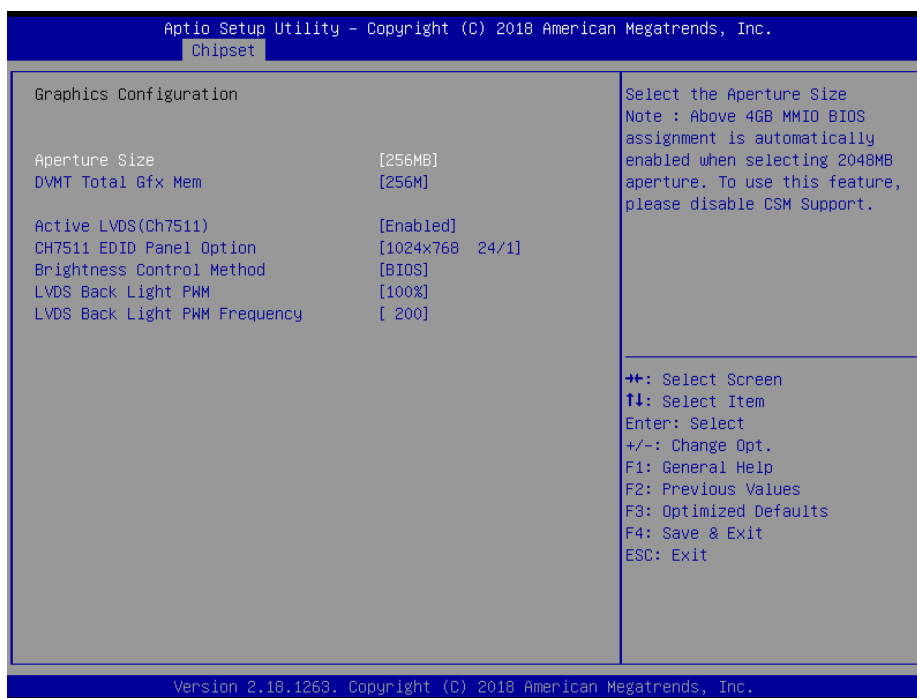


3.6.3.1 System Agent (SA) Configuration



Item	Option	Description
VT-d	Disabled Enabled [Default]	VT-d capability.

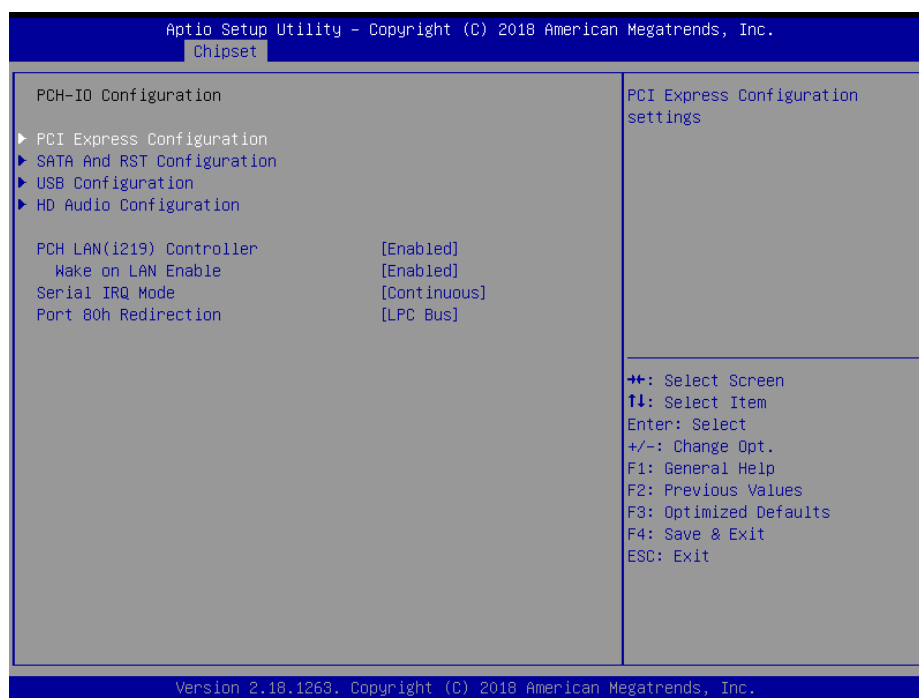
3.6.3.1.1 Graphics Configuration



Item	Option	Description
Aperture Size	128MB 256MB[Default] 512MB 1024MB 2048MB	Select the Aperture Size. Note: Above 4GB MMIO BIOS assignment is automatically enabled when selecting 2048MB aperture. To use this feature, please disable CSM Support.
DVMT Total Gfx Mem	256M[Default] 128M Max	Select DVMT5.0 Total Graphic Memory size used by the Internal Graphics Device.
Active LVDS(CH7511)	Disabled Enabled[Default]	Active Internal LVDS(eDP->Ch7511-to-LVDS).
CH7511 EDID Panel Option	1024x768 24/1[Default] 800x600 18/1 1024x768 18/1 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.
Brightness Control Method	BIOS[Default] BR Button	LVDS Brightness Control Method. 1.BIOS 2.Brightness Button

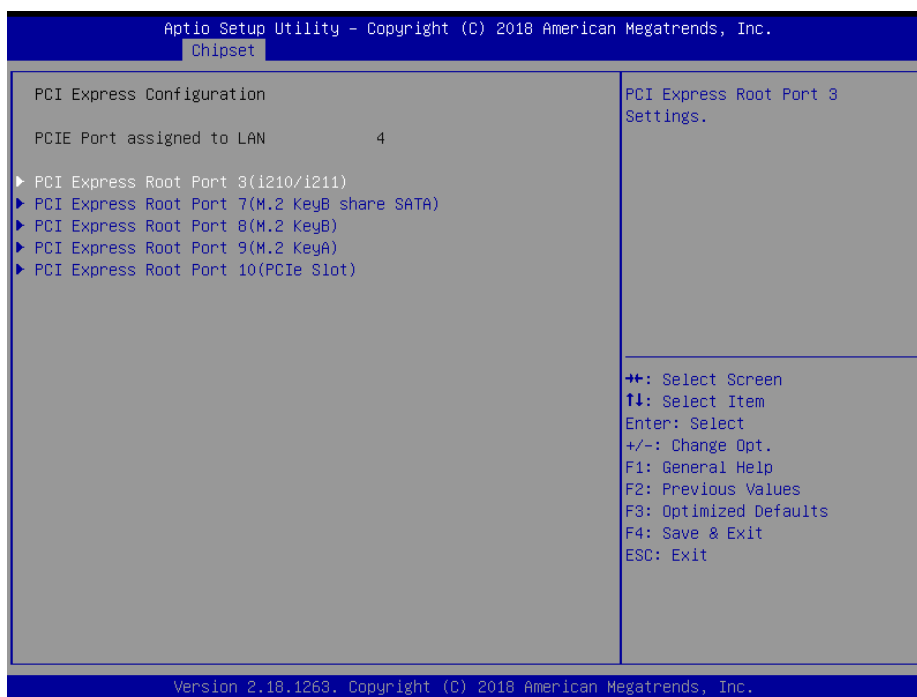
	VR OS driver	3.Variable Resistor 4.OS Driver.
LVDS Back Light PWM	00% 25% 50% 75% 100% [Default]	Select LVDS back light PWM duty.
LVDS Back Light PWM Frequency	200 [Default] 300 400 500 700 1k 2k 3k 5k 10k 20k	Select LVDS back light PWM Frequency.

3.6.3.2 PCH-IO Configuration

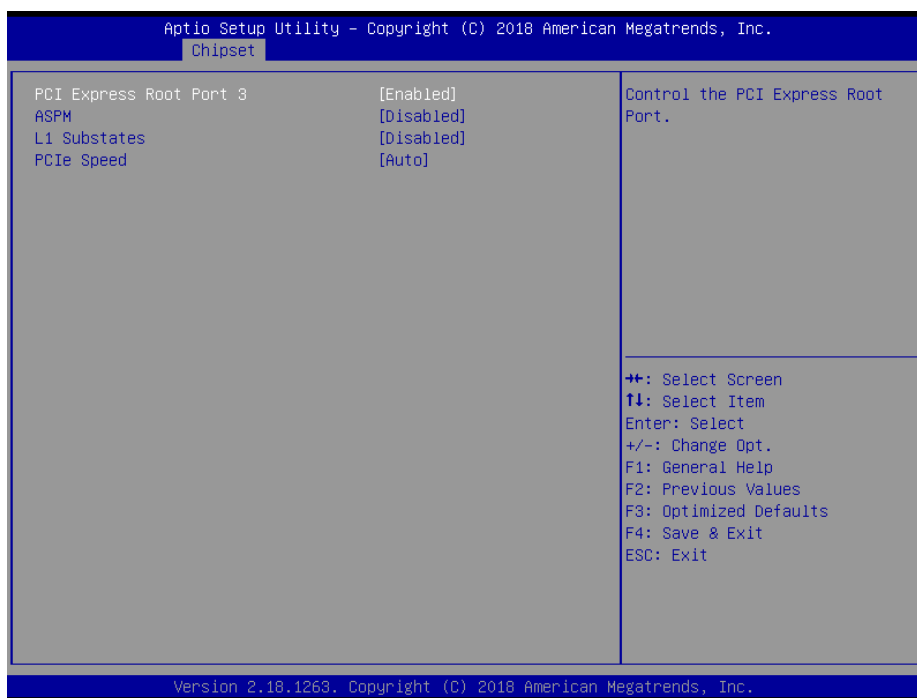


Item	Option	Description
PCH LAN(i219) Controller	Enabled [Default] Disabled	Enable/Disable onboard NIC.
Wake on LAN Enable	Enabled [Default] Disabled	Enable/Disable integrated LAN to wake the system.
Serial IRQ Mode	Quiet Continuous [Default]	Configure Serial IRQ Mode.
Port 80h Redirection	LPC Bus [Default]	Control where the Port 80h cycle are sent.

3.6.3.2.1 PCI Express Configuration



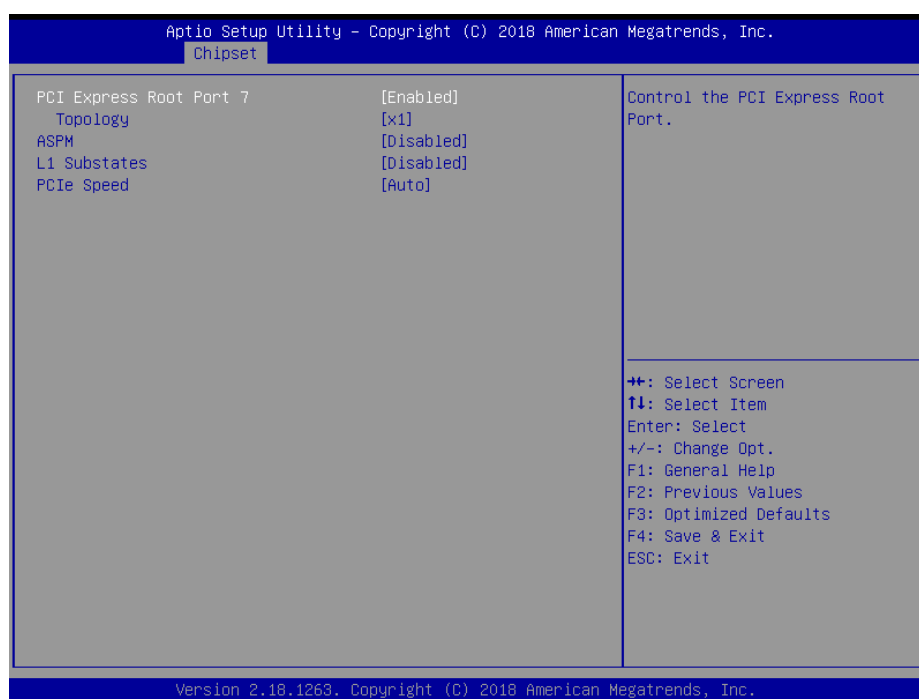
3.6.3.2.1.1 PCI Express Root Port 3 (i210/211)



Item	Option	Description
PCI Express Root Port 3	Disabled Enabled[Default],	Control the PCI Express Root Port.

ASPM	Auto, L0sL1 L1 L0s Disabled[Default]	Set the ASPM Level: Force L0s – Force all links to L0s State AUTO – BIOS auto configure DISABLE – Disables ASPM.
L1 Substates	Disabled[Default] L1.1 L1.2 L1.1 & L1.2,	PCI Express L1 Substates settings.
PCIe Speed	Auto[Default] Gen1 Gen2 Gen3	Configure PCIe speed.

3.6.3.2.1.2 PCI Express Root Port 7 (M.2 KeyB share SATA)

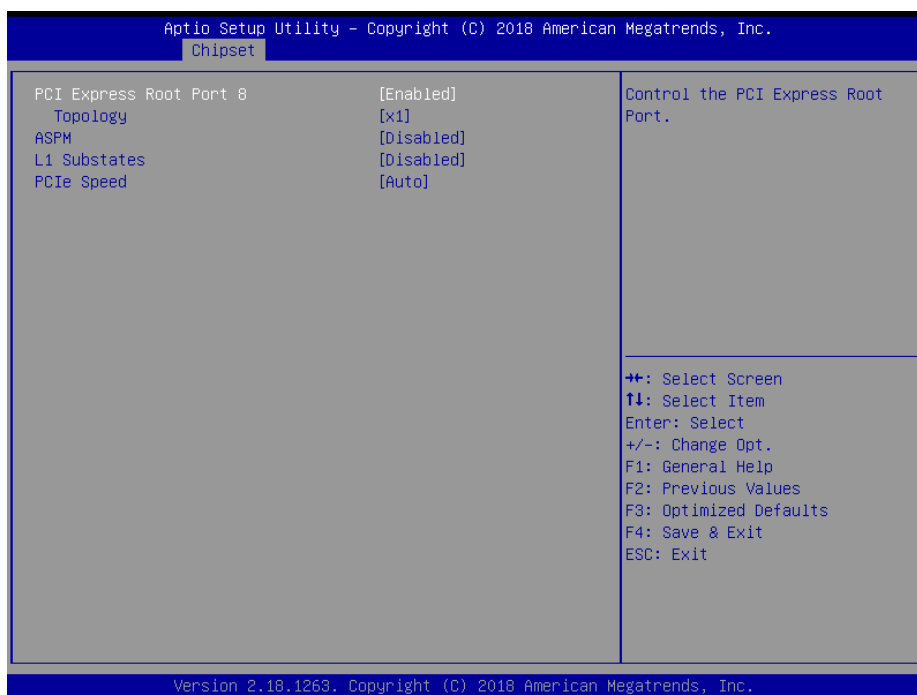


Item	Option	Description
PCI Express Root Port 7	Disabled Enabled[Default],	Control the PCI Express Root Port.
Topology	Unknown x1[Default] x4 Sata Express M2	Identify the SATA Topology if it is Default or ISATA or Flex or DirectConnect or M2.
ASPM	Disabled[Default] L0s L1 L0sL1 Auto,	Set the ASPM Level: Force L0s – Force all links to L0s State AUTO – BIOS auto configure DISABLE – Disables ASPM.

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L1 Substates	Disabled[Default] L1.1 L1.2 L1.1 & L1.2,	PCI Express L1 Substates settings.
PCIe Speed	Auto[Default] Gen1 Gen2 Gen3	Configure PCIe speed.

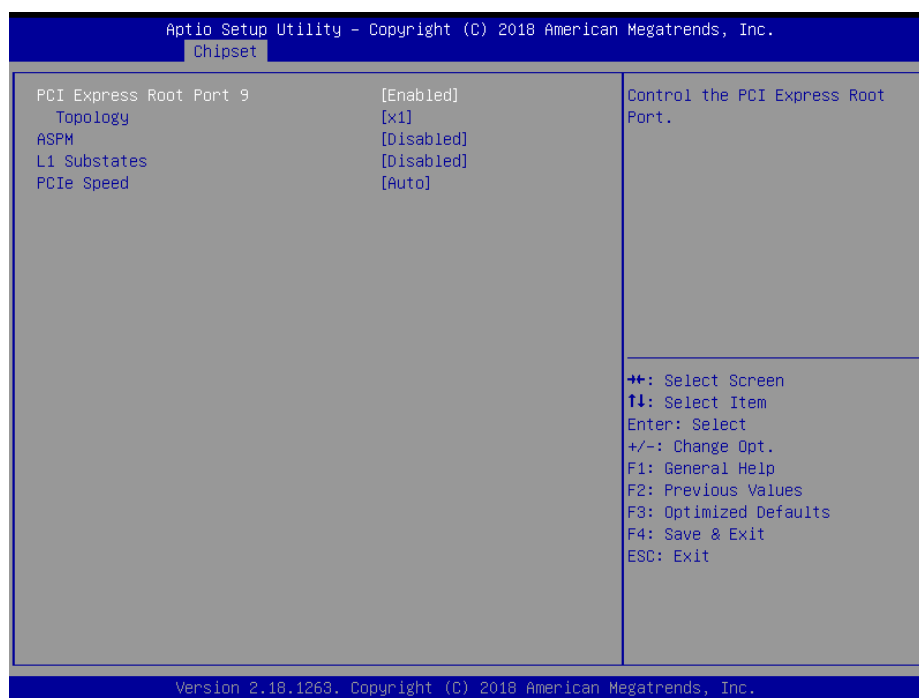
3.6.3.2.1.3 PCI Express Root Port 8 (M.2 KeyB)



Item	Option	Description
PCI Express Root Port 8	Disabled Enabled[Default],	Control the PCI Express Root Port.
Topology	Unknown x1[Default] x4 Sata Express M2	Identify the SATA Topology if it is Default or ISATA or Flex or DirectConnect or M2.
ASPM	Disabled[Default] L0s L1 L0sL1 Auto,	Set the ASPM Level: Force L0s – Force all links to L0s State AUTO – BIOS auto configure DISABLE – Disables ASPM.
L1 Substates	Disabled[Default] L1.1 L1.2 L1.1 & L1.2,	PCI Express L1 Substates settings.

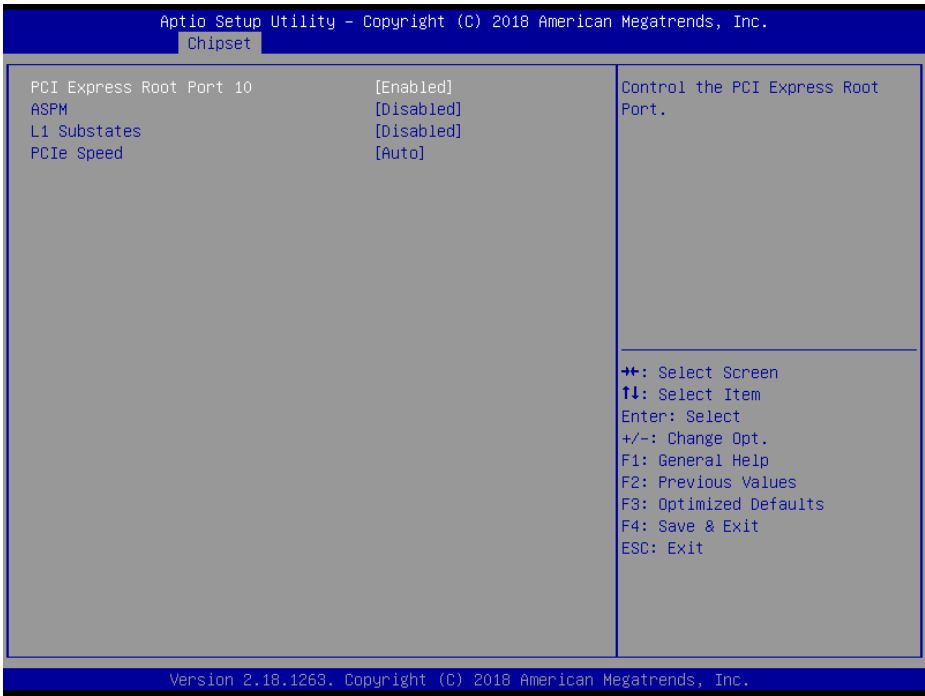
PCIe Speed	Auto[Default] Gen1 Gen2 Gen3	Configure PCIe speed.
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3.6.3.2.1.4 PCI Express Root Port 9 (M.2 KeyA)



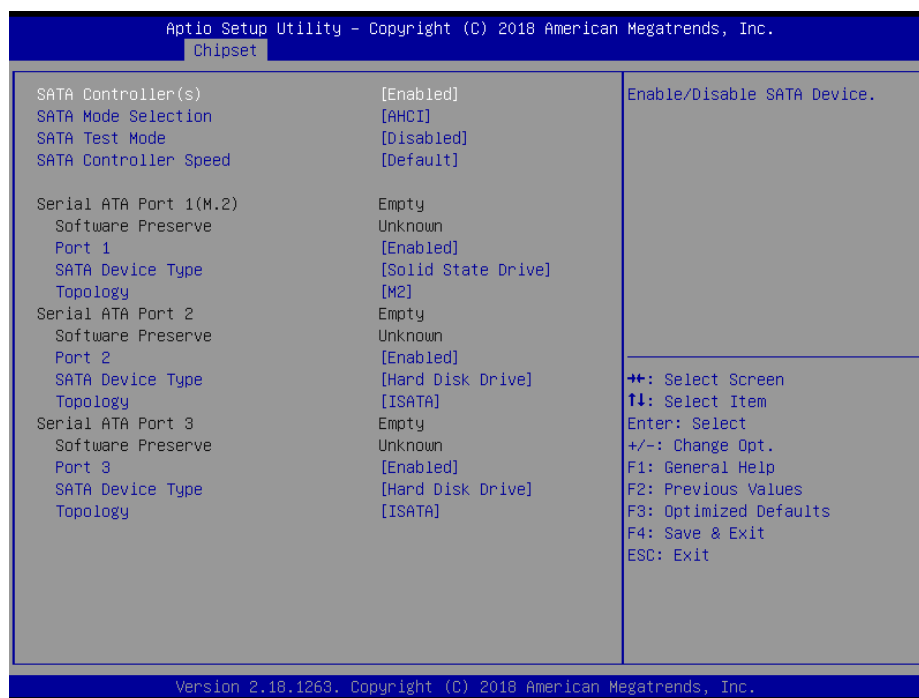
Item	Option	Description
PCI Express Root Port 9	Enabled[Default], Disabled	Control the PCI Express Root Port.
Topology	Unknown x1[Default] x4 Sata Express M2	Identify the SATA Topology if it is Default or ISATA or Flex or DirectConnect or M2.
ASPM	Auto, L0sL1 L1 L0s Disabled[Default]	Set the ASPM Level: Force L0s – Force all links to L0s State AUTO – BIOS auto configure DISABLE – Disables ASPM.
L1 Substates	Disabled[Default] L1.1 L1.2 L1.1 & L1.2,	PCI Express L1 Substates settings.
PCIe Speed	Auto[Default] Gen1 Gen2 Gen3	Configure PCIe speed.

3.6.3.2.1.5 PCI Express Root Port 10 (PCIe Slot)



Item	Option	Description
PCI Express Root Port 10	Disabled Enabled [Default]	Control the PCI Express Root Port.
ASPM	Disabled [Default] L0s L1 L0sL1 Auto,	Set the ASPM Level: Force L0s – Force all links to L0s State AUTO – BIOS auto configure DISABLE – Disables ASPM.
L1 Substates	Disabled [Default] L1.1 L1.2 L1.1 & L1.2,	PCI Express L1 Substates settings.
PCIe Speed	Auto [Default] Gen1 Gen2 Gen3	Configure PCIe speed.

3.6.3.2.2 SATA And RST Configuration

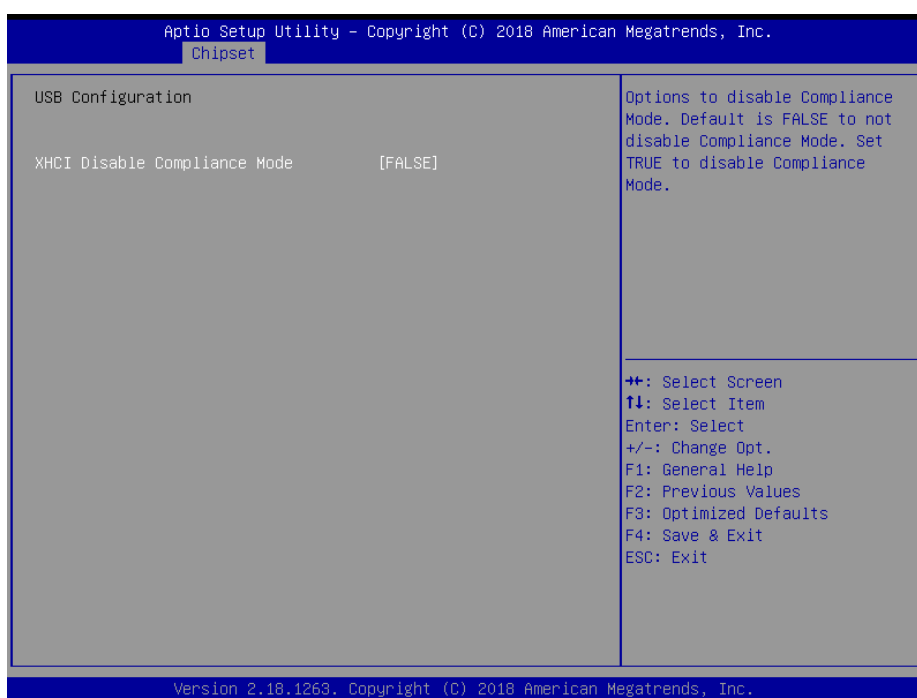


Item	Option	Description
SATA Controller(s)	Enabled[Default], Disabled	Enable/Disable SATA Device.
SATA Mode Selection	AHCI[Default], RAID	Determines how SATA controller(s) operate.
SATA Test Mode	Enabled, Disabled[Default]	Test Mode Enable/Disable (Loop Back).
SATA Controller Speed	Default[Default], Gen1 Gen2 Gen3	Indicates the maximum speed the SATA controller can support.
Port 1	Disabled Enabled[Default],	Enable or Disable SATA Port.
SATA Device Type	Hard Disk Drive Solid State Drive[Default]	Identify the SATA port is connected to Solid State Drive or Hard Disk Drive.
Topology	Unknown ISATA Direct Connect Flex M2[Default]	Identify the SATA Topology if it is Default or ISATA or Flex or DirectConnect or M2.
Port 2	Disabled Enabled[Default],	Enable or Disable SATA Port.
SATA Device Type	Hard Disk Drive[Default] Solid State Drive	Identify the SATA port is connected to Solid State Drive or Hard Disk Drive.
Topology	Unknown ISATA[Default] Direct Connect Flex	Identify the SATA Topology if it is Default or ISATA or Flex or DirectConnect or M2.

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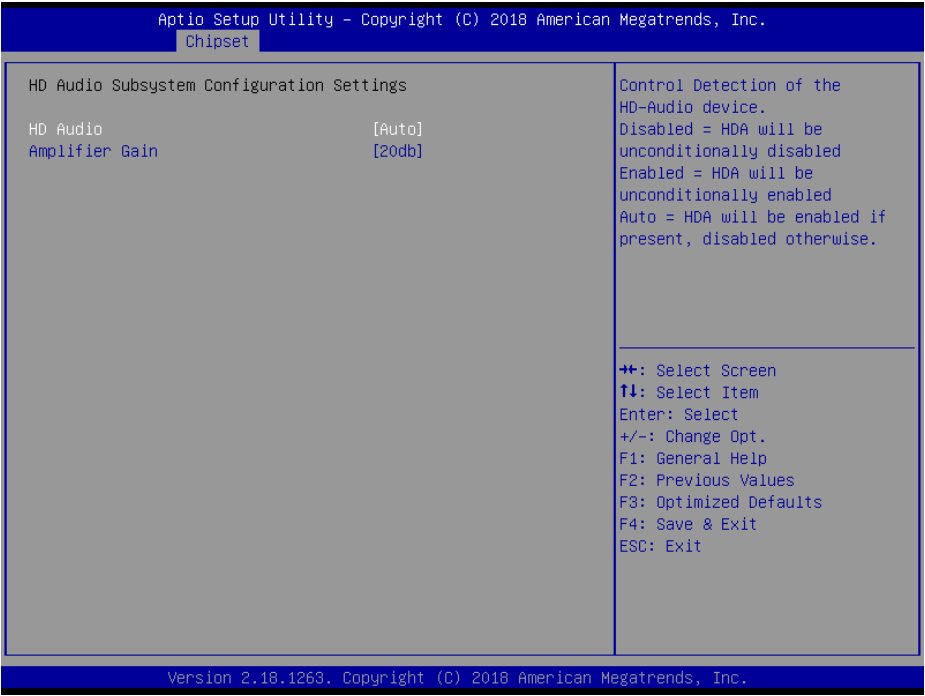
	M2	
Port 3	Disabled Enabled[Default],	Enable or Disable SATA Port.
SATA Device Type	Hard Disk Drive[Default] Solid State Drive	Identify the SATA port is connected to Solid State Drive or Hard Disk Drive.
Topology	Unknown ISATA[Default] Direct Connect Flex M2	Identify the SATA Topology if it is Default or ISATA or Flex or DirectConnect or M2.

3.6.3.2.3 USB Configuration



Item	Option	Description
XHCI Disable Compliance Mode	FALSE[Default], TRUE	Options to disable Compliance Mode. Default is FALSE to not disable Compliance Mode. Set TRUE to disable Compliance Mode.

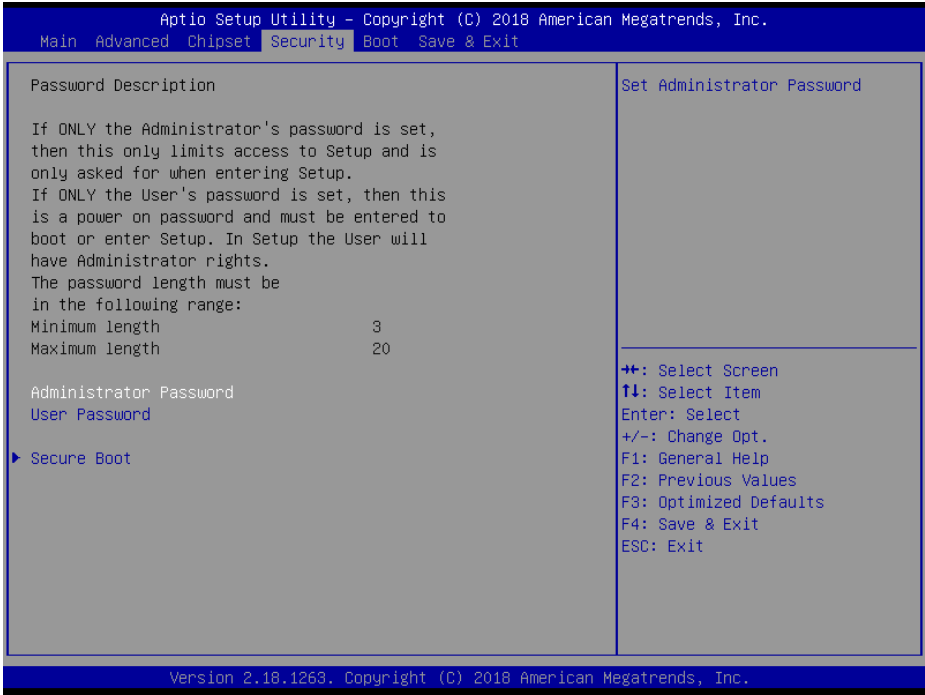
3.6.3.2.4 HD Audio Configuration



Item	Option	Description
HD Audio	Disabled Enabled Auto[Default],	Control Detection of the HD-Audio device. Disable = HDA will be unconditionally disabled Enabled = HDA will be unconditionally enabled Auto = HDA will be enabled if present, disabled otherwise.
Amplifier Gain	20db[Default] 26db 32db 36db	Amplifier Gain.

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3.6.4 Security



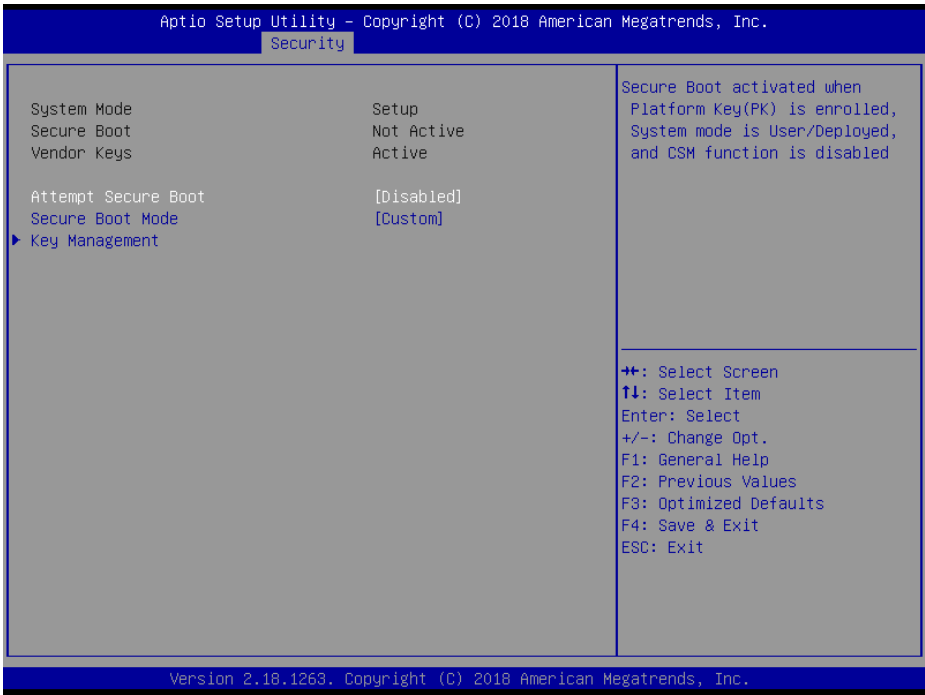
● Administrator Password

Set setup Administrator Password

● User Password

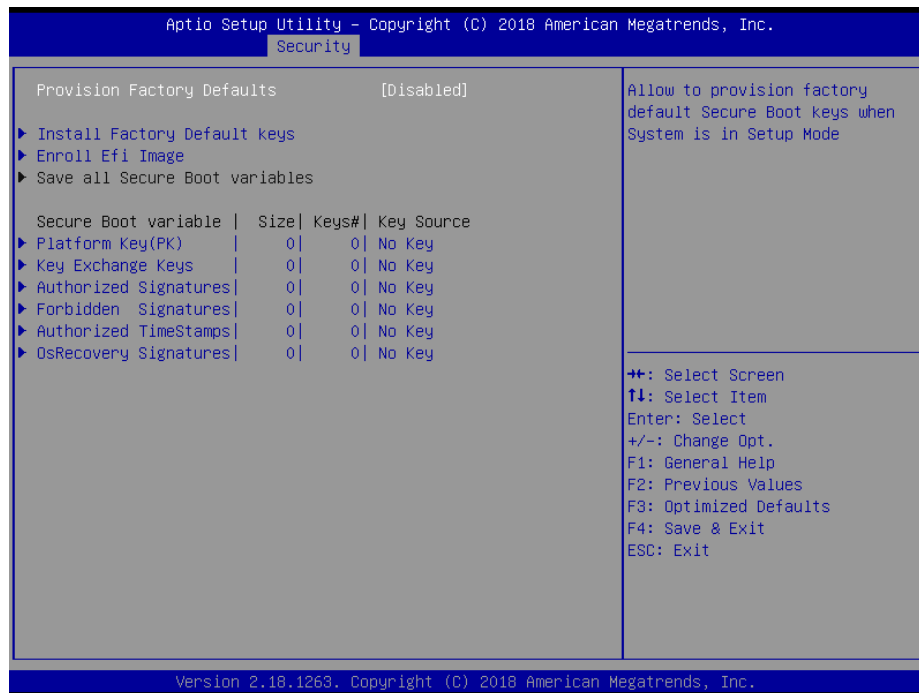
Set User Password

3.6.4.1 Secure Boot menu



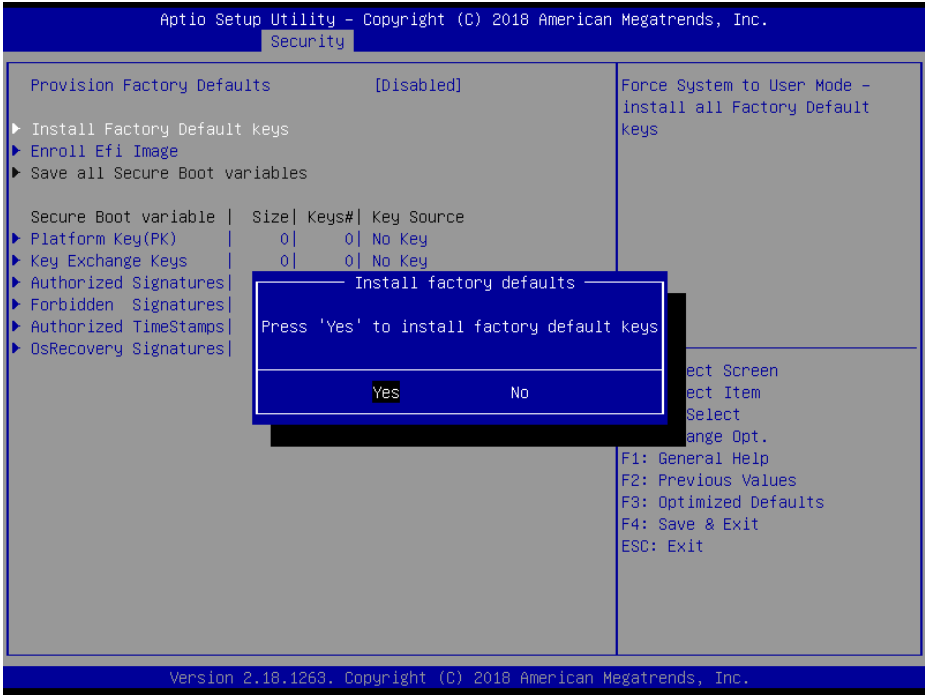
Item	Option	Description
Attempt Secure Boot	Disabled[Default] Enabled	Secure Boot activated when Platform Key(PK) is enrolled, System mode is User/Deployed, and CSM function is disabled.
Secure Boot Mode	Standard Custom[Default]	Secure Boot mode selector:Standard/Custom. In Custom mode Secure Boot Variables can be configured without authentication.

3.6.4.1.1 Key Management



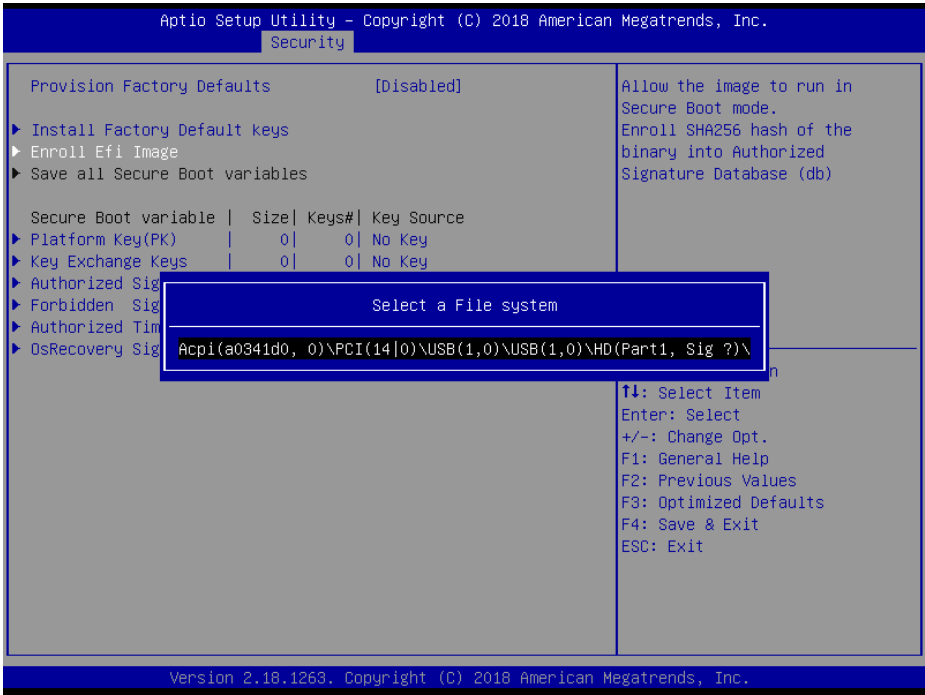
Item	Option	Description
Provision Factory Defaults	Disabled[Default] Enabled	Allow to provision factory default Secure Boot keys when System is in Setup Mode.

3.6.4.1.1.1 Install Factory Default keys



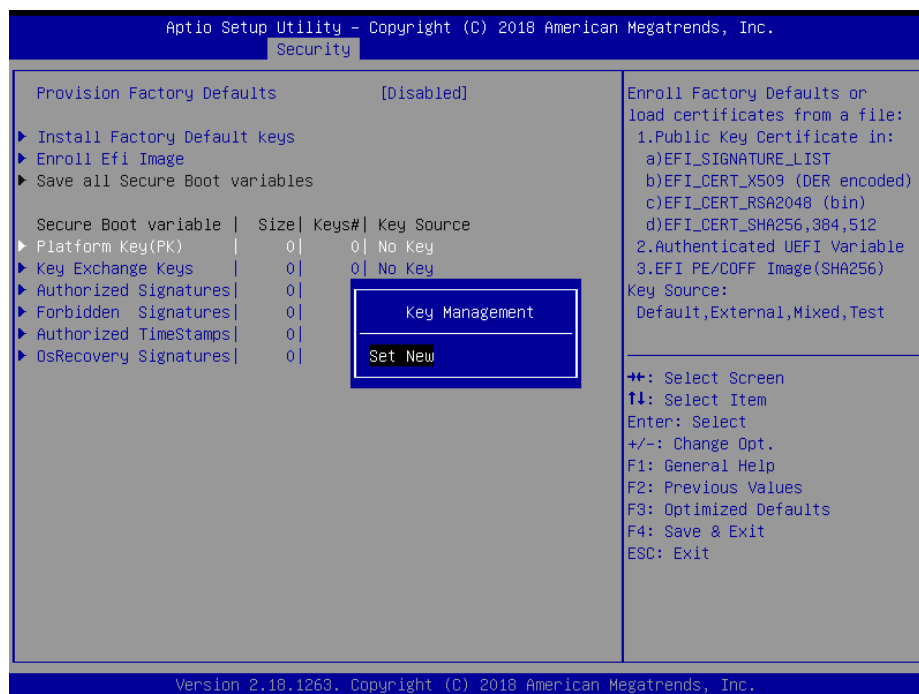
Item	Description
Install Factory Default keys	Force System to User Mode-install all Factory Default keys

3.6.4.1.1.2 Enroll Efi Image

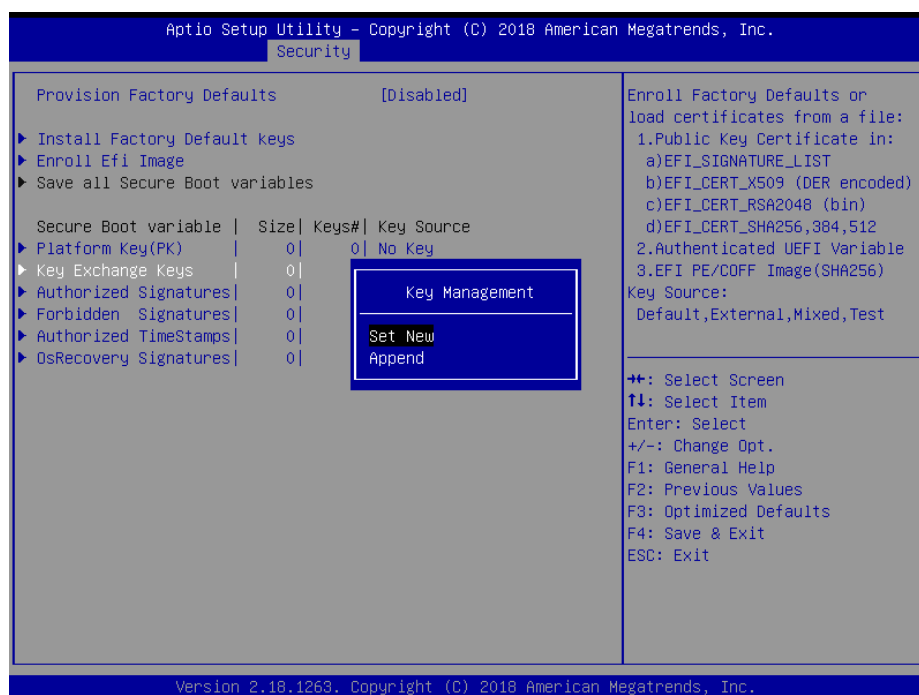


Item	Description
3.6.4.1.1.2 Enroll Efi Image	Allow the image to run in Secure Boot mode. Enroll SHA256 hash of the binary into Authorized Signature Database(db)

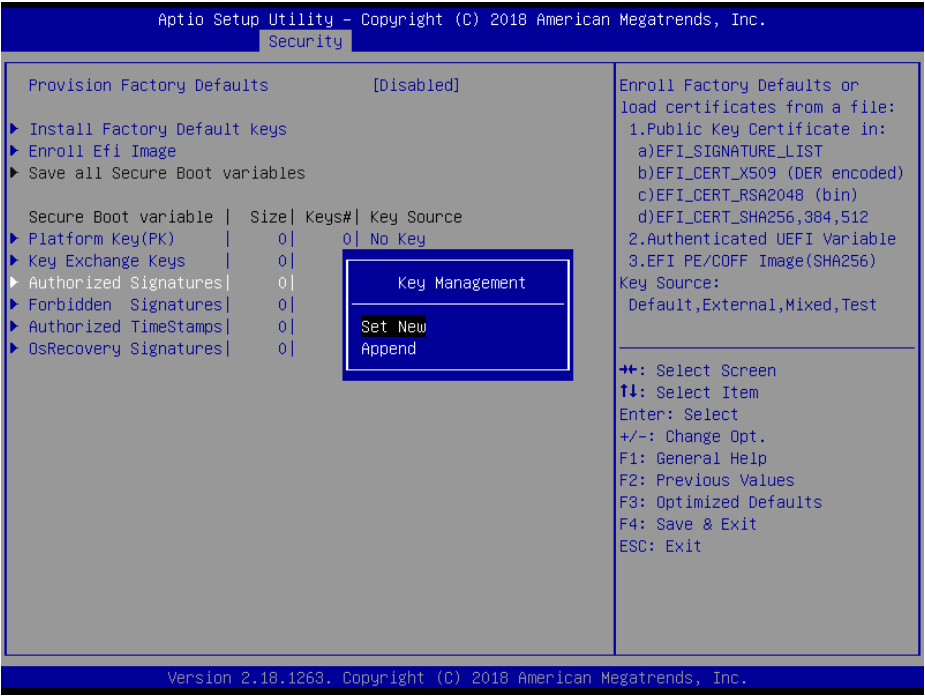
3.6.4.1.1.3 Platform Key(PK)



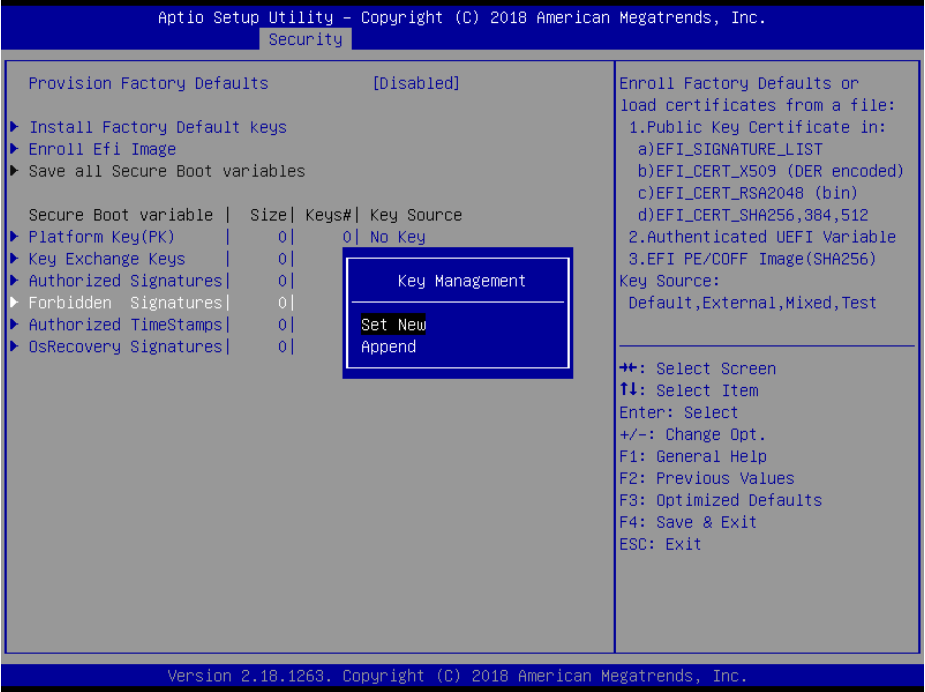
3.6.4.1.1.4 Key Exchange Keys



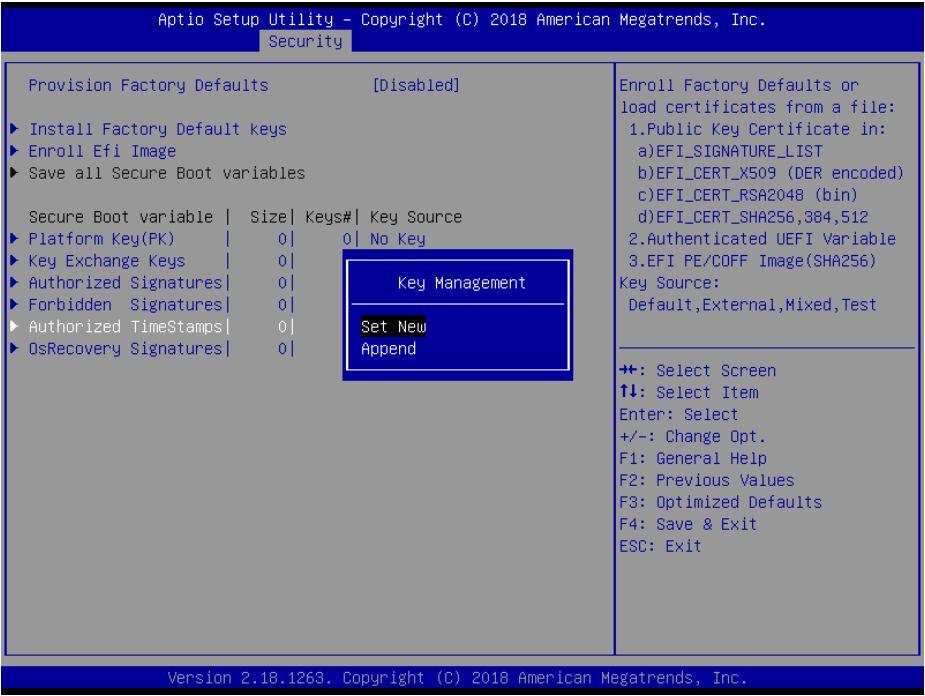
3.6.4.1.1.5 Authorized Signatures



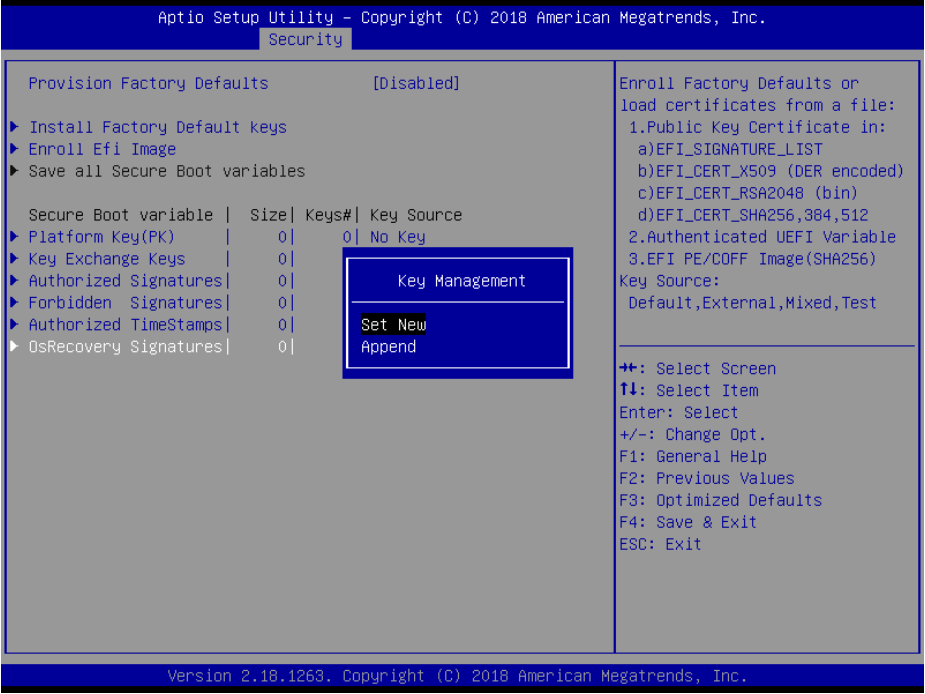
3.6.4.1.1.6 Forbidden Signatures



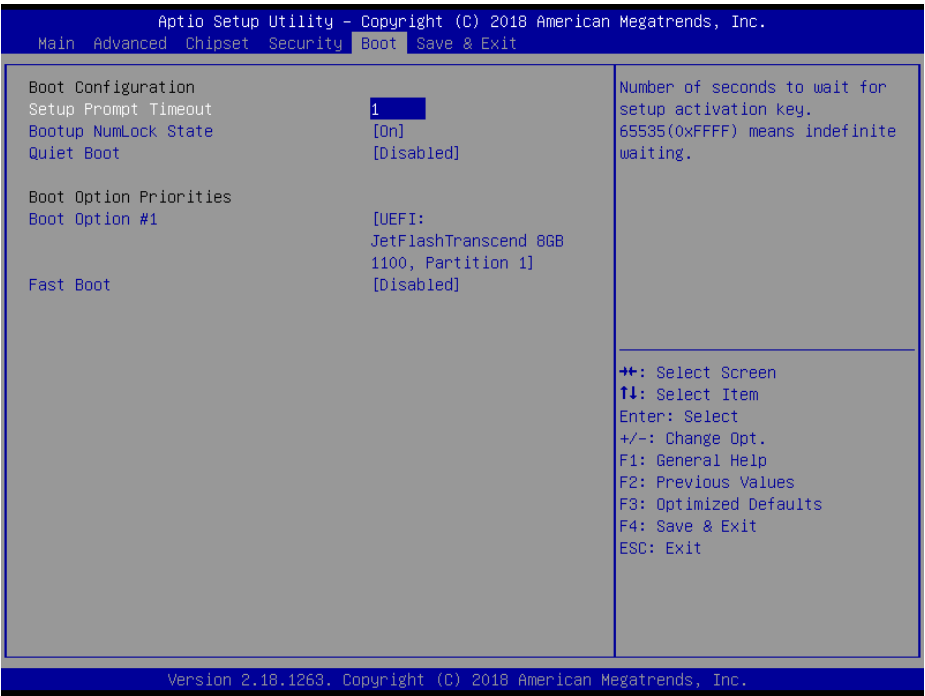
3.6.4.1.1.7 Authorized TimeStamps



3.6.4.1.1.8 OsRecovery Signatures

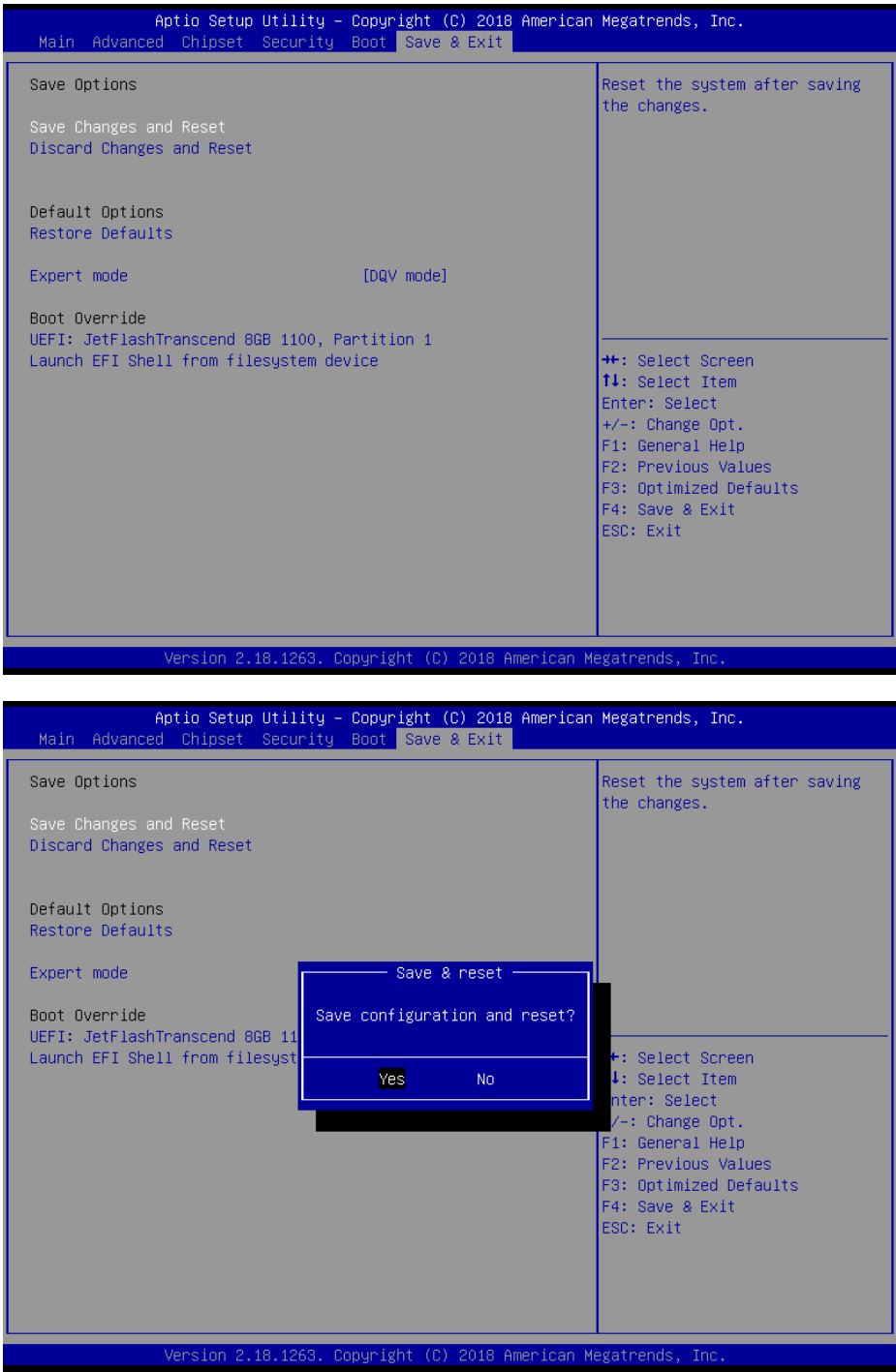


3.6.5 Boot



Item	Option	Description
Setup Prompt Timeout	1	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.
Boot Option #1	Set the system boot order.	
Fast Boot	Disabled[Default] Enabled	Enables or disables boot with initialization of a minimal set of devices required to launch active boot option. Has no effect for BBS boot options.

3.6.6 Save and exit



3.6.6.1 Save Changes and Reset

Reset the system after saving the changes.

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3.6.6.2 *Discard Changes and Reset*

Reset system setup without saving any changes.

3.6.6.3 *Restore Defaults*

Restore/Load Default values for all the setup options.

3.6.6.4 *UEFI: JetFlashTranscend 8GB 1100, Partition 1*

3.6.6.5 *Launch EFI Shell from filesystem device*

Attempts to Launch EFI Shell application (Shell.efi) from one of the available filesystem devices.

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.

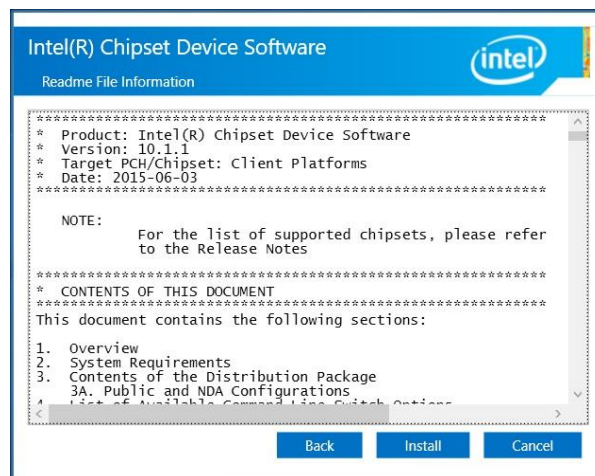
4.1 Install Chipset Driver

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.



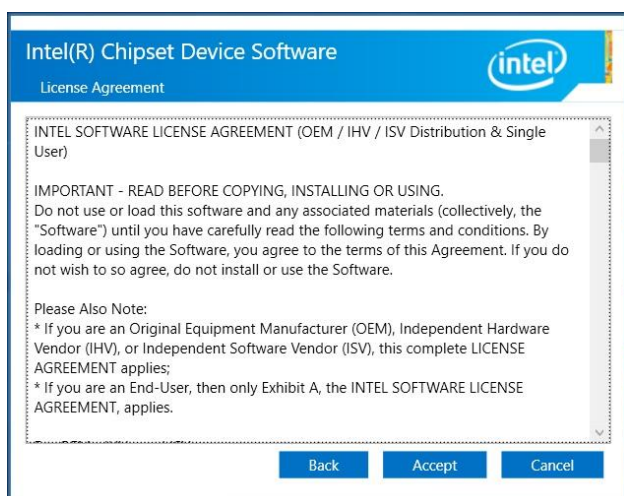
Step 3. Click Install.



Step1. Click Next.



Step 4. Complete setup.



Step 2. Click Accept.

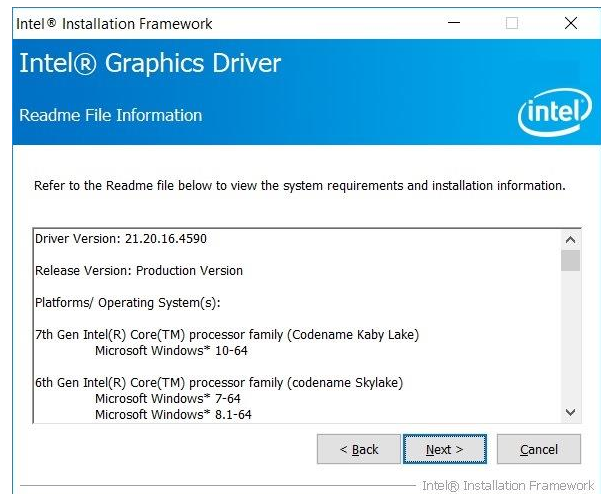
4.2 Install VGA Driver

All drivers can be found on the Avalue Official Website:

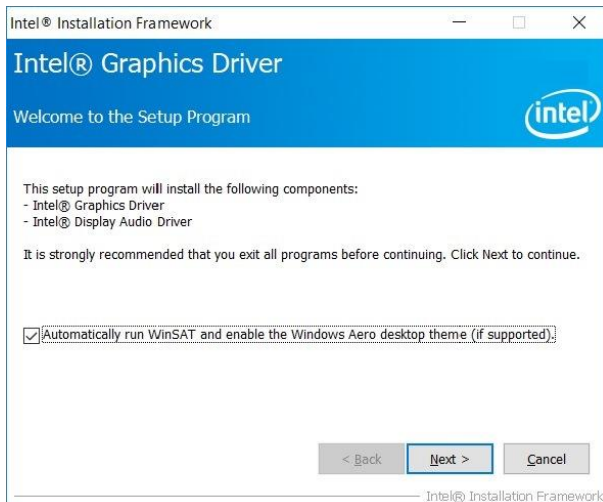
<http://www.avalue.com.tw>.



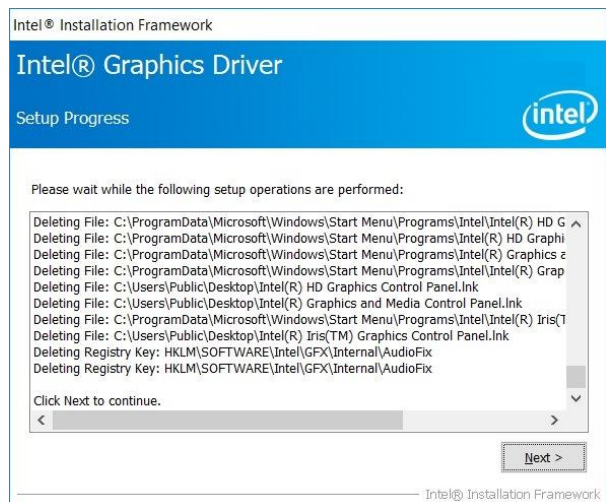
Note: The installation procedures and screen shots in this section are based on Windows 10 operation system.



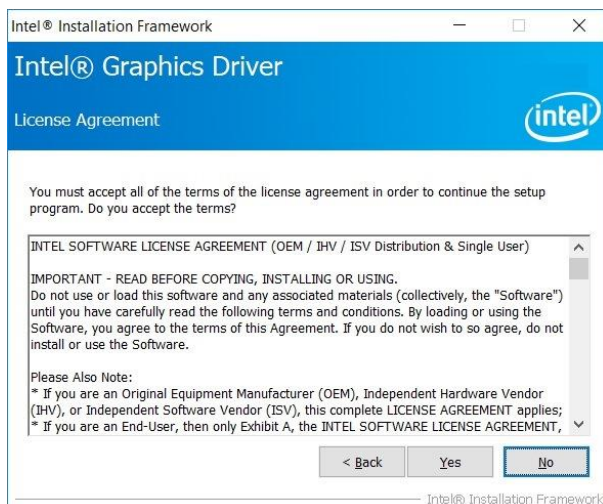
Step 3. Click Next.



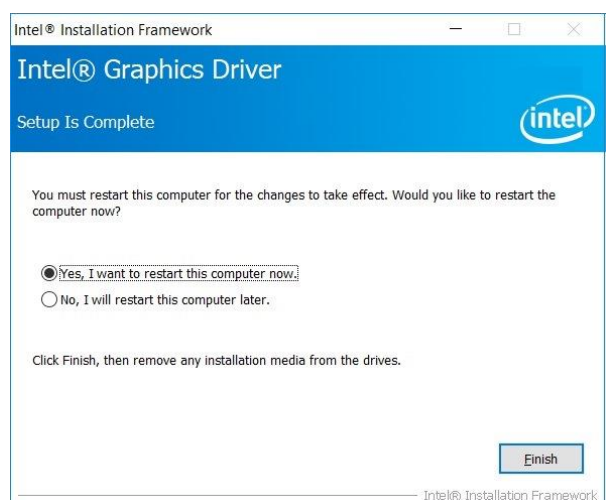
Step 1. Click Next to continue installation.



Step 4. Click Next.



Step 2.
Click **Yes** to accept license agreement.



Step 5. Click Finish to complete setup.

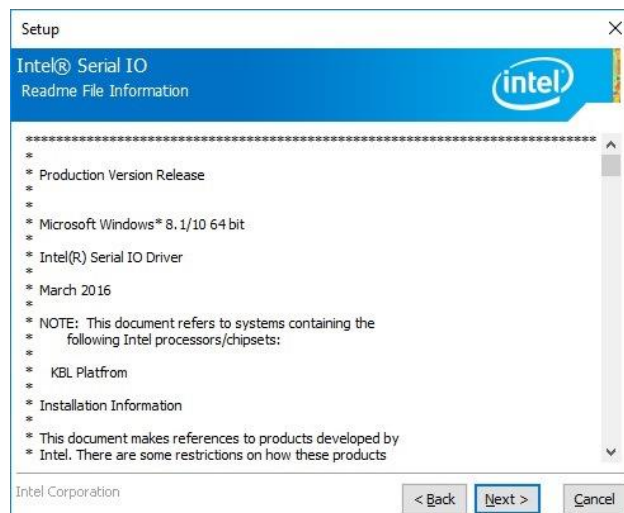
4.3 Install Serial IO Driver

All drivers can be found on the Avalue Official Website:

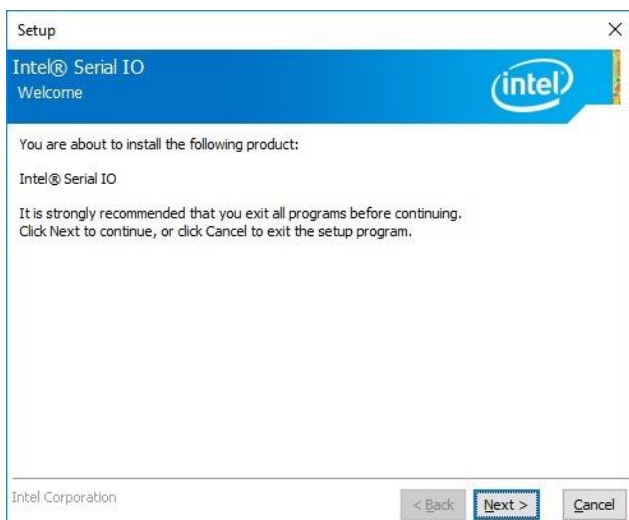
<http://www.avalue.com.tw>.



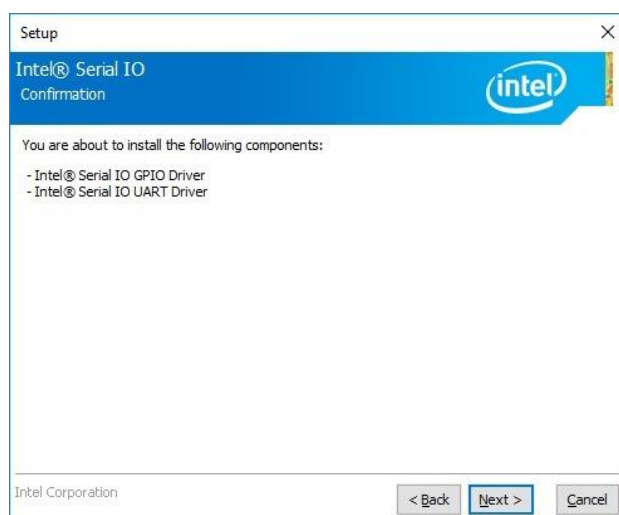
Note: The installation procedures and screen shots in this section are based on Windows 10 operation system.



Step 3. Click Next.



Step 1. Click Next to continue installation.



Step 4. Click Next.



Step 2. Click Next.



Step 5. Click Finish to complete setup.

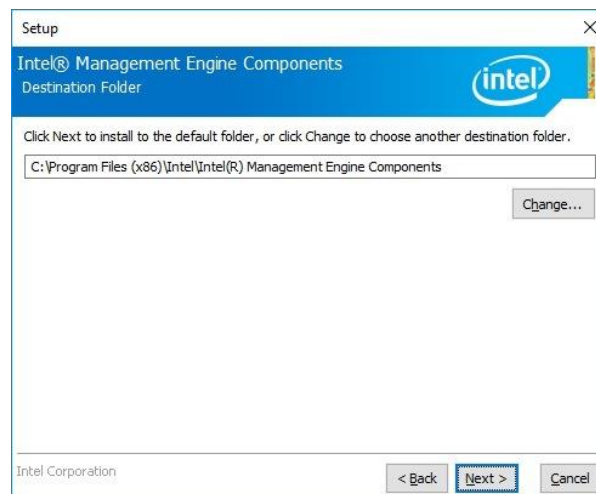
4.4 Install ME Driver

All drivers can be found on the Avalue Official Website:

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



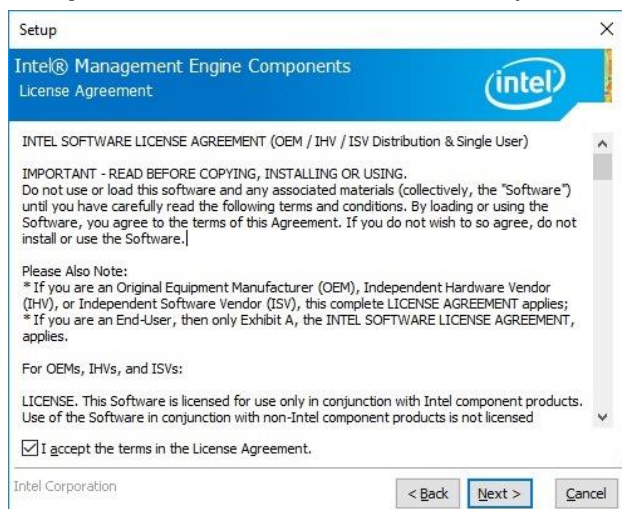
Note: The installation procedures and screen shots in this section are based on Windows 10 operation system.



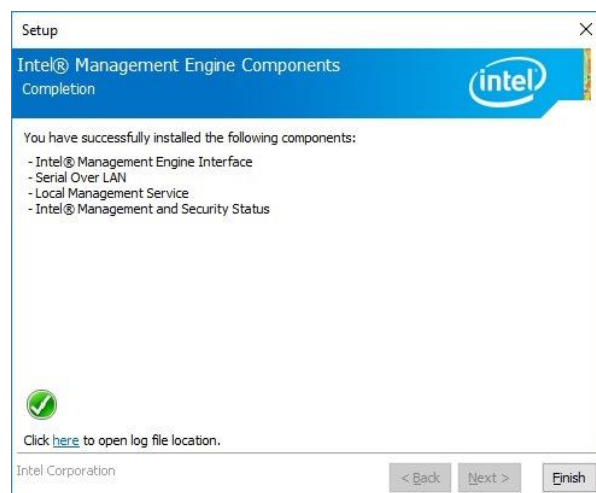
Step 3. Click Next.



Step 1. Click Next to continue setup.



Step 2. Click Next.



Step 4. Click Finish to complete setup.

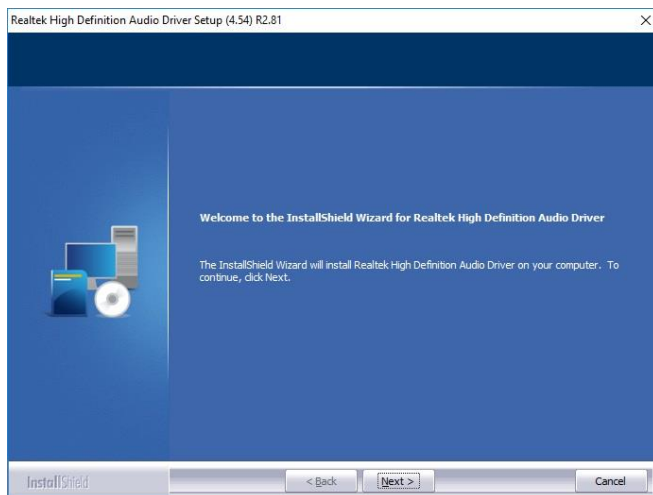
4.5 Install Audio Driver (For Realtek ALC888S HD Audio)

All drivers can be found on the Avalue Official Website:

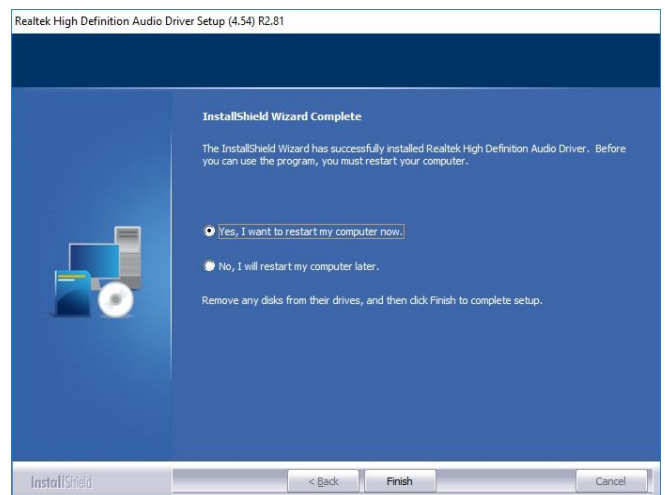
<http://www.avalue.com.tw>.



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.



Step1. Click **Next** to Install.



Step 2. Click **Finish** to complete setup.

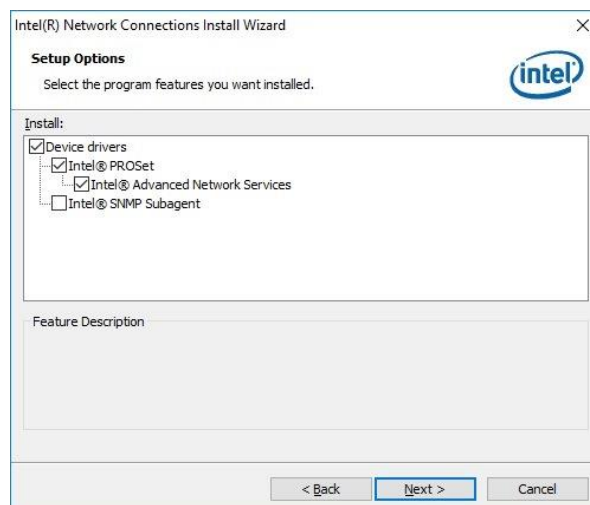
4.6 Install LAN Driver

All drivers can be found on the Avalue Official Website:

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



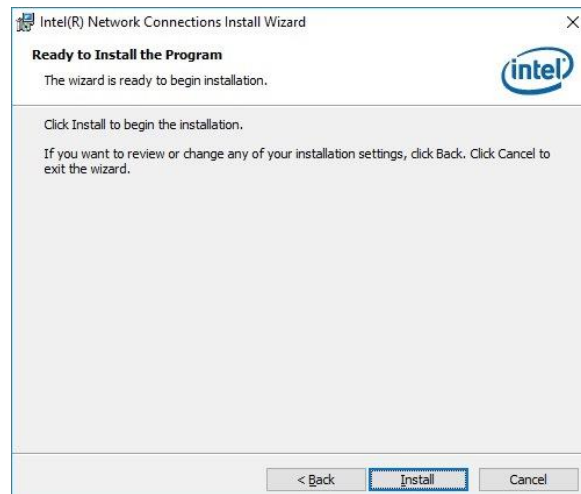
Note: The installation procedures and screen shots in this section are based on Windows 10 operation system.



Step 3. Click Next.



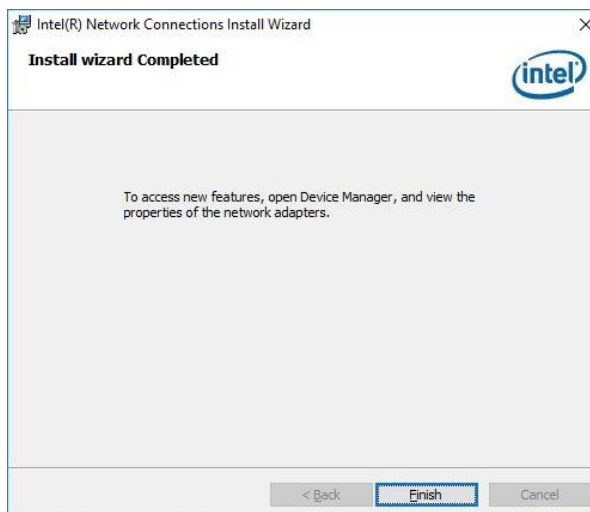
Step 1. Click Next to continue installation.



Step 4. Click Install.



Step 2. Click Next.



Step 5. Click Finish to complete setup.

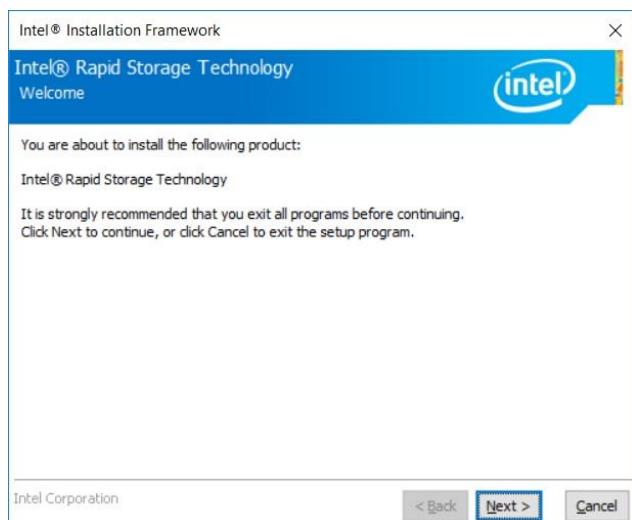
4.7 Install RST Driver

All drivers can be found on the Avalue Official Website:

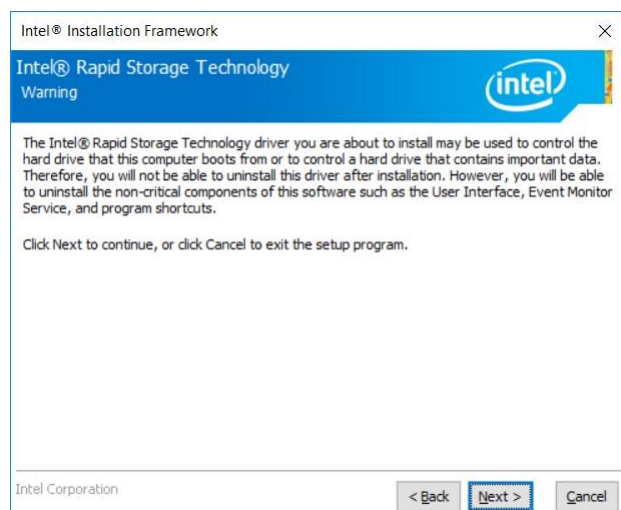
<http://www.avalue.com.tw>.



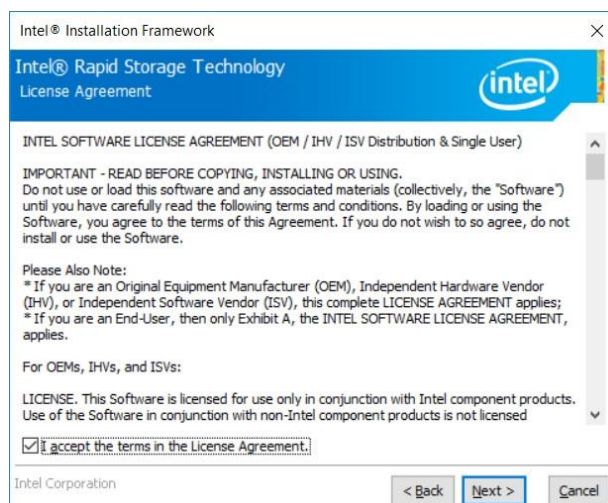
Note: The installation procedures and screen shots in this section are based on Windows 10 operation system.



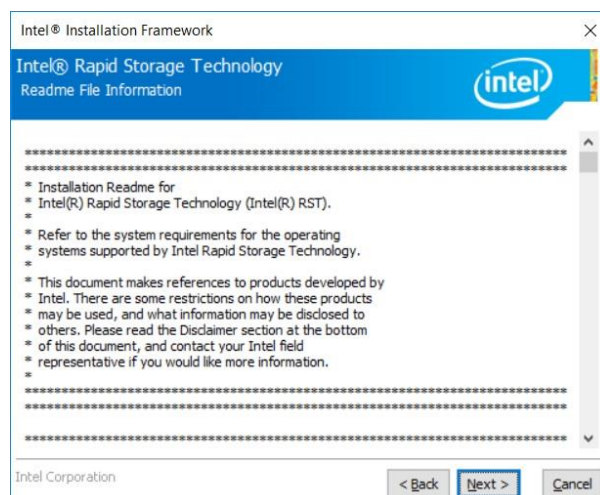
Step 1. Click **Next** to continue installation.



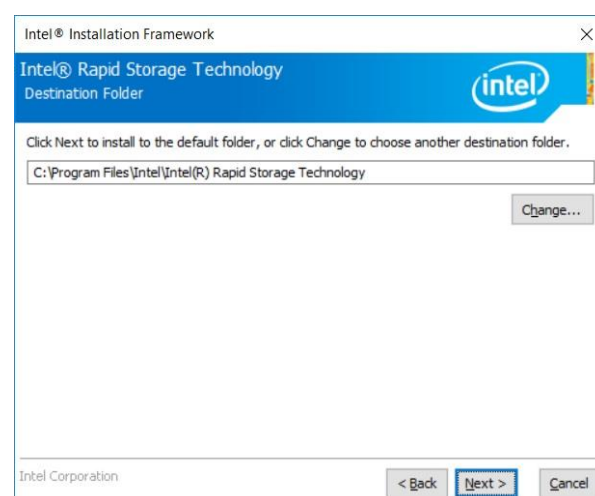
Step 2. Click **Next**.



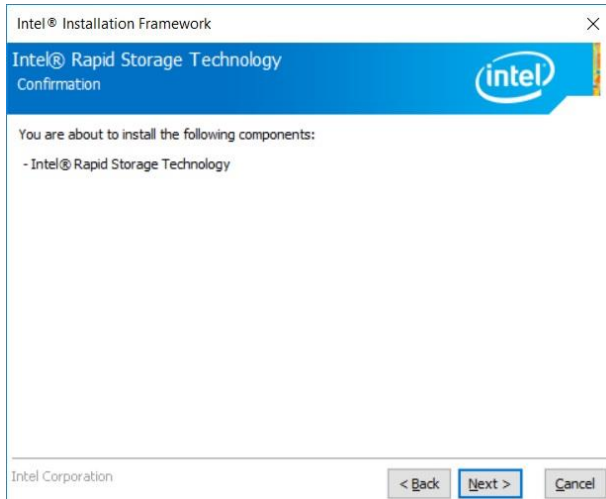
Step 3. Click **Next**.



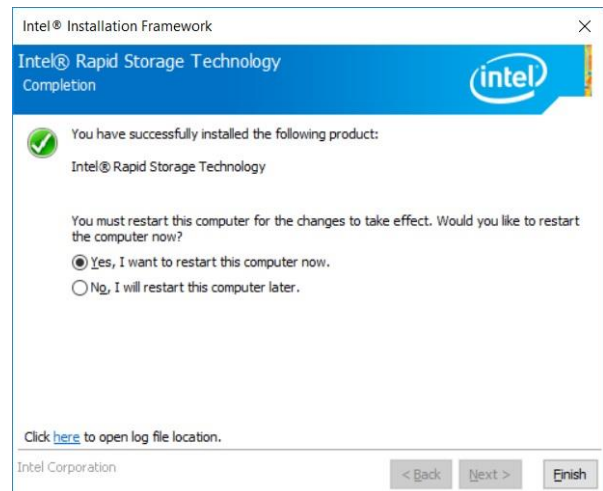
Step 4. Click **Next**.



Step 5. Click **Next**.



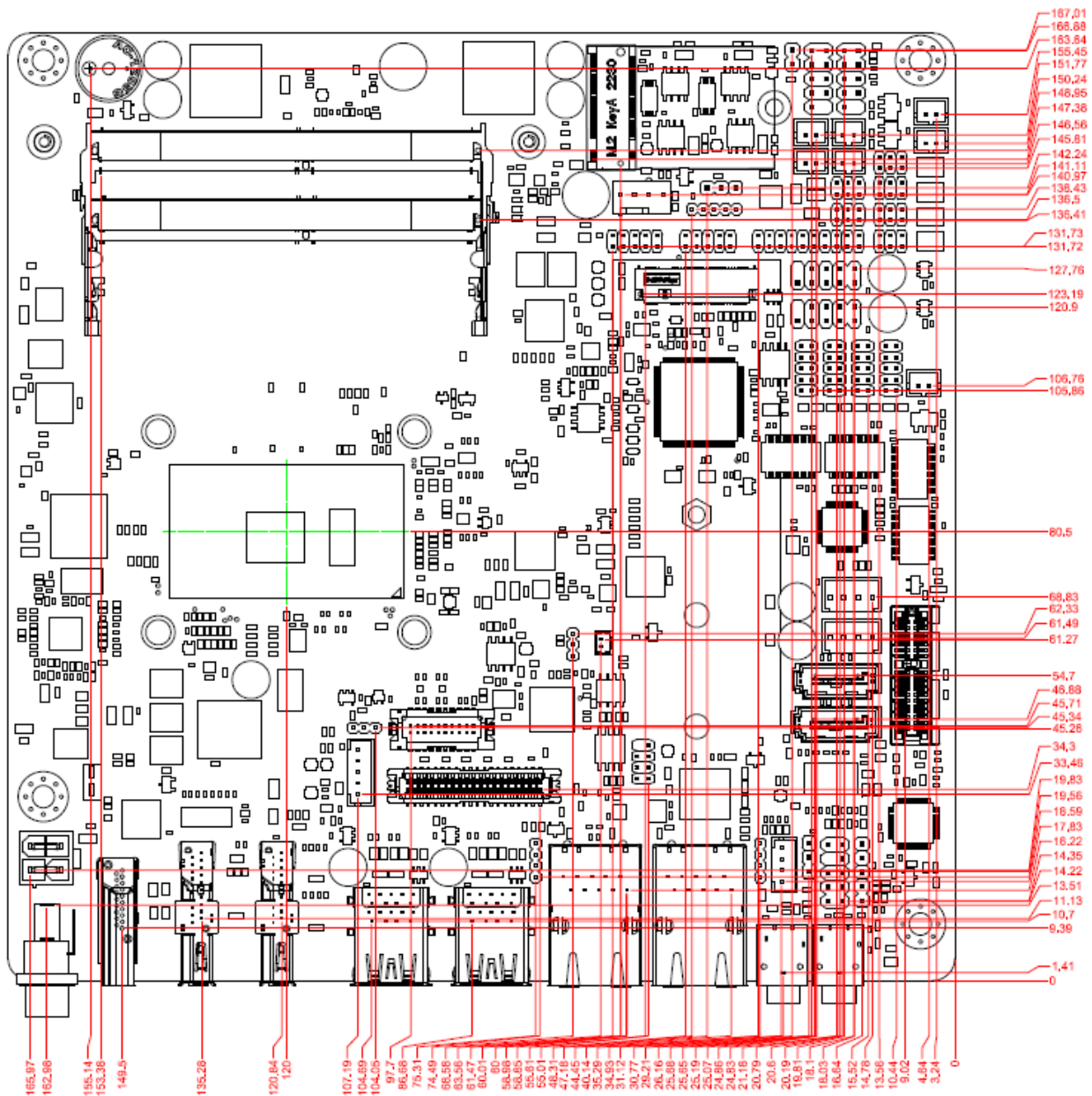
Step 6. Click Next.



Step 7. Click Finish to complete setup.

5. Mechanical Drawing





Unit: mm

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