

EMX-TGLP

11th Gen Intel® Core™ SoC i7/i5/i3 & Celeron Processor Mini
ITX Motherboard

User's Manual



2nd Ed – 23 March 2022

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

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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.

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

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1. Getting Started

1.1 Safety Precautions

Warning!



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

Caution!



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

1.2 Packing List

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

- 1 x EMX-TGLP motherboard
- 1 x SATA cable
- 1 x SATA power cable
- 1 x I/O Shield



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

1.3 Document Amendment History

Revision	Date	By	Comment
1 st	February 2021		Initial Release
2 nd	March 2022		Update System Specifications

1.4 Manual Objectives

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-TGLP 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

Product Specification	
CPU	<p>Onboard Tiger Lake U 11th Intel® Core™ SoC i7/i5/i3 & Celeron®BGA Processor</p> <p>Intel® Core™ i7-1185G7E, i7-1185GRE (up to 4.4GHz, quad-core, 12M Cache, TDP: 28/15/12W)*</p> <p>Intel® Core™ i5-1145G7E, i5-1145GRE (up to 4.1GHz, quad-core, 8M Cache, TDP: 28/15/12W)*</p> <p>Intel® Core™ i3-1115G4E, i3-1115GRE (up to 3.9GHz, dual-core, 6M Cache, TDP: 28/15/12W)*</p> <p>Intel® Celeron® 6305E (up to 1.8GHz, dual-core, 4M Cache, TDP: 15W)</p> <p>*Intel spec, check with PM's order information.</p>
BIOS	AMI uEFI BIOS, 256Mbit SPI Flash ROM
I/O Chip	<p>EC-IT8528E</p> <p>Fintek F81216HD-I</p>
System Memory	Two 260-pin DDR4 3200 MHz SO-DIMM socket, supports up to 64GB Max (non ECC only)
Watchdog Timer	H/W Reset, 1sec. – 65535sec./min.1sec. or 1min. step
H/W Status Monitor	<p>CPU temperature monitoring</p> <p>Voltages monitoring</p> <p>CPU fan speed control</p>
RAID	<p>Core i SKU CPU support RAID</p> <p>Celeron SKU CPU no support RAID</p> <p>SATA1 & 2 (RAID0/1)</p>
TPM	Onboard NuvoTon NPCT754AADYX support TPM 2.0
iAMT	<p>Core i 5/7 SKU CPU support iAMT</p> <p>Celeron SKU CPU no support iAMT</p>
Expansion Slot	
M.2	<p>1 x M.2 Type B 3042/3052/2242/2260/2280</p> <p>Support (*1)2x PCIE X1 / (*2)1x SATA/1xUSB3.0/1xUSB2.0</p> <p>with 1 x SIM card slot, support WWAN+GNSS or NVMe (SATA) SSD</p> <p>* 1: If M.2 Key B needs to support 2 x PCI-e x1, The LAN4 needs to be removed by BOM optional.</p> <p>Support PCI-e x2 function, need to modify the ME settings.</p> <p>*1: Where there is no LAN4, 2nd PCI-e functionable (By BOM) ; When support PCI-e x2 function, need request ME setting.</p> <p>*2 : SATA 2 share with M.2 key B SATA</p> <p>Only supports one SIM card</p> <p>Does not support I2S and PCM functions</p>

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	<p>1 x M.2 Key E 2230 support WiFi module and CNVi (1 x PCI-e x1 & USB 2.0 Signal)</p> <p>Does not support PCM/I2S and UART/SDIO functions</p> <p>* Due to support Intel CNVI function, please do not use support UART or SDIO module to avoid misfunction.</p>
Storage	
M.2	<p>1 x M.2 Type B 3042/3052/2242/2260/2280 NVMe SSD</p> <p>* SATA 2 share with M.2 key B SATA</p>
SATA	<p>2 x SATA III, 1 x SATA Power</p> <p>*SATA 2 share with M.2 key B SATA</p>
Edge I/O	
LAN	<p>1 x Intel® I225IT 2.5 Gigabit Ethernet</p> <p>1 x Intel® I219LM Gigabit Ethernet PHY</p> <p>2 x Intel® I210IT Gigabit Ethernet (BOM optional for Thin Mini ITX design SKU)</p>
USB 3.1	3 x USB3.1 Gen2, 1 x USB 3.1 Gen1 at I/O
DP	<p>2 x DP++ (Thin Mini ITX)</p> <p>2 x DP++, 2 x DP (Full height Mini ITX)</p>
DC Input	Mini Din 4-pin DC in Jack
Onboard I/O	
COM	<p>COM:</p> <p>COM 1 & COM2:</p> <p>COM 1 & COM2 support RS232/422/485 connector, with / +5V & +12V Supported and RS422/485 by BIOS setting</p> <p>2 x 2 x 5 pin, pitch 2.00mm connector support RS-232 connector, Pin 9 with / +5V & +12V Supported</p> <p>2 x 2 x 3 pin, pitch 2.00mm connector support RS422/485 connector, Pin 5 with / +5V Supported</p> <p>COM3 to 6:</p> <p>1 x 2 x 20 pin, pitch 2.00mm connector for COM3~6: support RS-232 connector</p>
USB 2.0	2 x 2 x 5 pin, pitch 2.54mm connector for 4 USB 2.0
GPIO	1 x 2 x 10 pin, pitch 2.00mm connector for GPIO: 16 bits & +3.3S Level SMBus
SATA Power	2 x SATA III, 1 x SATA Power
CPU/System FAN	1 x 1 x 4 pin, pitch 2.54mm CPU fan connector with smart fan function supported
Buzzer	Onboard Buzzer
Front Panel	2 x 2 x 5 pin, pitch 2.54mm connector for front panel
RTC Battery	1 x 2 Pin Pitch 1.25mm horizontal type battery connector (CR2032 Battery)
AT/ATX Selector	1 x 1 x 3 pin pitch 2.54mm connector for AT/ATX jumper
Clear CMOS	1 x 3 pin, pitch 2.00mm connector for CMOS clear
LVDS	1 x 2 x 20 pin, pitch 1.25mm connector for LVDS

LCD Backlight Brightness	2 x 1 x 5 pin, pitch 2.00mm Wafer connector for LCD inverter backlight connector (5V/12V) 1 x 1 x 3 pin, pitch 2.00mm connector LCD backlight brightness adjustment (PWM/DC)
LCD Inverter	2 x 1 x 5 pin, pitch 2.00mm Wafer connector for LCD inverter backlight connector
eDP	1 x 2 x 10 pin, pitch 1.25mm connector for eDP
LPC	1 x 2 x 5 pin, pitch 2.0mm connector for LPC debug
BIOS SPI	1 x 2 x 4 pin, pitch 2.00mm connector for BIOS SPI
EC Debug	1 x 2 x 5 pin, pitch 2.00mm connector for EC SPI
Audio	1 x 2 x 6 pin, pitch 2.00mm connector for front Audio
Audio AMP	1 x 4 pin, pitch wafer 2.00mm connector for 6W x 2 Speaker
Power input connector	1 x 2 x 2 pin, pitch 4.20mm connector for power input connector
DC-Input	Mini Din 4-pin DC in Jack
Display	
Graphic Chipset	Intel® 12th Generation CPU integrated
Spec. & Resolution	DP1+DP2 (DP1.4): Max: 7680 x 4329@60 Hz DP3+DP4 (DP1.4): Max: 7680 x 4329@60 Hz Single DP port (2021/2 Lab test): 5120 x 2160 @60 Hz, DVT check Max: 7680 x 4329@60 Hz Note: This resolution is actual test result. Intel resolution as below: 2 x DP++ : 1920 x 1080@60 Hz 2 x DP: 4096 x 2304@60 Hz LVDS: 1920 x 1080 Dual channel 18/24-bits LVDS (Chrontel CH7511B eDP to LVDS) eDP 4096 x 2304@60 Hz *2 x DP++, LVDS, eDP Default (Thin Mini ITX), Optional: DP3 and DP4 for full height (Maximum: 6 for quadruple independent displays)
Multiple Display	Quadruple Independent Display : 2 x DP++, LVDS, eDP (Thin Mini ITX) Six display for quadruple Independent Display : 2 x DP++, LVDS, eDP, 2 x DP (Full height Mini ITX) Multiple priority: LVDS > eDP > DP1 > DP2 > DP3 > DP4
Audio	
Audio Codec	Realtek ALC897 co-lay ALC888S & Tempo 92HD73 (Default: Tempo 92HD73)
Amplifier	TI TPA3113D2PWP Stereo Class-D 6W x 2 Audio Amplifier
Ethernet	
LAN Chipset	1 x Intel® I225IT 2.5 Gigabit Ethernet (LAN2) 1 x Intel® I219LM Gigabit Ethernet PHY (LAN1)

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	2 x Intel® I210IT Gigabit Ethernet (LAN3, LAN4)(BOM optional for Thin Mini ITX design SKU)
LAN Spec.	10/100/1000 Base-Tx GbE compatible & 2.5 Gigabit Ethernet
Mechanical & Environmental Specification	
Power Requirement	DC in +12V ~ +24V
ACPI	Single power ATX Support S0, S3, S4, S5 ACPI 5.0 Compliant
Power Mode	AT / ATX mode Switchable Through Jumper
Operating Temp.	intel@ wide temperature CPU SKU Support: -20~60C Intel@ CPU SKU support: 0~60C
Storage Temp.	-40~ +75°C
Operating Humidity	40°C @ 95% Relative Humidity, Non-condensing
Size (L x W)	6.7" x 6.7" (170mm x 170mm)
Weight	0.88lbs (0.4kg)



Note:

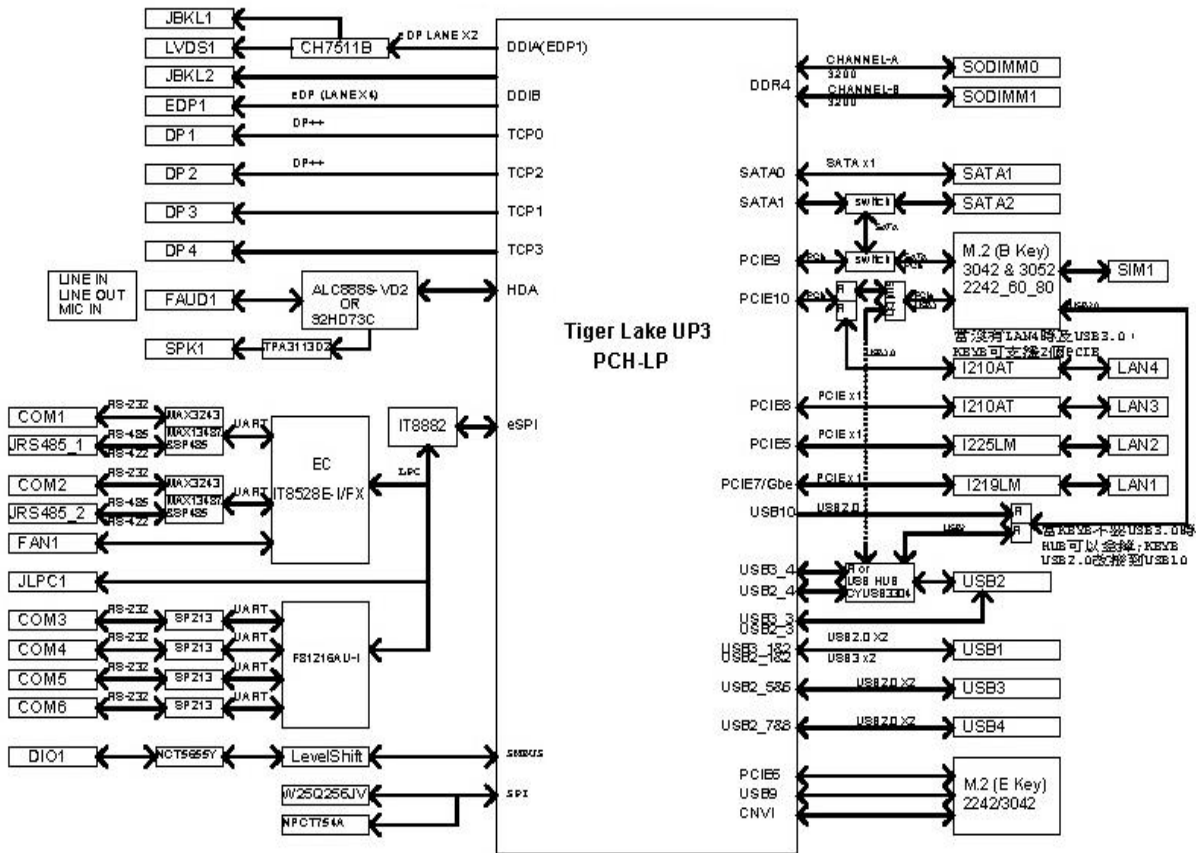
Specifications are subject to change without notice.

User condition suggestion:

- Please do not use ECC SO-DIMM DRAM with wide-temperature CPU sku (CPU sku ended with GRE).
- When enabling Network PXE, due to driver load will increase boot time (Stay longer at AMI logo image), 1 LAN PXE around 7sec, 4 LAN around 28sec.
- When remove device M.2 KeyE (Intel® Wireless-AC 9560) from EMX-TGLP motherboard, OS Device Manager will still show this on device item with exclamation mark [!] (Code 10). It has to power off DC-In and reboot. (With system product, please request dedicated AE for OEM BIOS to enable, or customer can Enable from BIOS menu)
- Tempo Semiconductor 92HD73C1T5 Audio Codec, MIC-IN OS default setting Microphone: 86 / Microphone Boost : +10%, different Microphone may have sound reception vary leading noise, customer can manually turn off boost.
- Under RAID1 mode, Intel Optane Memory and Storage Management has already set as Automatic rebuild on hot plug as Enabled, but SATA hot plug has reaction, therefore, when hot plug SATA device will not automatically rebuild, it will need reboot to detect device for rebuild. Hardware does not support hot plug.

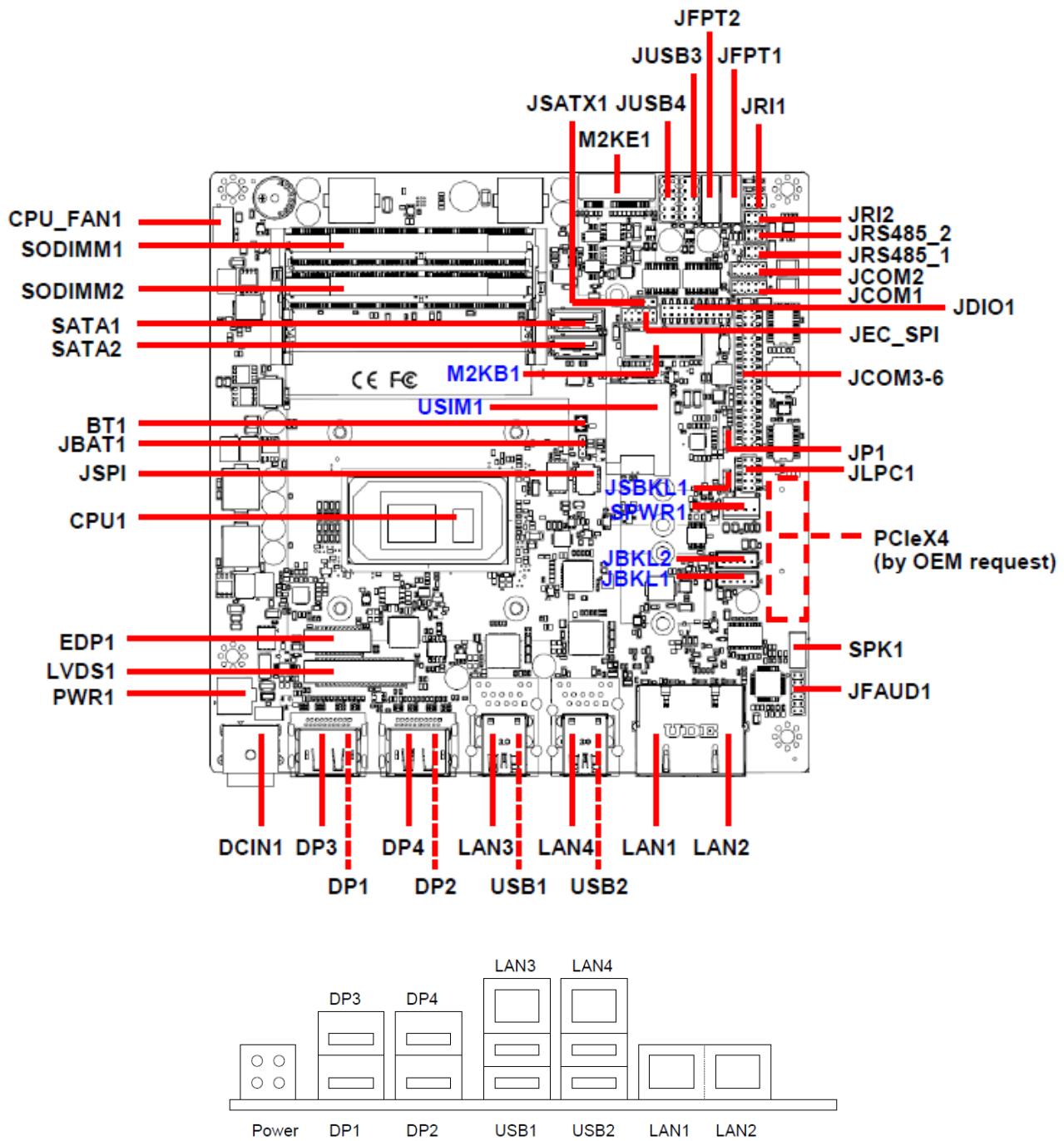
1.6 Architecture Overview—Block Diagram

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



2. Hardware Configuration

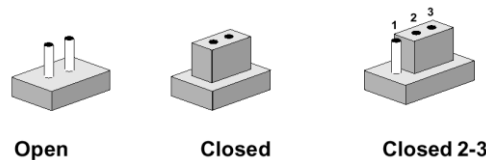
2.1 Product Overview



2.2 Jumper and Connector List

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

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



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
JRI1/2	Serial port 1/2 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
JP1	M2KB1 Voltage setting	3 x 1 header, pitch 2.00mm
JBAT1	Clear CMOS	2 x 1 wafer, pitch 2.00mm

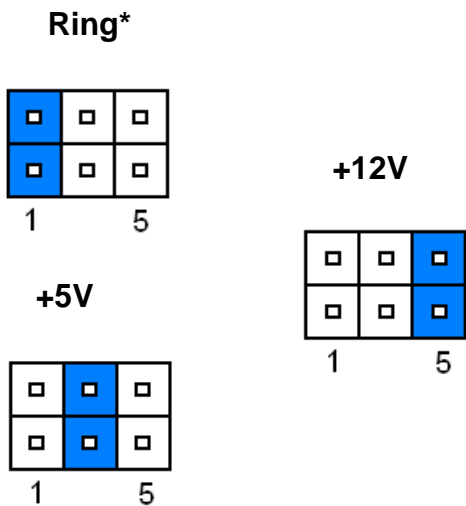
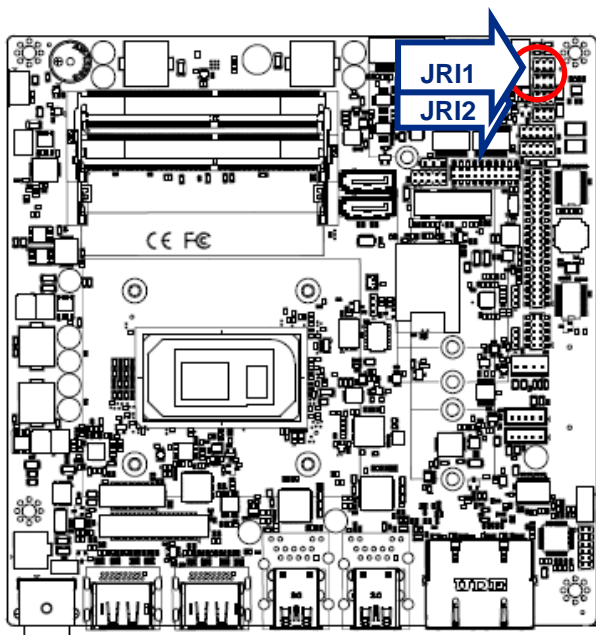
Connectors

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	
JFAUD1	Front Audio connector	6 x 2 header, pitch 2.00mm

JBKL1/2	LCD Inverter connector	5 x 1 wafer, pitch 2.00mm
JSPI1	SPI connector	4 x 2 header, pitch 2.00mm
JEC_SPI	EC Debug	5 x 2 header, pitch 2.00mm
JCOM1	Serial Port 1 connector	5 x 2 header, pitch 2.00mm
JCOM2	Serial Port 2 connector	5 x 2 header, pitch 2.00mm
JCOM3-6	Serial Port 3-6 connector	20 x 2 header, pitch 2.00mm
JDIO1	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
EDP1	eDP_Panel connector	10 x 2 wafer, pitch 1.25mm
USB1/2	USB connector 1/2	
JUSB3/4	USB connector 3/4	5 x 2 header, pitch 2.54mm
LAN1/2/3/4	RJ-45 Ethernet 1/2/3/4	
BT1	Battery connector	2 x 1 wafer, pitch 1.25mm
M2KE1	M.2 2230 Type E Slot	
M2KB1	M.2 3042/2242/2260/2280 Type B Slot	
DP1/2/3/4	DP connector 1/2/3/4	
JRS485_1/2	Serial Port 1/2 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	
PWR1	Power connector	2 x 2 wafer, pitch 4.20mm
SATA1/2	Serial ATA connector 1/2	
SPWR1	SATA Power connector 1	4 x 1 wafer, pitch 2.54mm
USIM1	USIM card slot	
CPU_FAN1	CPU fan connector	4 x 1 wafer, pitch 2.54mm
PCIEX4_1	PCIe connector	By OEM request. Due to poor compatibility concern, remove this connector.

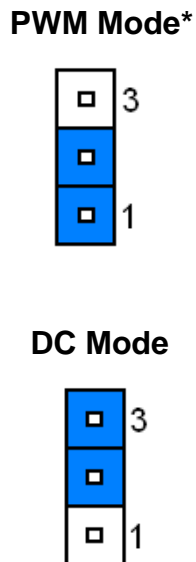
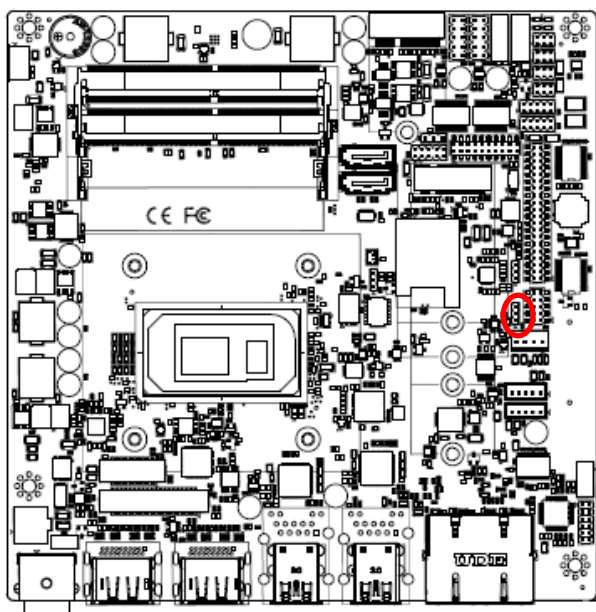
2.3 Setting Jumpers & Connectors

2.3.1 Serial port 1/2 pin9 signal select (JRI1/JRI2)



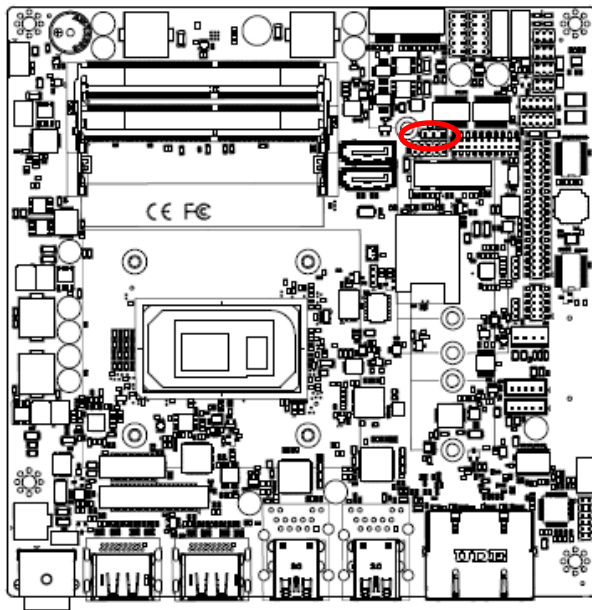
* Default

2.3.2 LVDS Back Light power selection (JSBKL1)

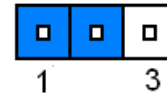


* Default

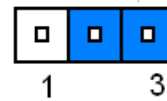
2.3.3 AT/ATX Power Mode Select (JSATX1)



ATX*

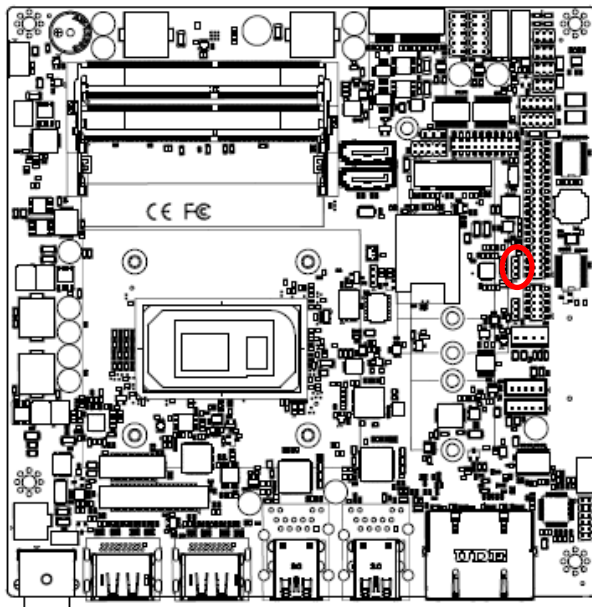


AT

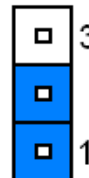


* Default

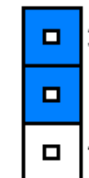
2.3.4 M2KB1 Voltage setting (JP1)



+3.8V

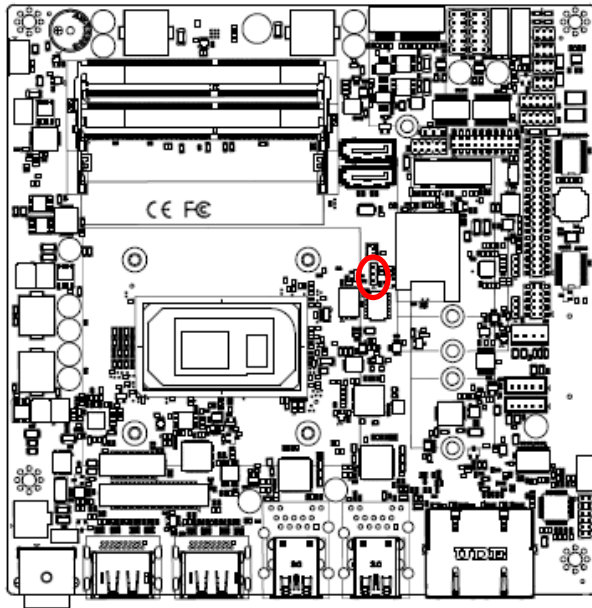


+3.3V*

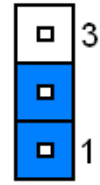


* Default

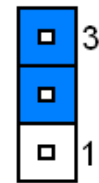
2.3.5 Clear CMOS (JBAT1)



Protect*

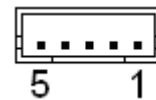
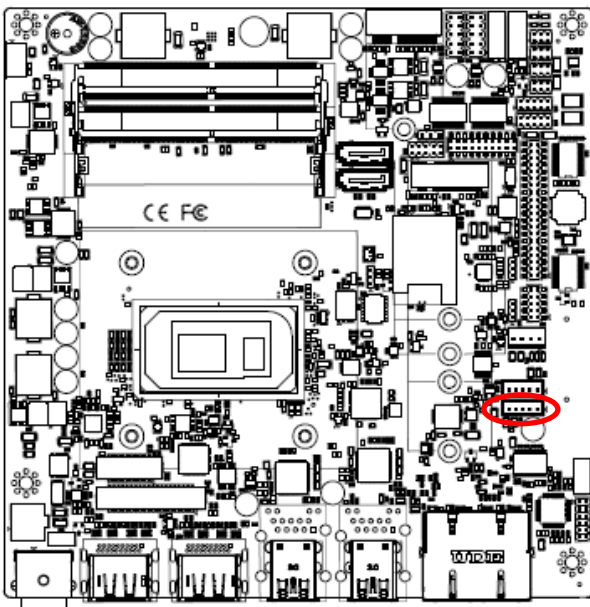


Clear CMOS



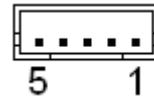
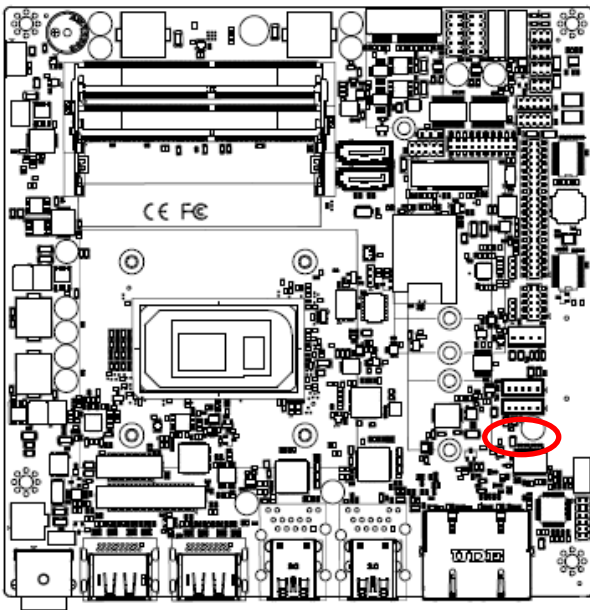
* Default

2.3.6 LCD Inverter connector (JBKL1)



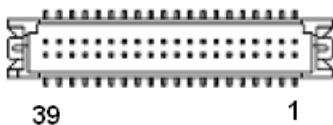
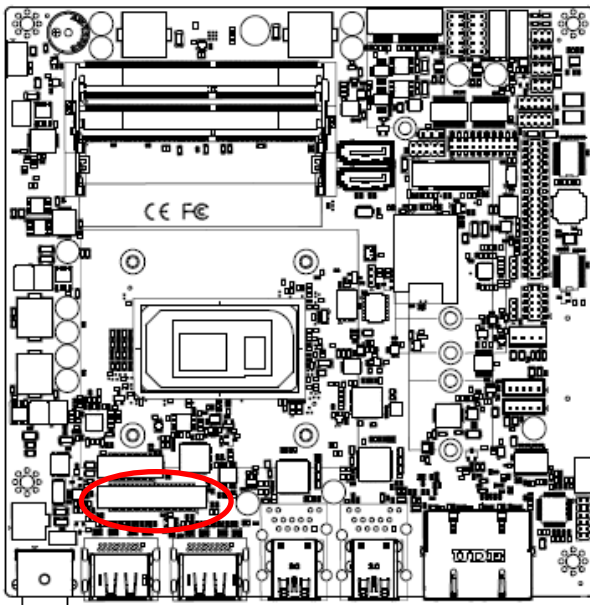
PIN	Signal
1	+12V
2	GND
3	LVDS_BKLT_EN
4	LVDS_BKLTCTL
5	+5V

2.3.7 LCD Inverter connector (JBKL2)



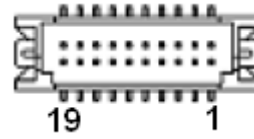
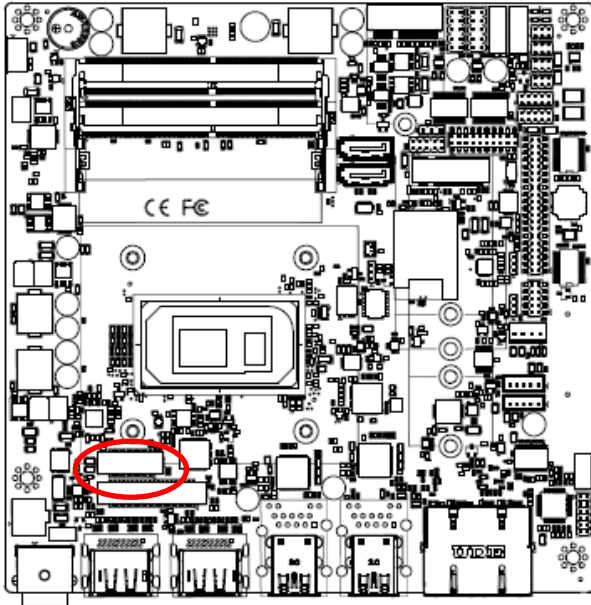
PIN	Signal
1	+12V
2	GND
3	EDP2_BKLTEN
4	EDP2_BKLT_CTL
5	+5V

2.3.8 LVDS connector (LVDS1)



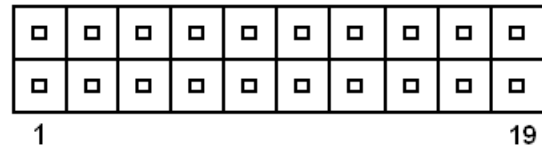
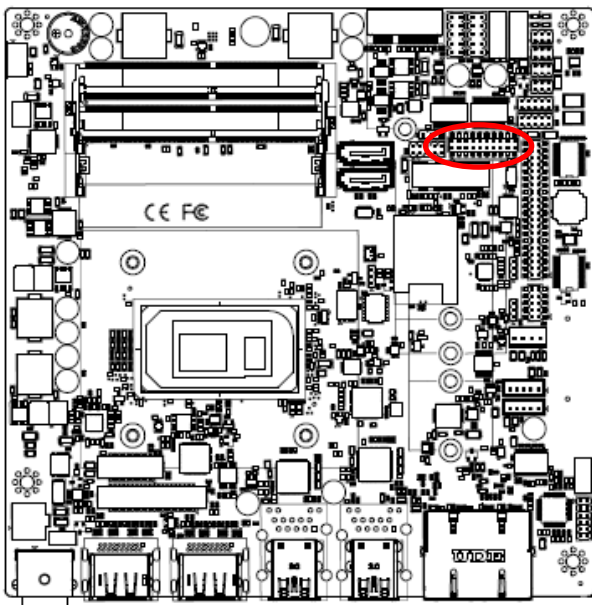
Signal	PIN	PIN	Signal
+V5S_LVDS	2	1	+ V3.3S_LVDS
+V5S_LVDS	4	3	+ V3.3S_LVDS
NC	6	5	NC
GND	8	7	GND
LVDS_DATA0_P	10	9	LVDS_DATA1_P
LVDS_DATA0_N	12	11	LVDS_DATA1_N
GND	14	13	GND
LVDS_DATA2_P	16	15	LVDS_DATA3_P
LVDS_DATA2_N	18	17	LVDS_DATA3_N
GND	20	19	GND
LVDS_DATA4_P	22	21	LVDS_DATA5_P
LVDS_DATA4_N	24	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
+V12S_LVDS	40	39	+V12S_LVDS

2.3.9 eDP_Panel connector (EDP1)



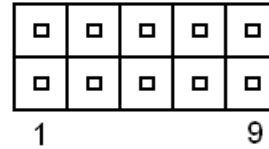
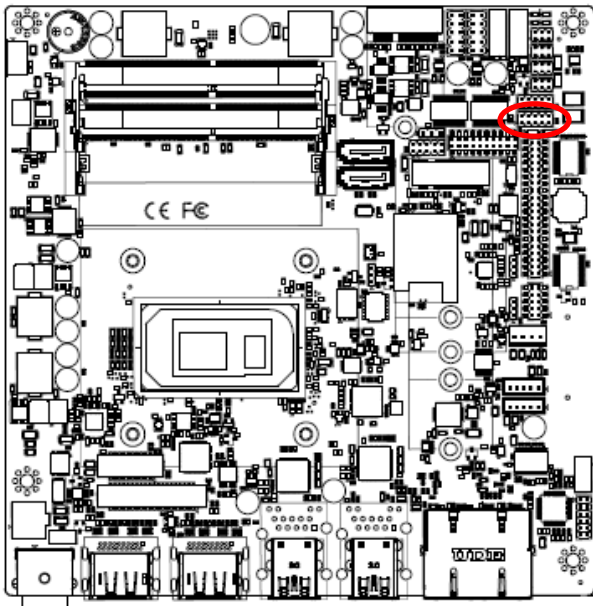
Signal	PIN	PIN	Signal
GND	1	2	GND
EDP_PANEL_TXN0	3	4	EDP_PANEL_TXN3
EDP_PANEL_TXP0	5	6	EDP_PANEL_TXP3
GND	7	8	NC
EDP_PANEL_TXN1	9	10	GND
EDP_PANEL_TXP1	11	12	EDP_PANEL_AUXN
GND	13	14	EDP_PANEL_AUXP
EDP_PANEL_TXN2	15	16	GND
EDP_PANEL_TXP2	17	18	EDP_PANEL_HPDP
+V35_EDP	19	20	+V35_EDP

2.3.10 General purpose I/O connector (DIO1)



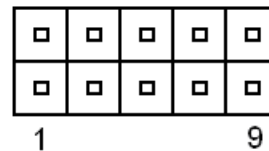
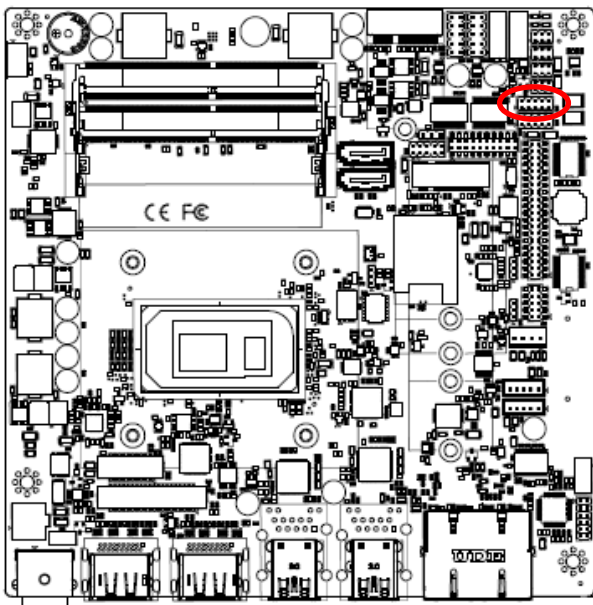
Signal	PIN	PIN	Signal
DI0	1	2	DO0
DI1	3	4	DO1
DI2	5	6	DO2
DI3	7	8	DO3
DI4	9	10	DO4
DI5	11	12	DO5
DI6	13	14	DO6
DI7	15	16	DO7
SMB_SCL_S0_3P3EXT	17	18	SMB_SDA_S0_3P3EXT
GND	19	20	+5V (Max current = 0.5A)

2.3.11 Serial port1 connector (JCOM1)



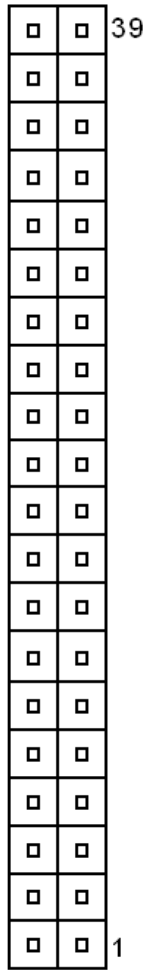
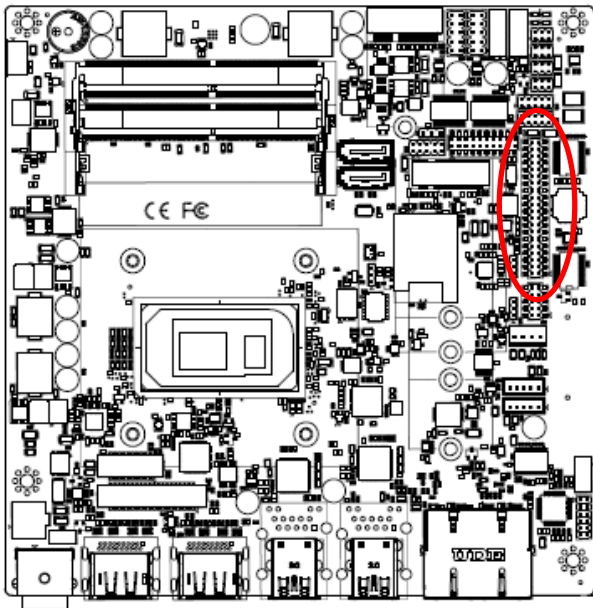
Signal	PIN	PIN	Signal
COM_DCD#_1	1	2	COM_RXD_1
COM_TXD_1	3	4	COM_DTR#_1
GND	5	6	COM_DSR#_1
COM_RTS#_1	7	8	COM_CTS#_1
COM_RI#_1	9	10	NC

2.3.12 Serial port2 connector (JCOM2)



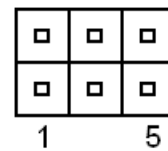
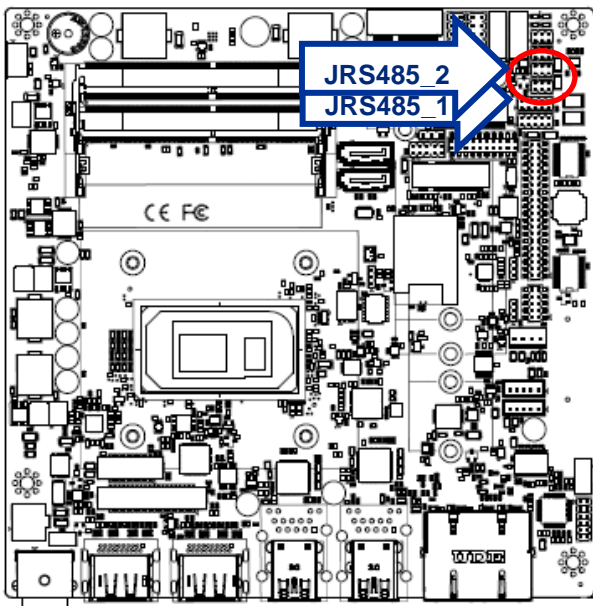
Signal	PIN	PIN	Signal
COM_DCD#_2	1	2	COM_RXD_2
COM_TXD_2	3	4	COM_DTR#_2
GND	5	6	COM_DSR#_2
COM_RTS#_2	7	8	COM_CTS#_2
COM_RI#_2	9	10	NC

2.3.13 Serial port 3/4/5/6 connector (JCOM3/4/5/6)



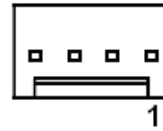
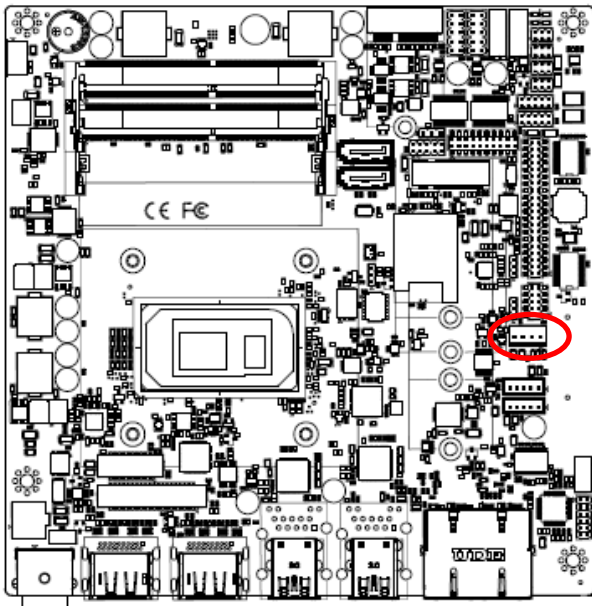
Signal	PIN	PIN	Signal
NC	40	39	COM_RI#_6
COM_CTS#_6	38	37	COM_RTS#_6
COM_DSR#_6	36	35	GND
COM_DTR#_6	34	33	COM_TXD_6
COM_RXD_6	32	31	COM_DCD#_6
NC	30	29	COM_RI#_5
COM_CTS#_5	28	27	COM_RTS#_5
COM_DSR#_5	26	25	GND
COM_DTR#_5	24	23	COM_TXD_5
COM_RXD_5	22	21	COM_DCD#_5
NC	20	19	COM_RI#_4
COM_CTS#_4	18	17	COM_RTS#_4
COM_DSR#_4	16	15	GND
COM_DTR#_4	14	13	COM_TXD_4
COM_RXD_4	12	11	COM_DCD#_4
NC	10	9	COM_RI#_3
COM_CTS#_3	8	7	COM_RTS#_3
COM_DSR#_3	6	5	GND
COM_DTR#_3	4	3	COM_TXD_3
COM_RXD_3	2	1	COM_DCD#_3

2.3.14 Serial Port 1/2 RS485/422 Mode connector (JRS485_1/2)



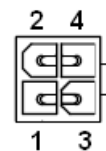
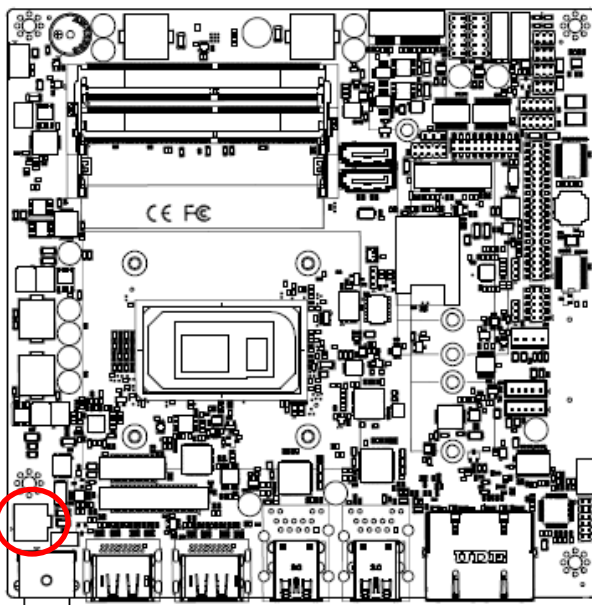
Signal	PIN	PIN	Signal
485_422TX-	1	2	422RX-
485_422TX+	3	4	422RX+
+5V	5	6	GND

2.3.15 SATA Power connector 1 (SPWR1)



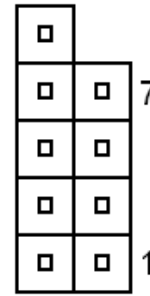
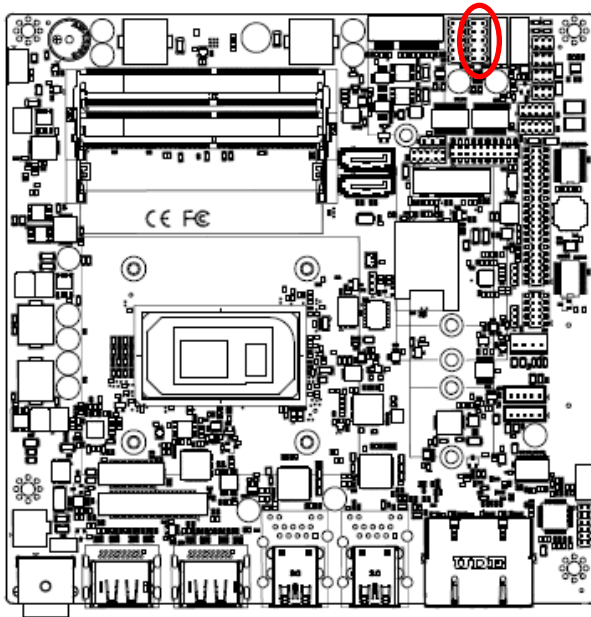
PIN	Signal
1	+V5S_SATA
2	GND
3	GND
4	+V12S_SATA

2.3.16 Power connector (PWR1)



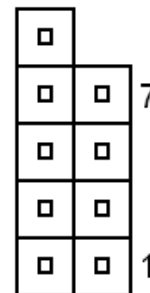
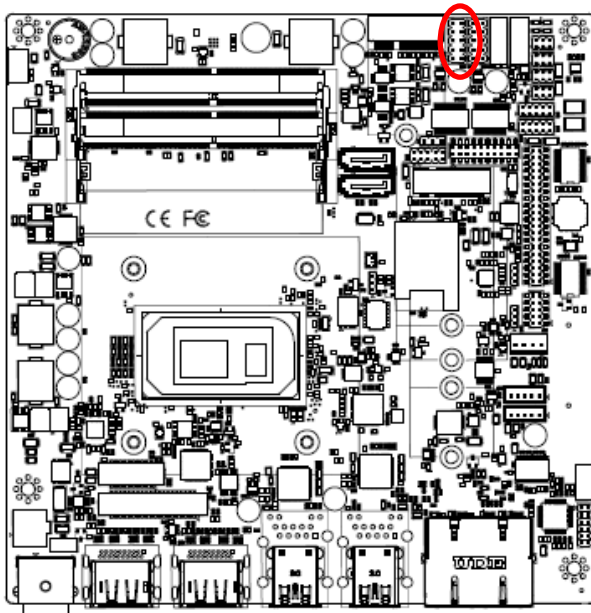
Signal	PIN	PIN	Signal
GND	2	4	+VIN
GND	1	3	+VIN

2.3.17 USB connector 3 (JUSB3)



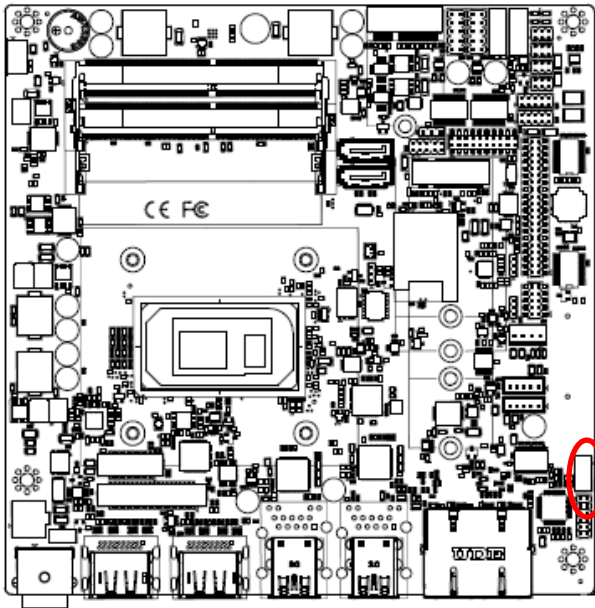
Signal	PIN	PIN	Signal
+V5A_USB56	1	2	+V5A_USB56
USB_DN5	3	4	USB_DN6
USB_DP5	5	6	USB_DP6
GND	7	8	GND
		10	GND

2.3.18 USB connector 4 (JUSB4)



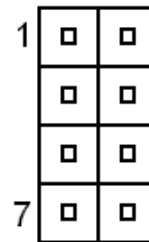
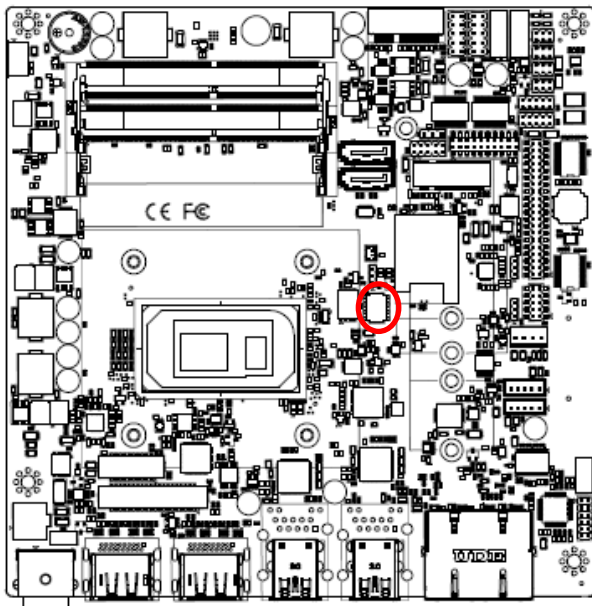
Signal	PIN	PIN	Signal
+V5A_USB78	1	2	+V5A_USB78
USB_DN7	3	4	USB2_DN8
USB_DP7	5	6	USB2_DP8
GND	7	8	GND
		10	GND

2.3.19 Speaker connector (SPK1)



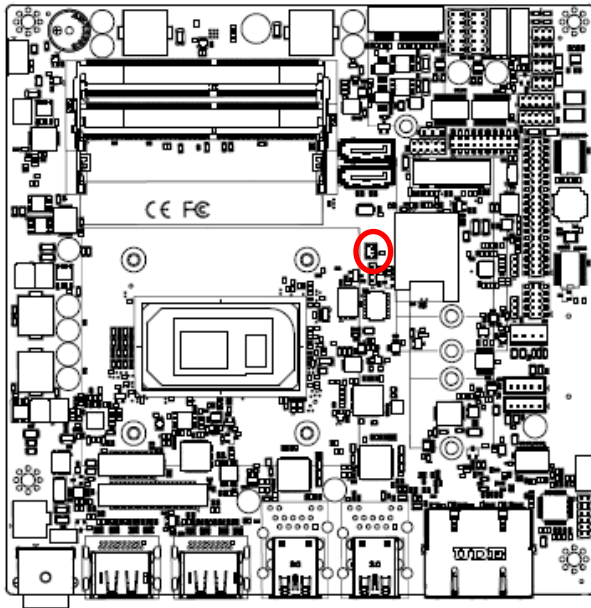
Signal	PIN
SPK_L+	1
SPK_L-	2
SPK_R+	3
SPK_R-	4

2.3.20 SPI connector (JSPI1)



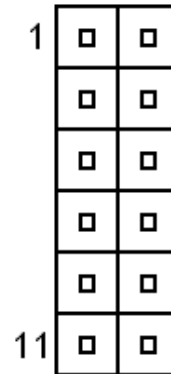
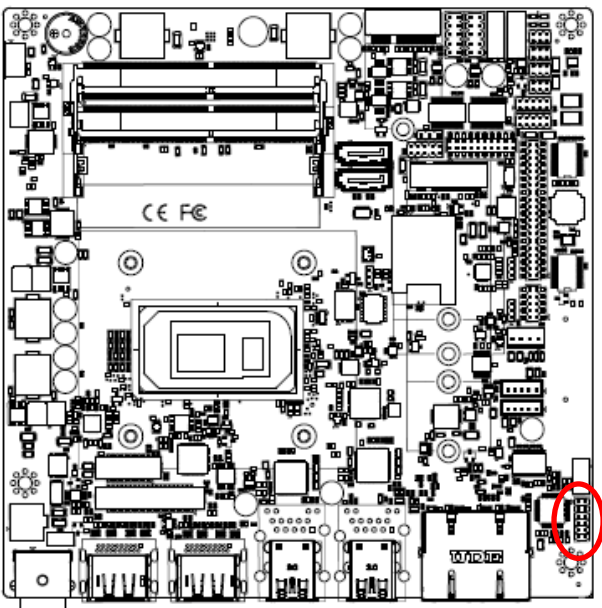
Signal	PIN	PIN	Signal
+V3.3A_1.8A_SPI	1	2	GND
SPI0_CS0#	3	4	SPI0_BIOS_CLK
SPI0_BIOS_MISO	5	6	SPI0_BIOS_MOSI
BIOS_HOLD#	7	8	BIOS_WP#

2.3.21 Battery connector (BT1)



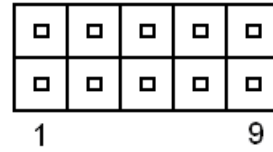
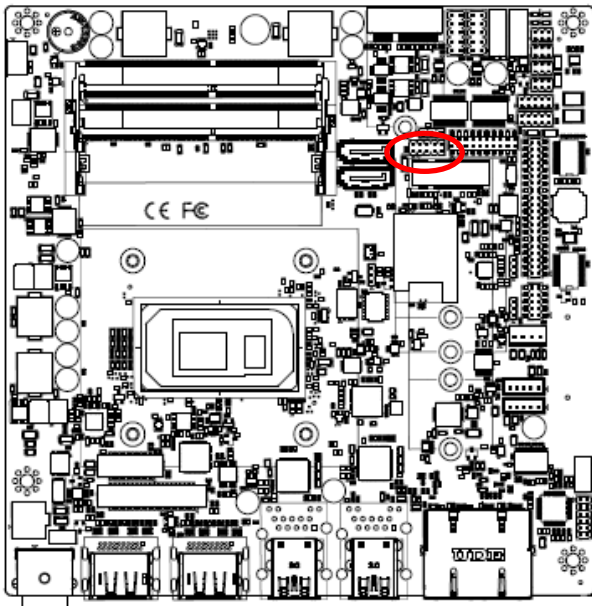
PIN	Signal
1	+RTCBAT
2	GND

2.3.22 Audio connector (JFAUD1)



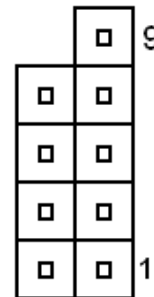
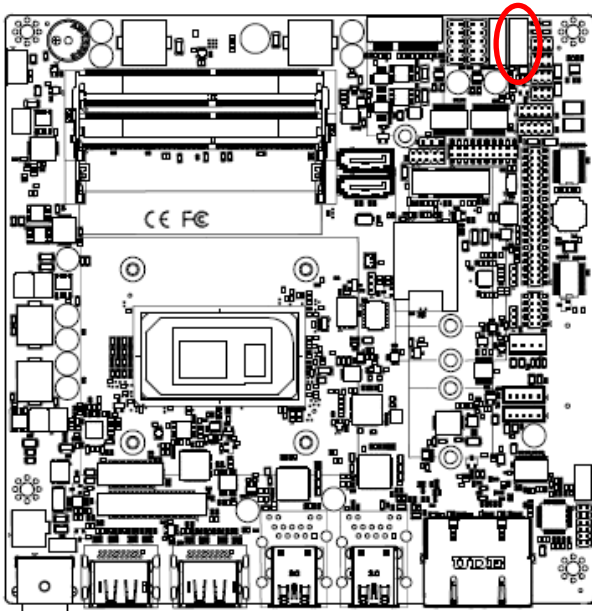
Signal	PIN	PIN	Signal
LINEOUT_R	1	2	LINEOUT_L
GND_AUD	3	4	GND_AUD
LINEIN_R	5	6	LINEIN_L
MICIN_R	7	8	MICIN_L
LINEOUT1_JD	9	10	LINE1-JD
MIC1_JD	11	12	GND_AUD

2.3.23 EC Debug (JEC_SPI)



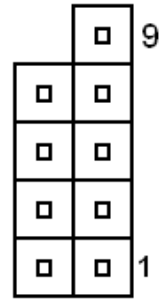
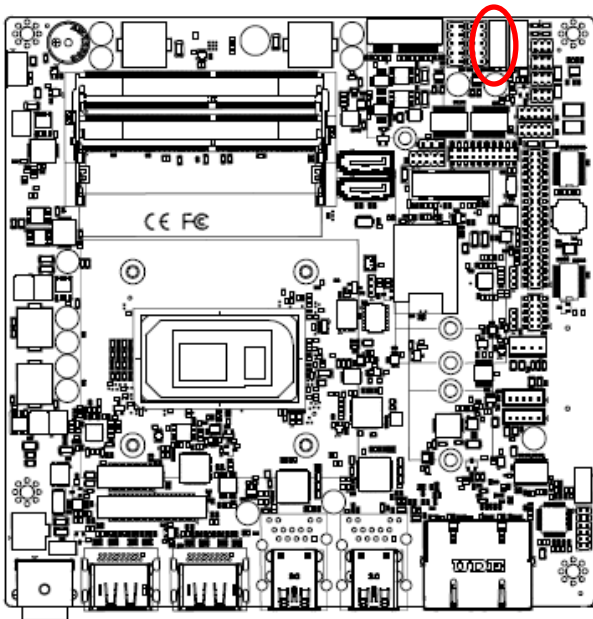
Signal	PIN	PIN	Signal
+V3.3A_EC	1	2	GND
EC_FSCE#	3	4	EC_FSCK
EC_FMISO	5	6	EC_FMOSI
EC_HOLD#	7	8	NC
EC_SMCLK_DEBUG	9	10	EC_SMDAT_DEBUG

2.3.24 Miscellaneous setting connector 1 (JFPT1)



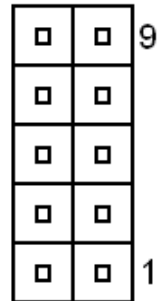
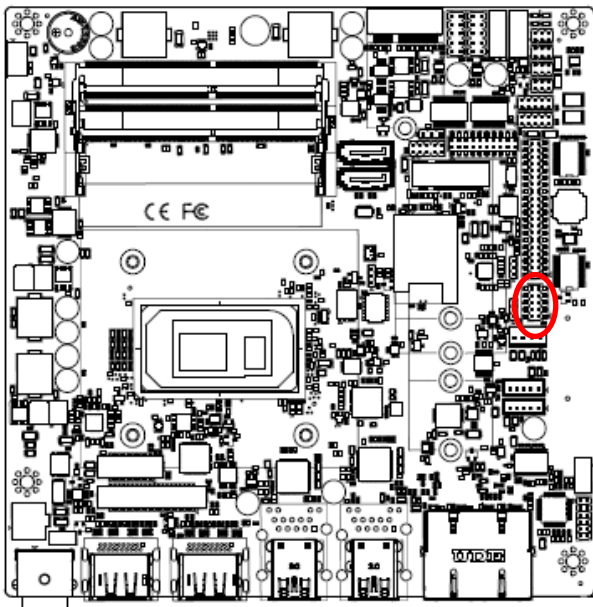
Signal	PIN	PIN	Signal
		9	NC
-PWR_BNT	8	7	-Reset
+PWR_BNT	6	5	+Reset
-PWR_LED	4	3	-HD_LED
+PWR_LED	2	1	+HD_LED

2.3.25 Miscellaneous setting connector 2 (FPT2)



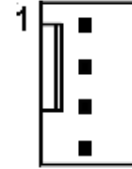
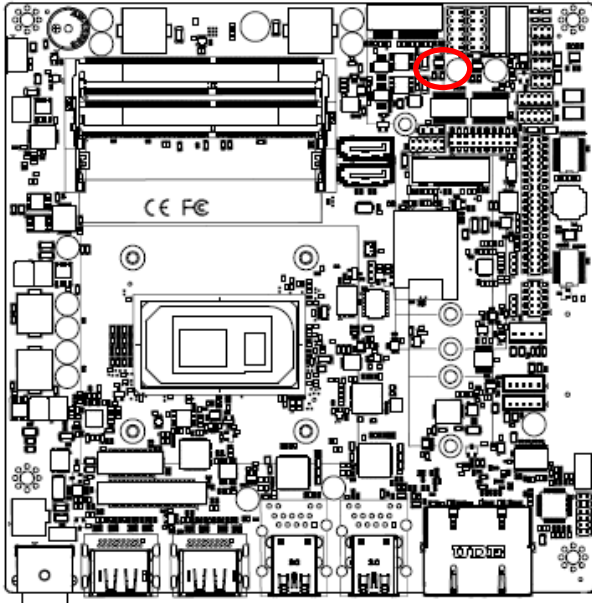
Signal	PIN	PIN	Signal
		9	NC
GND	8	7	Speaker-
BLK_DN	6	5	NC
BLK_UP	4	3	NC
BLK_VR(10K)	2	1	Speaker+

2.3.26 LPC connector (JLPC1)



Signal	PIN	PIN	Signal
LPC_AD0	1	2	+3.3V
LPC_AD1	3	4	PLT_BUF_RST#
LPC_AD2	5	6	LPC_LFRAME#
LPC_AD3	7	8	CLK_24M_80
LPC_SERIRQ	9	10	GND

2.3.27 CPU fan connector (CPU_FAN1)



Signal	PIN
GND	1
+12V	2
CPU_FANIN	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.

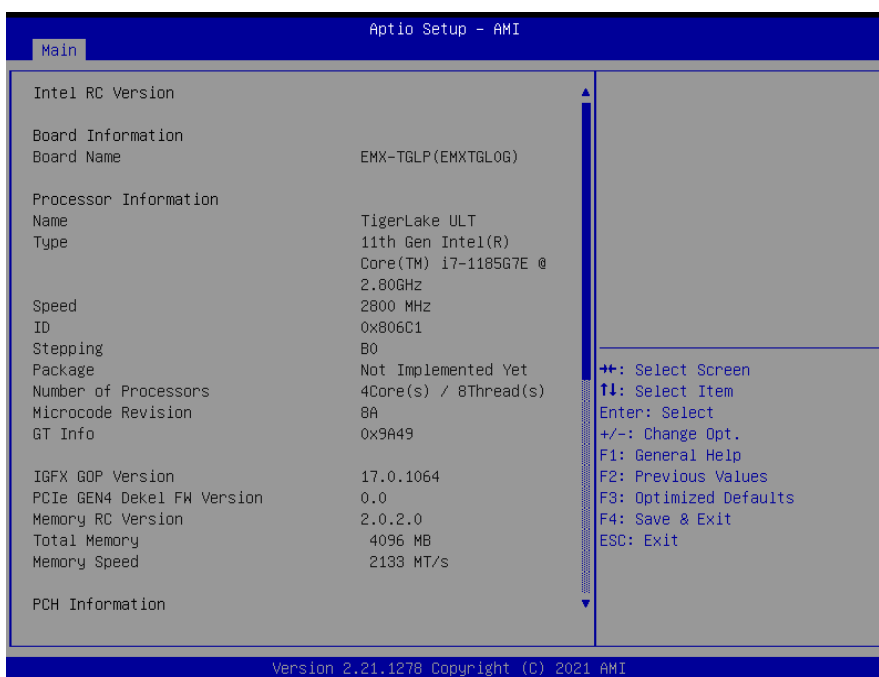
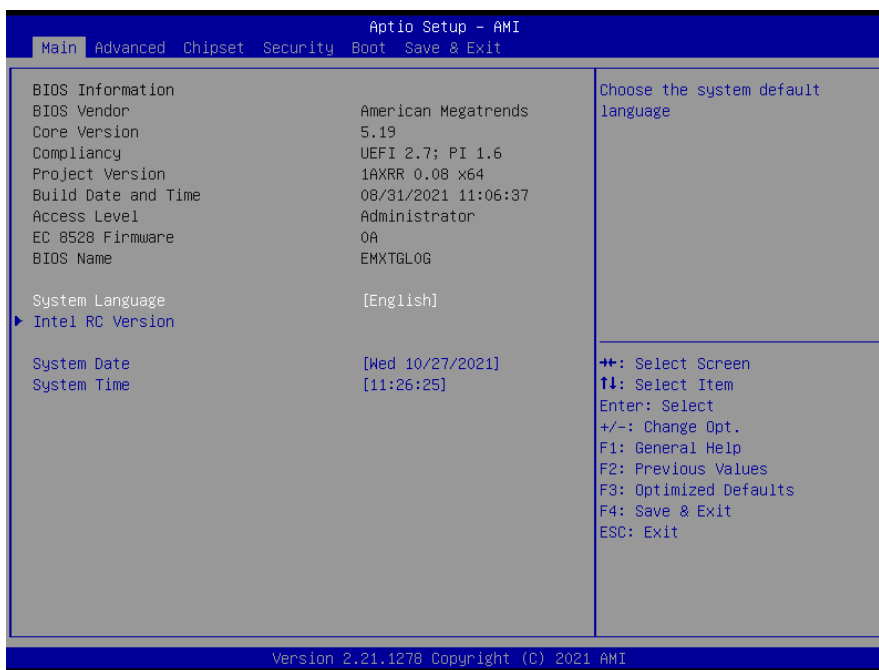
3.6 BIOS setup

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.

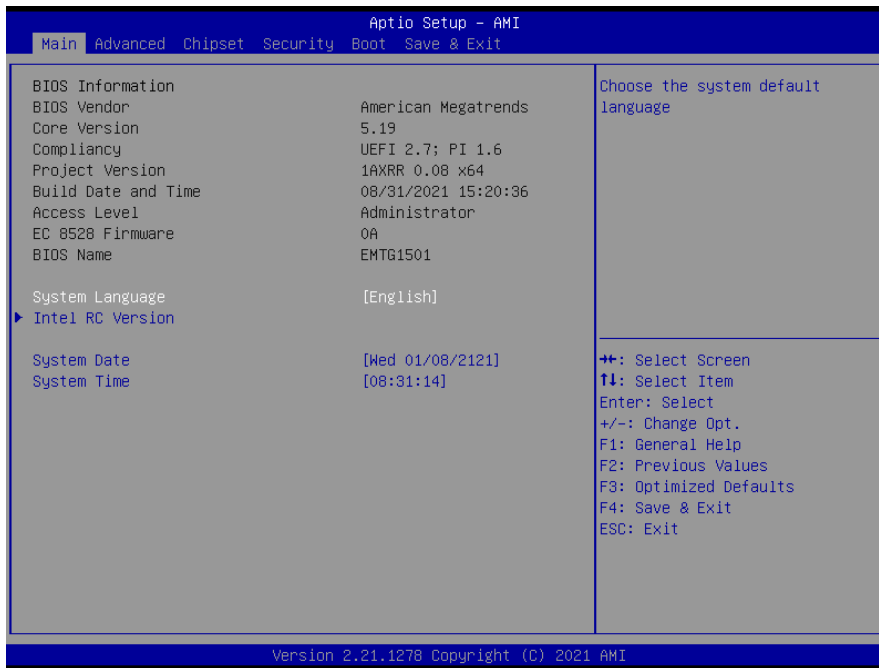
3.6.1 Main Menu

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

3.6.1.1 TDP-28W BIOS



3.6.1.2 TDP-15W BIOS



3.6.1.3 System Language

This option allows choosing the system default language.

3.6.1.4 System Date

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

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3.6.1.5 System Time

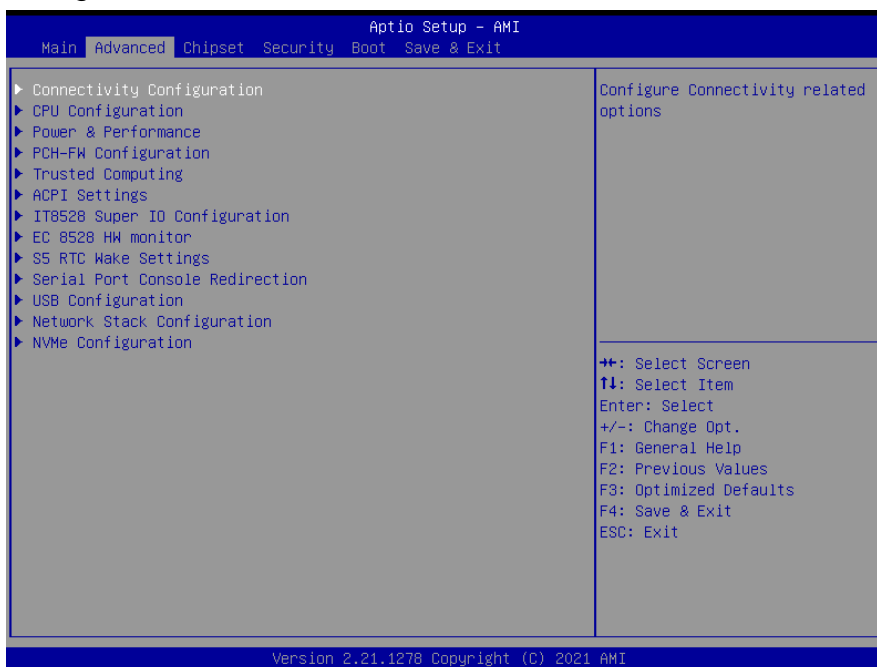
Use the system time option to set the system time. Manually enter the hours, minutes and seconds.



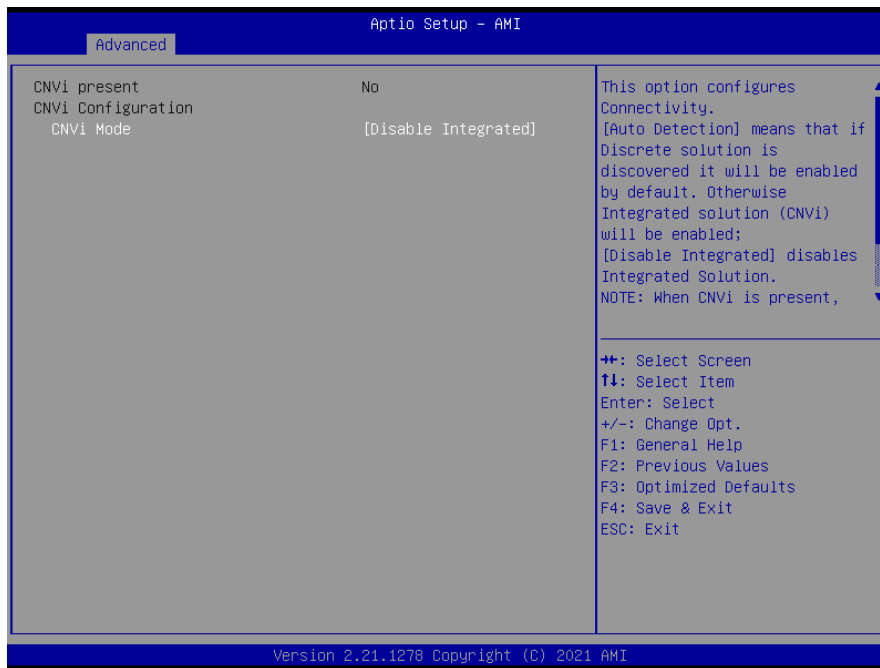
Note: The BIOS setup screens shown in this chapter are for reference purposes only, and may not exactly match what you see on your screen.

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.

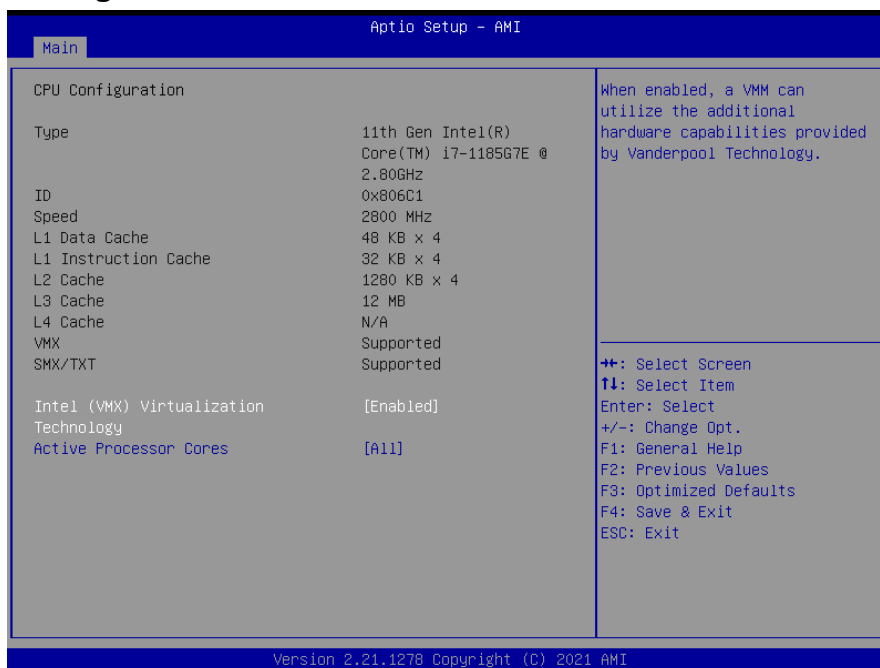


3.6.2.1 Connectivity Configuration



Item	Options	Description
CNVi Mode	Disable Integrated[Default] Auto Detection	This option configures Connectivity. [Auto Detection] means that if Discrete solution is discovered it will be enabled by default. Otherwise Integrated solution (CNVi) will be enabled; [Disable Integrated] disables Integrated Solution. NOTE: When CNVi is present, the GPIO pins that are used for radio

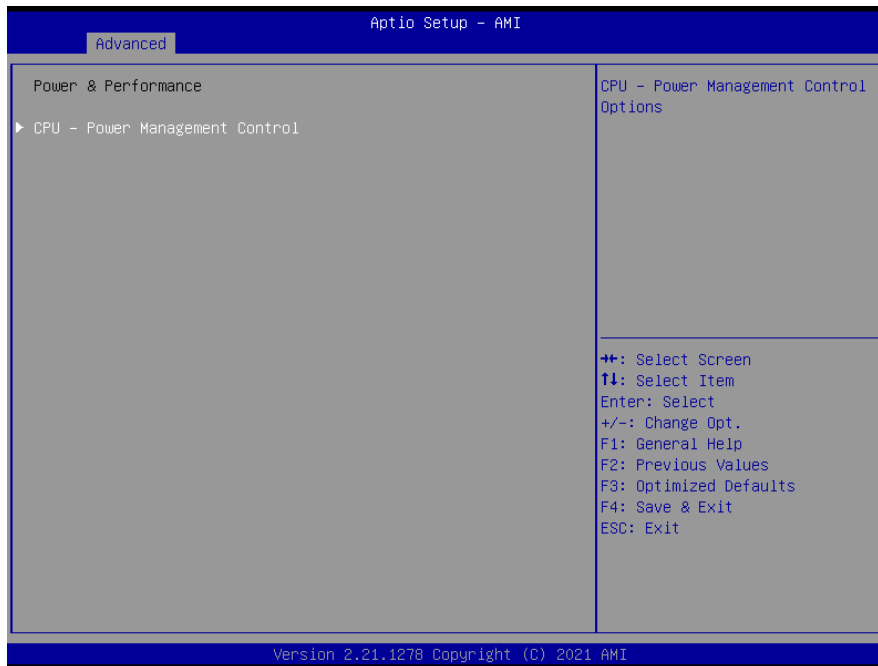
3.6.2.2 CPU Configuration



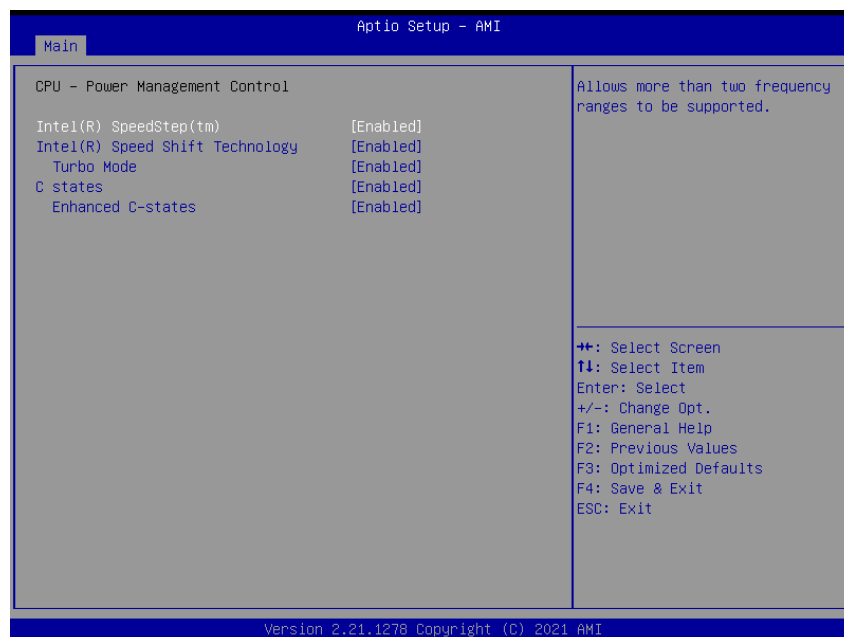
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Item	Options	Description
Intel (VMX) Virtualization Technology	Disabled Enabled[Default],	When enabled, a VMM can utilize the additional hardware capabilities provided by Vanderpool Technology.
Active Processor Cores	All[Default], 1 2 3	Number of cores to enable in each processor package.

3.6.2.3 Power & Performance

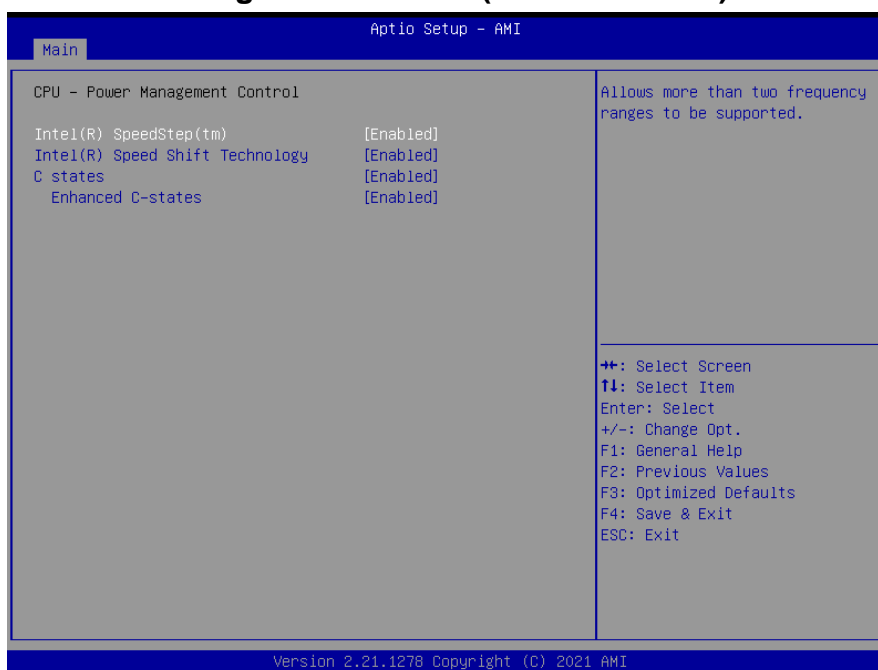


3.6.2.3.1 CPU - Power Management Control (TDP-28W BIOS)



Item	Options	Description
Intel(R) SpeedStep(tm)	Disabled Enabled[Default],	Allows more than two frequency ranges to be supported.
Intel(R) Speed Shift Technology	Disabled Enabled[Default],	Enable/Disable Intel(R) Speed Shift Technology support. Enabling will expose the CPPC v2 interface to allow for hardware controlled P-states.
Turbo Mode	Disabled Enabled[Default],	Enable/Disable processor Turbo Mode (requires EMTTM enabled too). AUTO means enabled.
C states	Disabled Enabled[Default],	Enable/Disable CPU Power Management. Allows CPU to go to C states when it's not 100% utilized.
Enhanced C-states	Disabled Enabled[Default],	Enable/Disable C1E. When enabled, CPU will switch to minimum speed when all cores enter C-State.

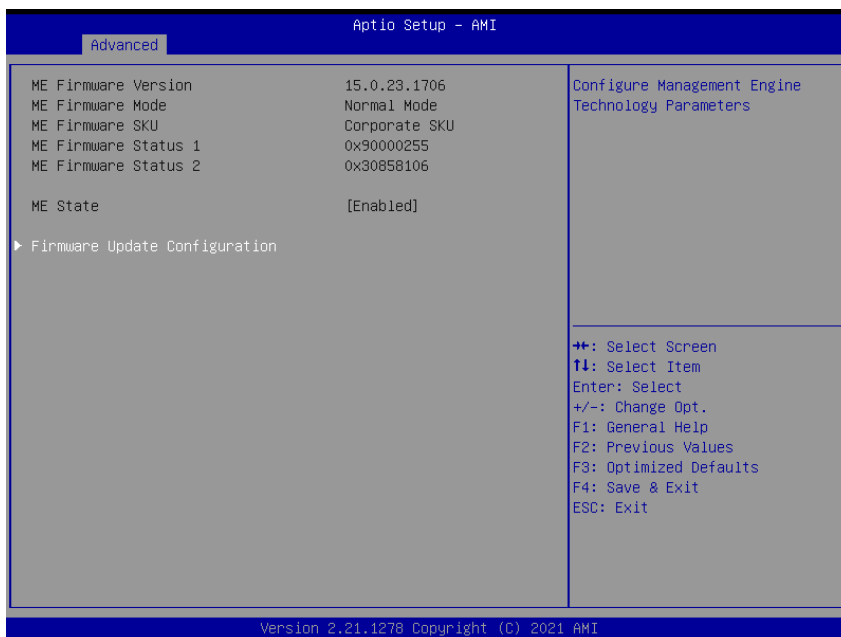
3.6.2.3.2 CPU - Power Management Control (TDP-15W BIOS)



Item	Options	Description
Intel(R) SpeedStep(tm)	Disabled Enabled[Default],	Allows more than two frequency ranges to be supported.
Intel(R) Speed Shift Technology	Disabled Enabled[Default],	Enable/Disable Intel(R) Speed Shift Technology support. Enabling will expose the CPPC v2 interface to allow for hardware controlled P-states.
C states	Disabled Enabled[Default],	Enable/Disable CPU Power Management. Allows CPU to go to C states when it's not 100% utilized.
Enhanced C-states	Disabled Enabled[Default],	Enable/Disable C1E. When enabled, CPU will switch to minimum speed when all cores enter C-State.

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3.6.2.4 PCH-FW Configuration



3.6.2.4.1 Firmware Update Configuration



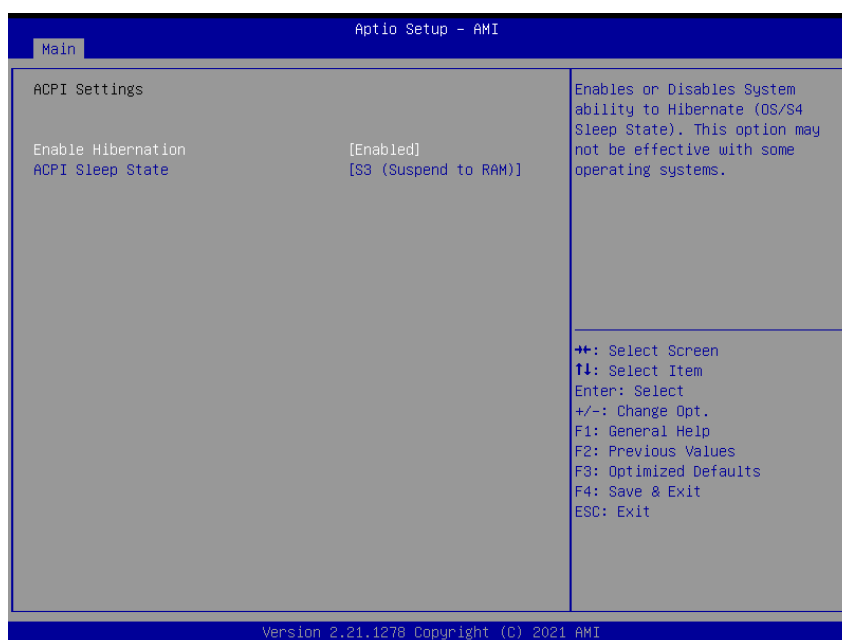
Item	Options	Description
Me FW Image Re-Flash	Disabled[Default], Enabled	Enable/Disable Me FW Image Re-Flash function.

3.6.2.5 Trusted Computing



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

3.6.2.6 ACPI Settings



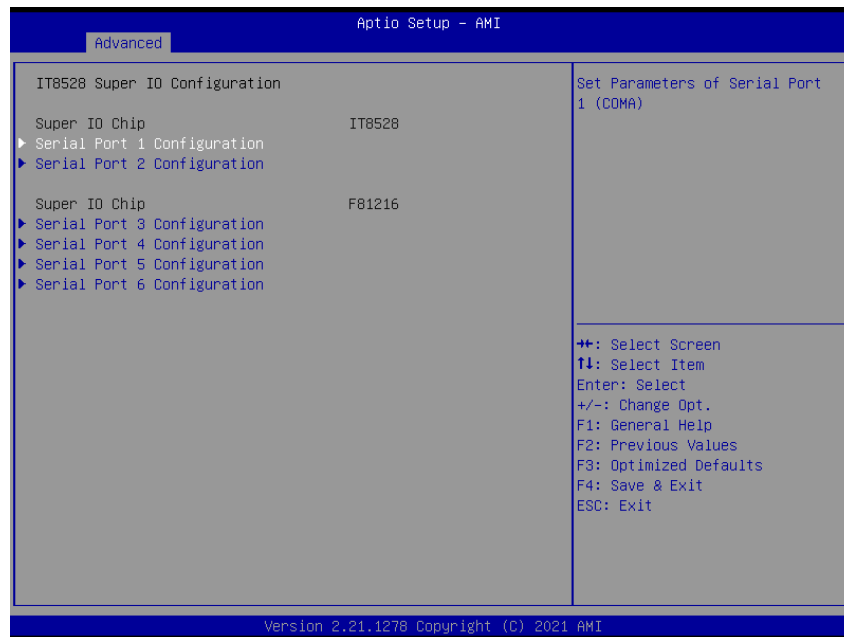
Item	Options	Description
Enable Hibernation	Disabled Enabled[Default],	Enables or Disables System ability to Hibernate (OS/S4 Sleep State). This

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		option may be not 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 SUSPEDN button is pressed.

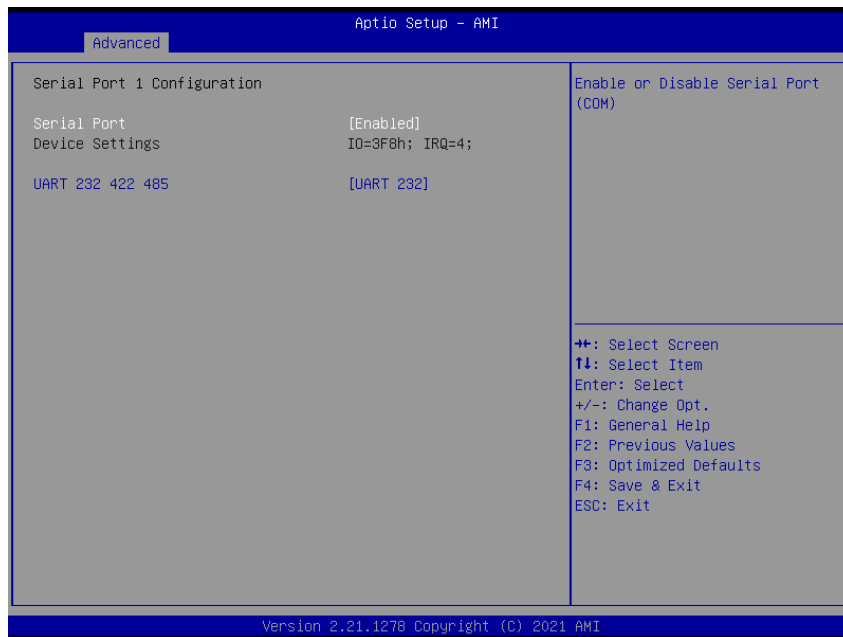
3.6.2.7 IT8528 Super IO Configuration

You can use this item to set up or change the IT8528 Super IO configuration for serial ports. Please refer to 3.6.2.5.1~ 3.6.2.5.6 for more information.



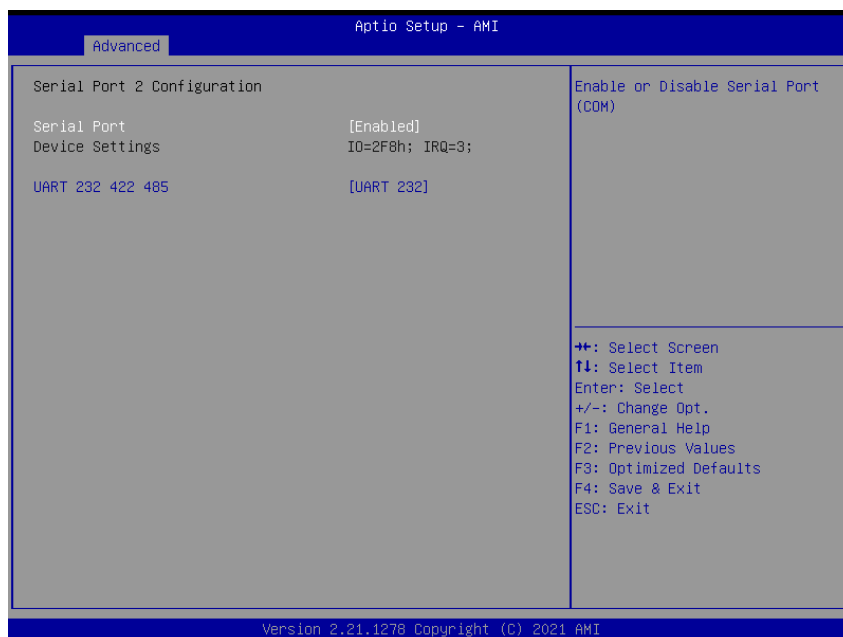
Item	Description
Serial Port 1 Configuration	Set Parameters of Serial Port 1 (COMA).
Serial Port 2 Configuration	Set Parameters of Serial Port 2 (COMB).
Serial Port 3 Configuration	Set Parameters of Serial Port 3 (COMC).
Serial Port 4 Configuration	Set Parameters of Serial Port 4 (COMD).
Serial Port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

3.6.2.7.1 Serial Port 1 Configuration



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

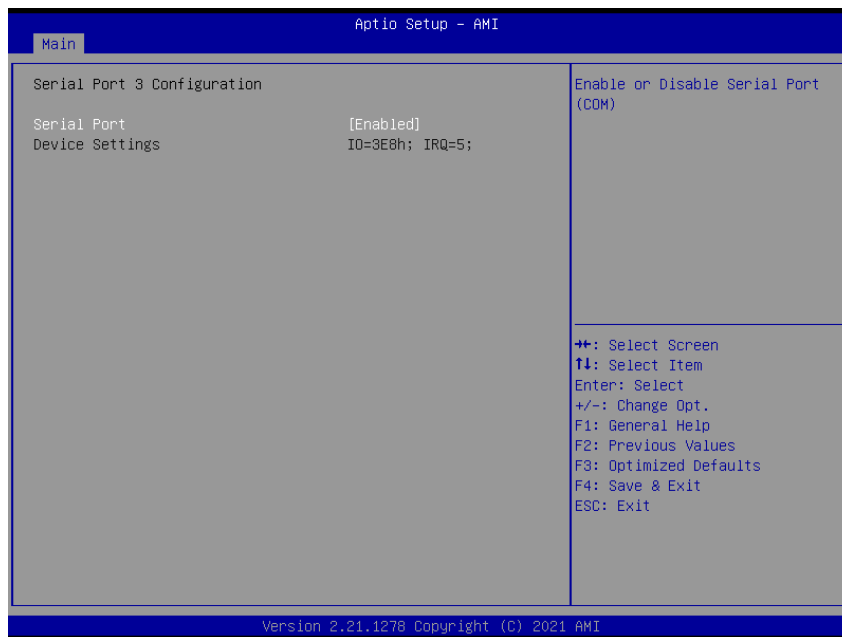
3.6.2.7.2 Serial Port 2 Configuration



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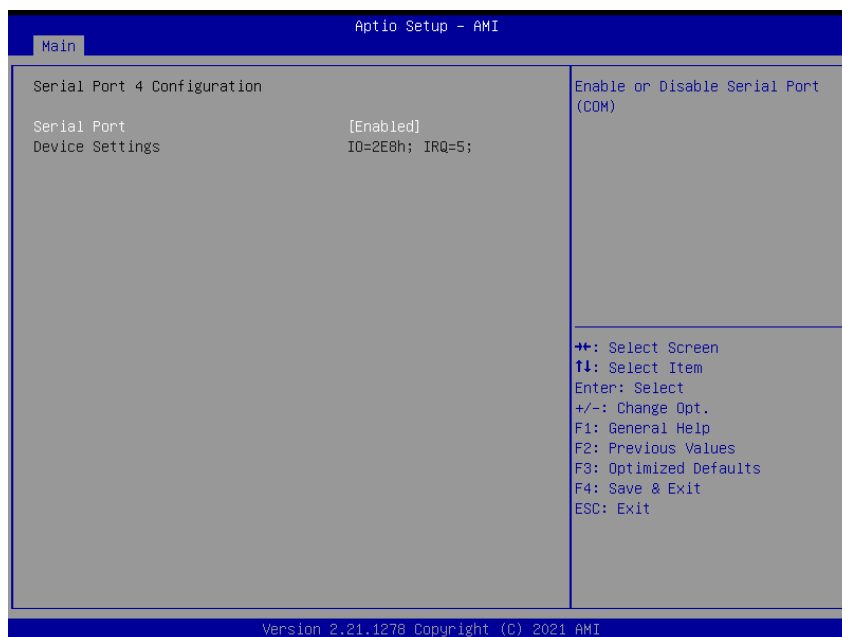
Item	Option	Description
Serial Port	Disabled Enabled[Default],	Enable or Disable Serial Port (COM).
UART 232 422 485	UART 232[Default], UART 422, UART 485	Change the Serial Port as RS232/422/485.

3.6.2.7.3 Serial Port 3 Configuration



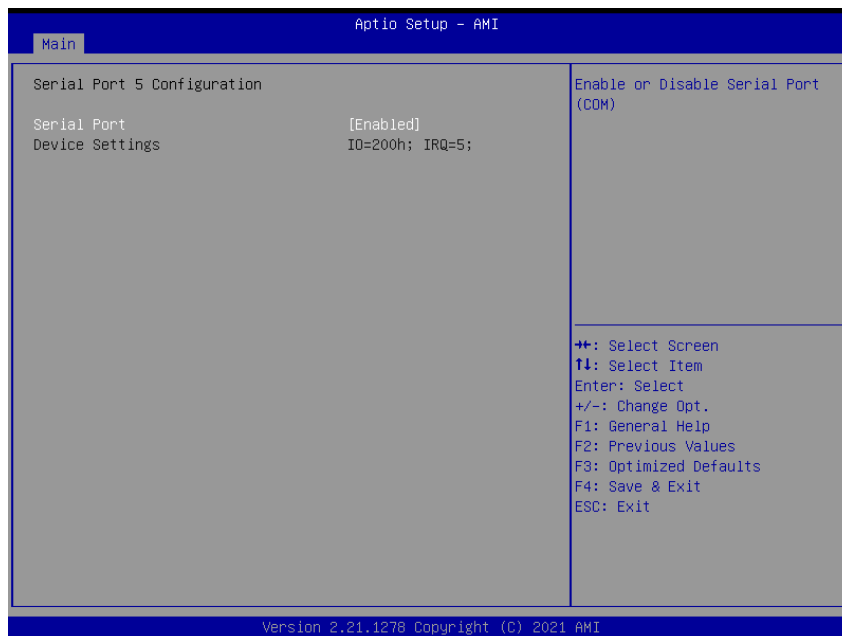
Item	Option	Description
Serial Port	Enabled[Default], Disabled	Enable or Disable Serial Port (COM).

3.6.2.7.4 Serial Port 4 Configuration



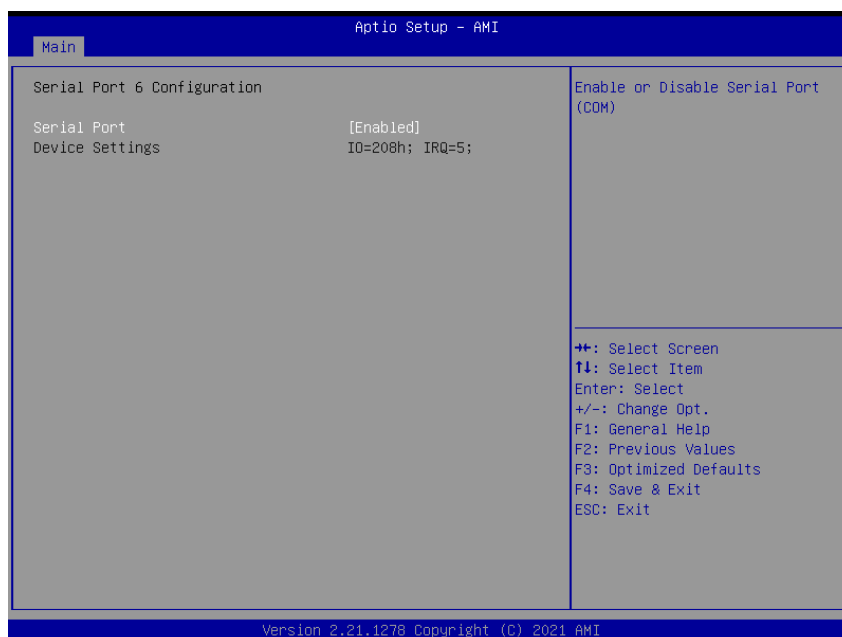
Item	Option	Description
Serial Port	Enabled[Default], Disabled	Enable or Disable Serial Port (COM).

3.6.2.7.5 Serial Port 5 Configuration



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

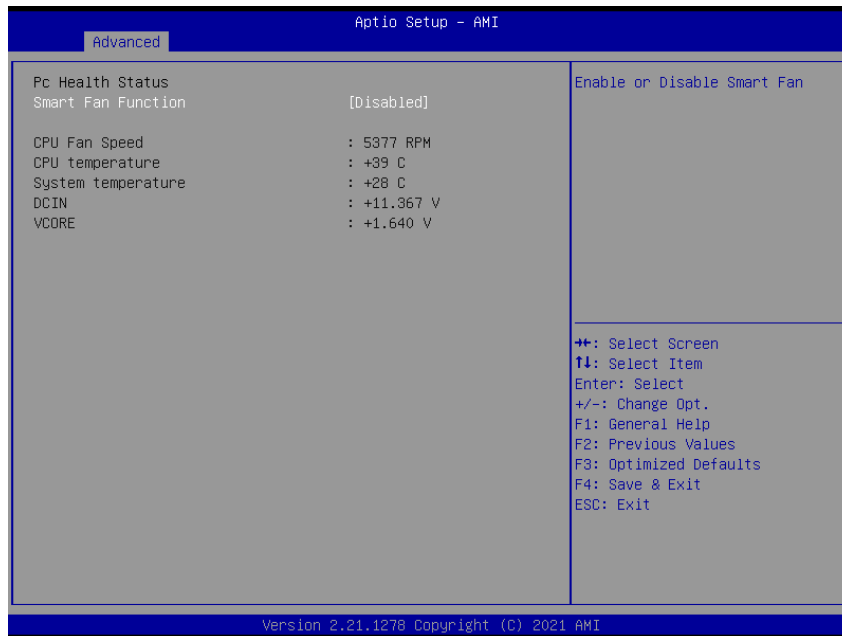
3.6.2.7.6 Serial Port 6 Configuration



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

3.6.2.8 EC 8528 H/W monitor



Item	Options	Description
Smart Fan Function	Disabled[Default], Enabled	Enable or Disable Smart Fan.

3.6.2.9 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 FixedTime, system will wake on the hr::min::sec specified. Select DynamicTime, System will wake on the current time + Increase minutes(s).

3.6.2.10 Serial Port Console Redirection



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

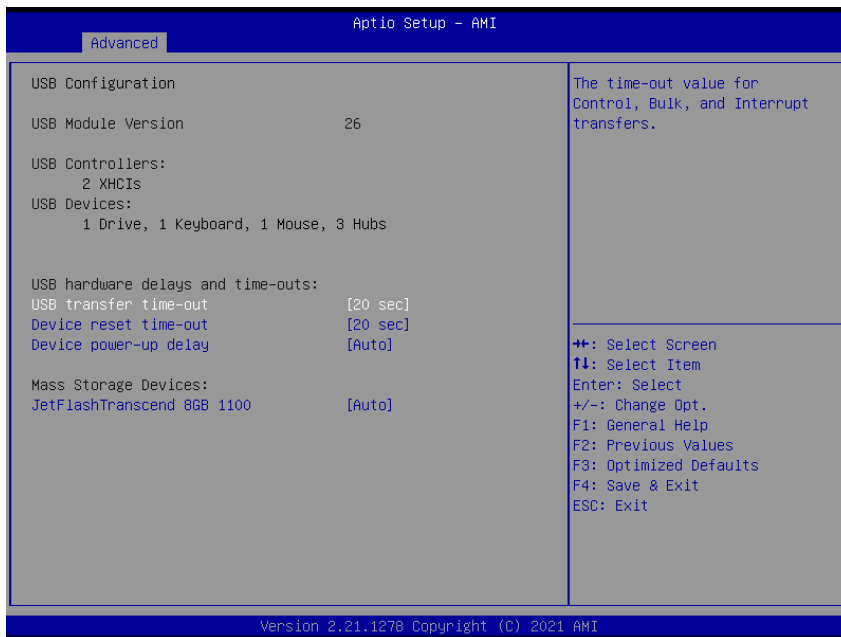
3.6.2.10.1 Legacy Console Redirection Settings



Item	Options	Description
Redirection COM Port	COM0	Select a COM port to display redirection of Legacy OS and Legacy OPRM Messages

3.6.2.11 USB Configuration

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



Item	Options	Description
USB transfer time-out	1 sec 5 sec	The time-out value for Control, Bulk, and Interrupt transfers.

	10 sec 20 sec[Default]	
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.

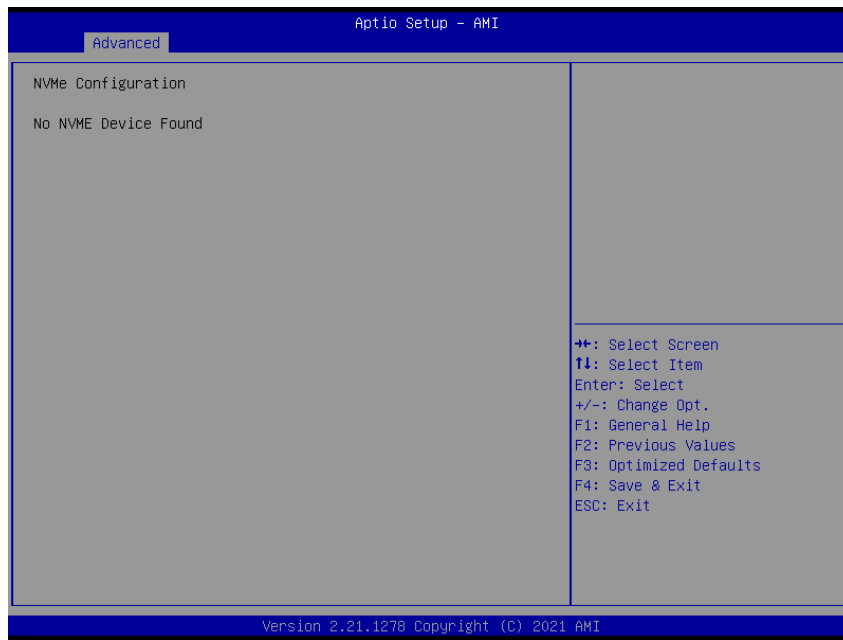
3.6.2.12 Network Stack Configuration



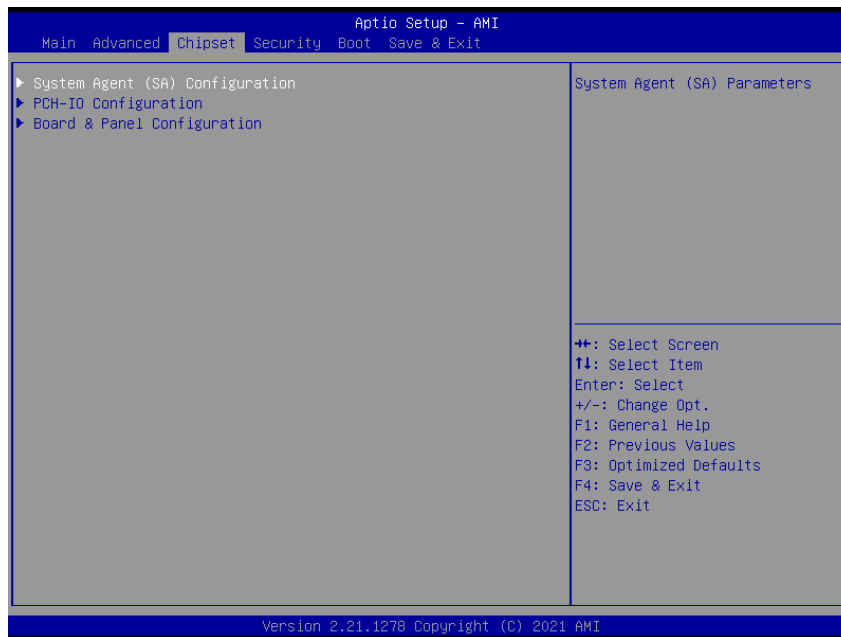
Item	Options	Description
Network Stack	Enabled Disabled[Default]	Enable/Disable UEFI Network Stack.

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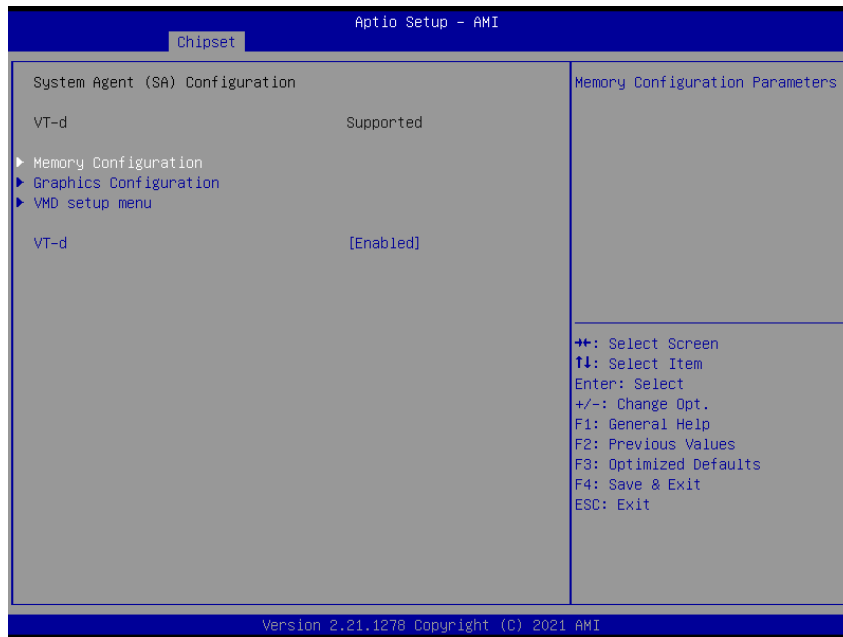
3.6.2.13 NVMe Configuration



3.6.3 Chipset

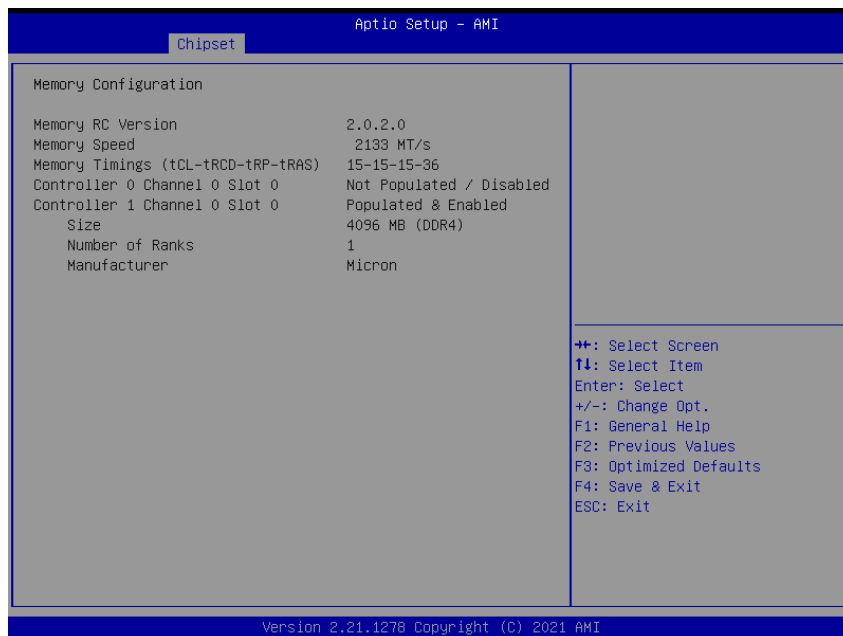


3.6.3.1 System Agent (SA) Configuration



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

3.6.3.1.1 Memory Configuration

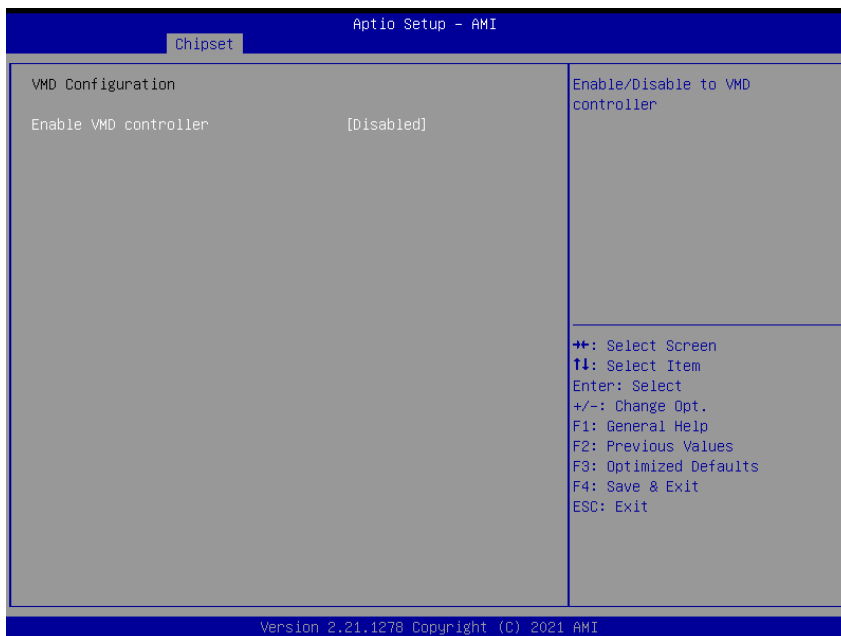


3.6.3.1.2 Graphics Configuration



Item	Option	Description
Primary Display	Auto[Default] IGFX	Select which of IGFX/PEG/PCI Graphics device should be Primary Display Or select HG for Hybrid Gfx.

3.6.3.1.3 VMD Configuration



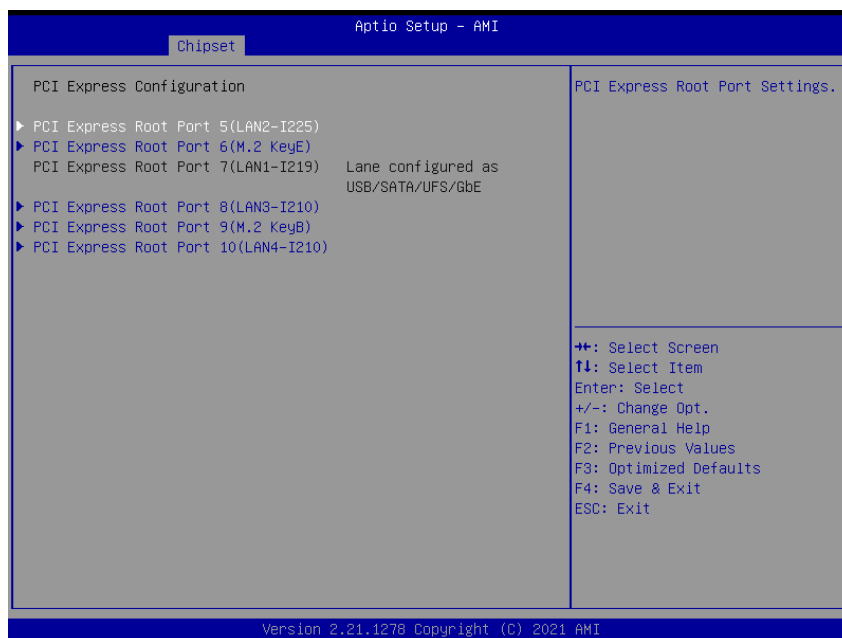
Item	Option	Description
Enable VMD controller	Disabled[Default] Enabled	Enable/Disable to VMD controller

3.6.3.2 PCH-IO Configuration

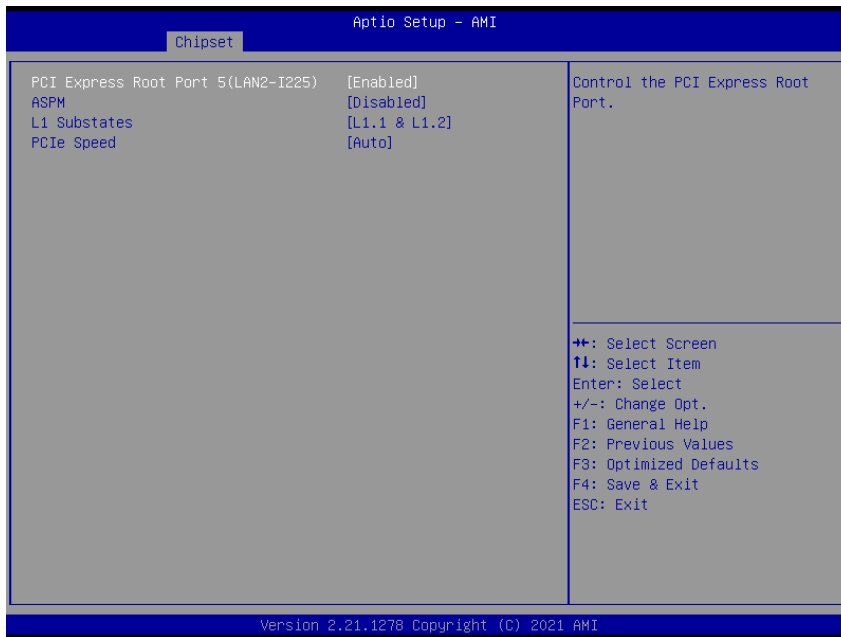


Item	Option	Description
PCH LAN Controller	Enabled[Default] Disabled	Enable/Disable onboard NIC.

3.6.3.2.1 PCI Express Configuration



3.6.3.2.1.1 PCI Express Root Port 5(LAN2-I225)



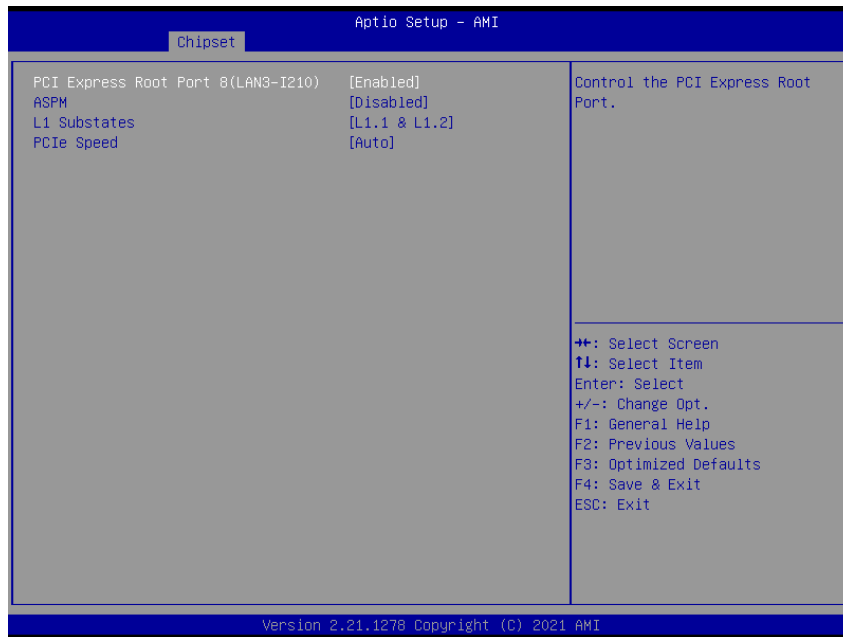
Item	Option	Description
PCI Express Root Port 5(LAN2-I225)	Disabled Enabled [Default] ,	Control the PCI Express Root Port.
ASPM	Disabled [Default] L0s L1 L0sL1 Auto	Set the ASPM Level: Force L0s – Force all links to L0s State AUTO – BIOS auto configure DISABLE – Disables ASPM.
L1 Substates	Disabled L1.1 L1.1 & L1.2 [Default] ,	PCI Express L1 Substates settings.
PCIe Speed	Auto [Default] Gen1 Gen2 Gen3	Select PCIe speed.

3.6.3.2.1.2 PCI Express Root Port 6(M.2 KeyE)



Item	Option	Description
PCI Express Root Port 6(M.2 KeyE)	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 L1.1 L1.1 & L1.2[Default],	PCI Express L1 Substates settings.
PCIe Speed	Auto[Default] Gen1 Gen2 Gen3	Select PCIe speed.

3.6.3.2.1.3 PCI Express Root Port 8(LAN3-I210)



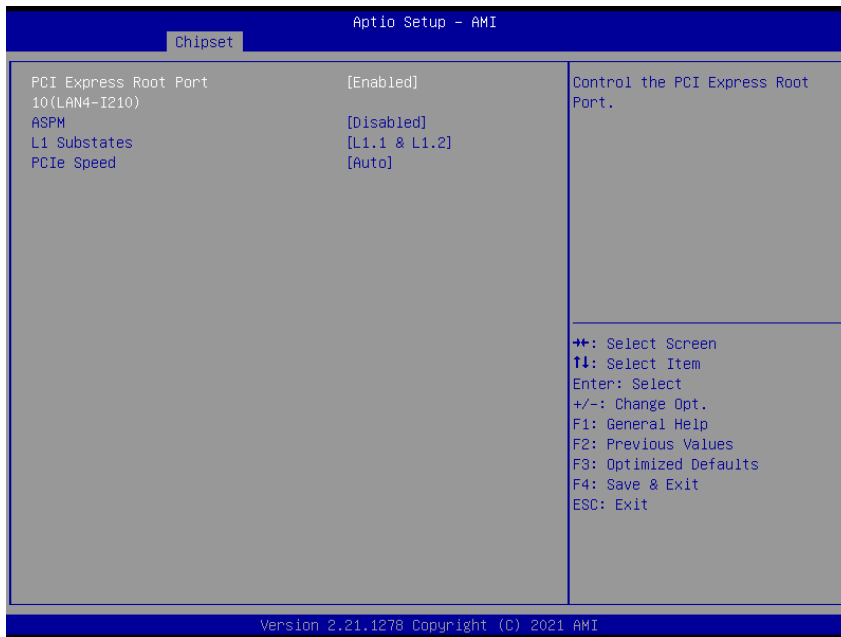
Item	Option	Description
PCI Express Root Port 8(LAN3-I210)	Disabled Enabled [Default] ,	Control the PCI Express Root Port.
ASPM	Disabled [Default] L0s L1 L0sL1 Auto	Set the ASPM Level: Force L0s – Force all links to L0s State AUTO – BIOS auto configure DISABLE – Disables ASPM.
L1 Substates	Disabled L1.1 L1.1 & L1.2 [Default] ,	PCI Express L1 Substates settings.
PCIe Speed	Auto [Default] Gen1 Gen2 Gen3	Select PCIe speed.

3.6.3.2.1.4 PCI Express Root Port 9(M.2 KeyB)



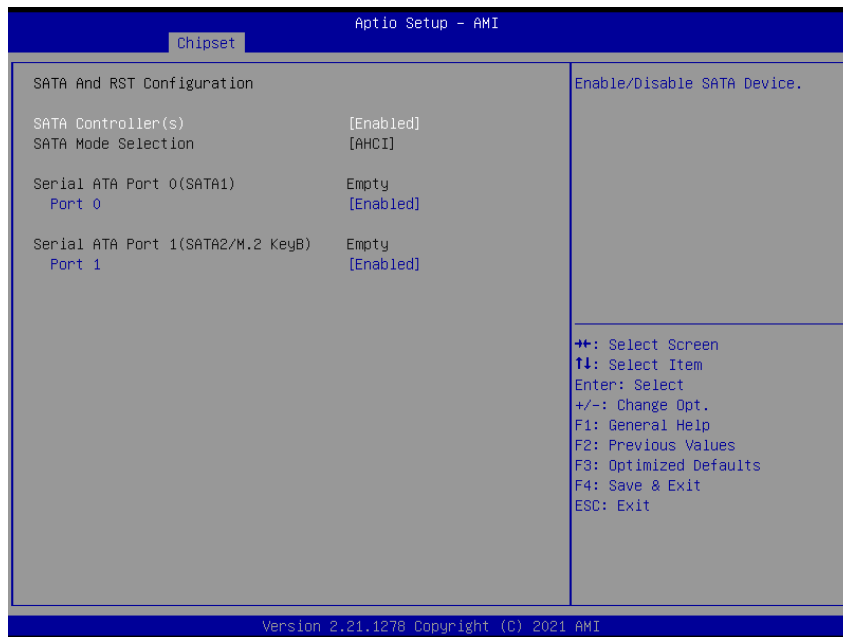
Item	Option	Description
PCI Express Root Port 9 (M.2 KeyB)	Disabled Enabled [Default] ,	Control the PCI Express Root Port.
ASPM	Disabled [Default] L0s L1 L0sL1 Auto	Set the ASPM Level: Force L0s – Force all links to L0s State AUTO – BIOS auto configure DISABLE – Disables ASPM.
L1 Substates	Disabled L1.1 L1.1 & L1.2 [Default] ,	PCI Express L1 Substates settings.
PCIe Speed	Auto [Default] Gen1 Gen2 Gen3	Select PCIe speed.

3.6.3.2.1.5 PCI Express Root Port 10(LAN4-I210)



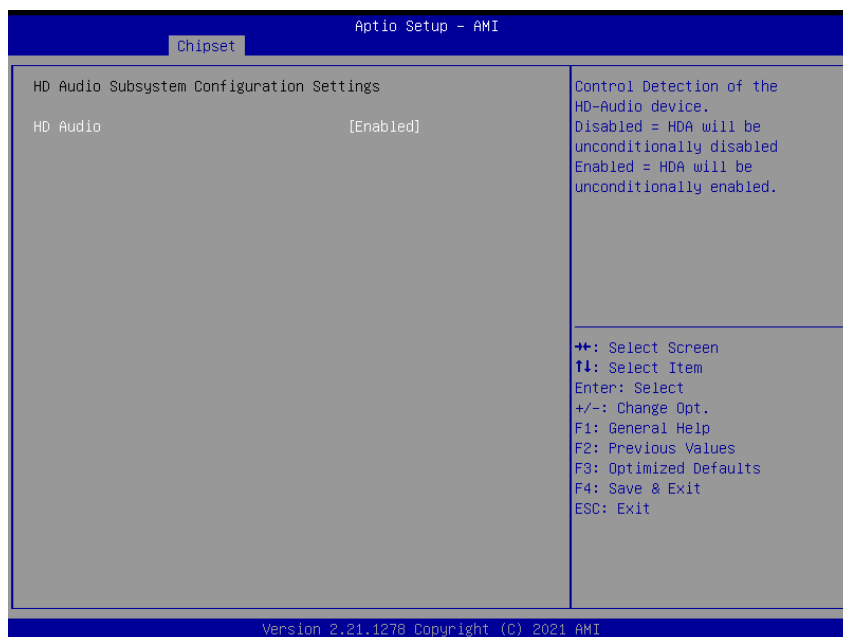
Item	Option	Description
PCI Express Root Port 10(LAN4-I210)	Disabled Enabled [Default] ,	Control the PCI Express Root Port.
ASPM	Disabled [Default] L0s L1 L0sL1 Auto	Set the ASPM Level: Force L0s – Force all links to L0s State AUTO – BIOS auto configure DISABLE – Disables ASPM.
L1 Substates	Disabled L1.1 L1.1 & L1.2 [Default] ,	PCI Express L1 Substates settings.
PCIe Speed	Auto [Default] Gen1 Gen2 Gen3	Select PCIe speed.

3.6.3.2.2 SATA And RST Configuration



Item	Option	Description
SATA Controller(s)	Disabled Enabled[Default],	Enable/Disable SATA Device.
Port 0	Disabled Enabled[Default],	Enable or Disable SATA Port
Port 1	Disabled Enabled[Default],	Enable or Disable SATA Port

3.6.3.2.3 HD Audio Configuration



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Item	Option	Description
HD Audio	Disabled Enabled[Default],	Control Detection of the HD-Audio device. Disable = HDA will be unconditionally disabled Enabled = HDA will be unconditionally enabled.

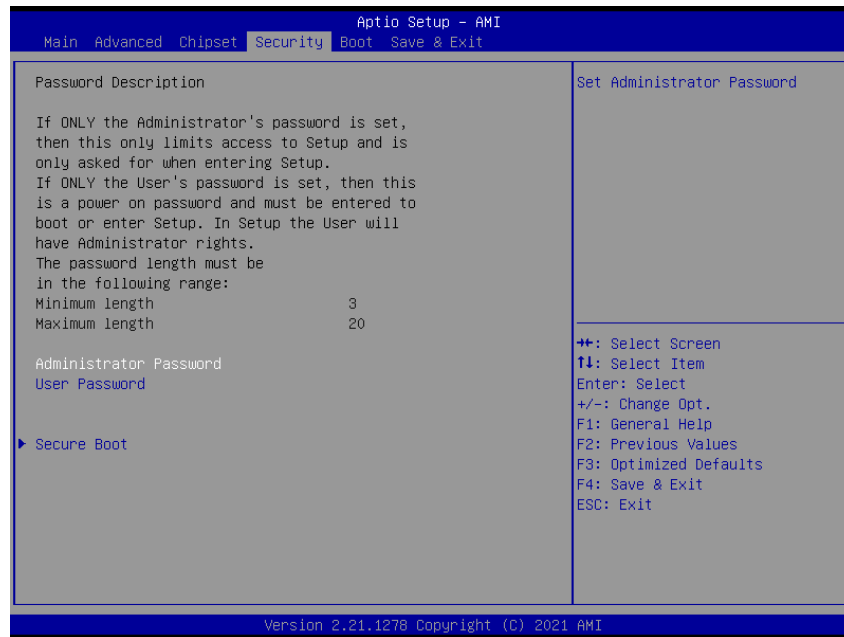
3.6.3.3 Board & Panel Configuration



Item	Option	Description
Active Panel	Disabled Enabled[Default]	Active Internal LVDS(eDP->Ch7511-to-LVDS) [Enabled] load vbt with EDP(7511) [Disabled] load vbt without EDP(7511)
CH7511 EDID Panel Option	1024 x 768 24/1[Default] 800 x 600 18/1 1024 x 768 18/1 1366 x 768 18/1 1024 x 600 18/1 1280 x 800 18/1 1920 x 1200 24/2 1920 x 1080 18/2 1280 x 1024 24/2 1440 x 900 18/2 1600 x1200 24/2 1366 x768 24/1 1920 x1080 24/2 1680 x1050 24/2	Port1-EDP to LVDS(Chrotel 7511)Panel EDID Option
Panel Brightness Control Method	BIOS[Default] BR Button VR OS Driver	Panel Brightness Control Method. 1.BIOS 2. Brightness Button 3. VR 4.OS Driver
Panel Brightness	00%	Select Panel back light PWM duty.

	25% 50% 75% 100% [Default]	
Panel Back Light PWM Frequency	200 [Default] 300 400 500 700 1k 2k 3k 5k 10k 20k	Select Panel back light PWM Frequency
ErP Function	Disabled [Default] , Enabled	ErP Function (Deep S5).
PWR-On After PWR-Fail	Off [Default] , On Last State	AC loss resume.
Wake Up by Ring	Disabled Enabled [Default] ,	Wake Up by Ring from S3/S4/S5
Watch Dog	Disabled [Default] , 30 sec 40 sec 50 sec 1 min 2 min 10 min 30 min	Select WatchDog.
USB Standby Power	Disabled Enabled [Default] ,	Enabled/Disabled USB Standby Power during S3/S4/S5
Amplifier Gain	2W [Default] , 6W	Amplifier Gain
M.2 KeyB type	USB3 [Default] , PCIE	M.2 KeyB type
SHOW DMI INFO	Disabled [Default] , Enabled	SHOW DMI INFO

3.6.4 Security



- **Administrator Password**

Set setup Administrator Password

- **User Password**

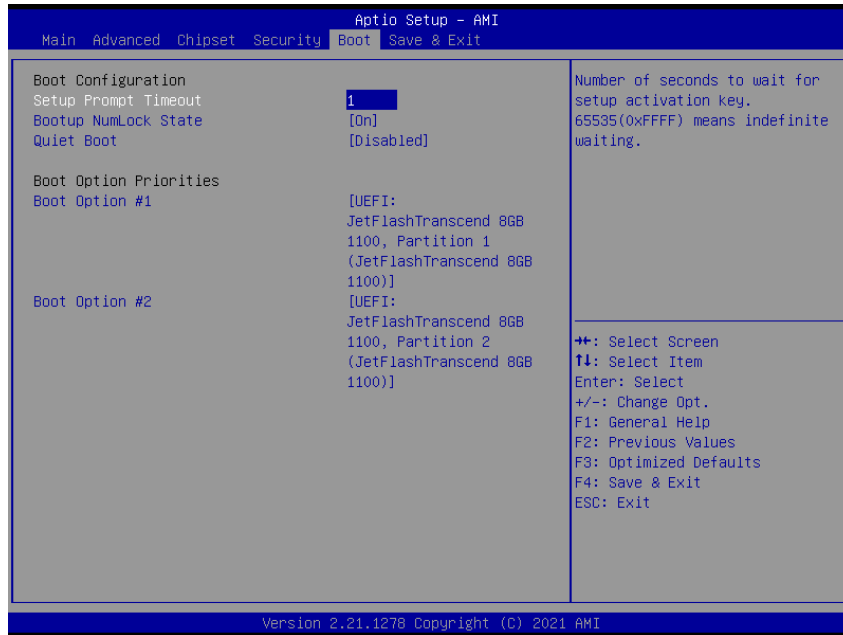
Set User Password

3.6.4.1 Secure Boot menu



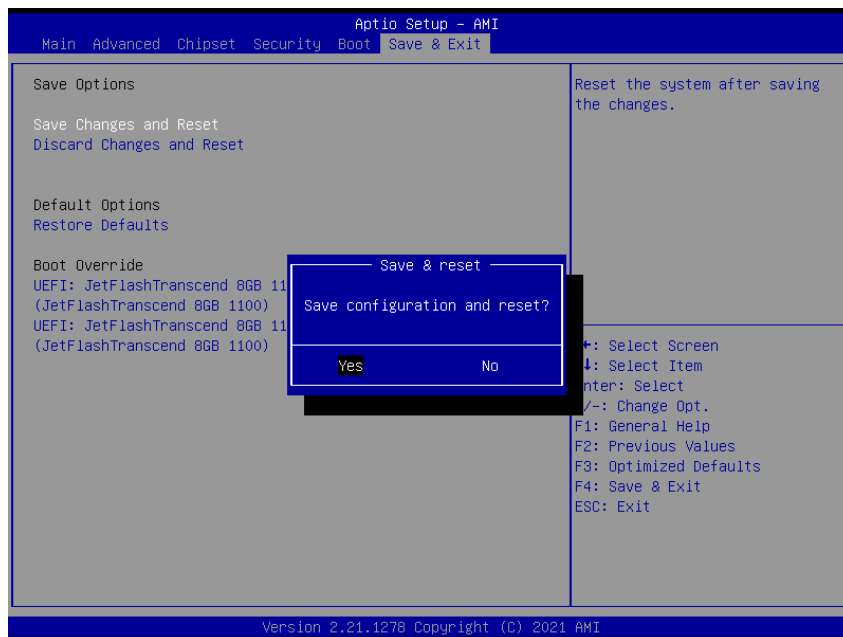
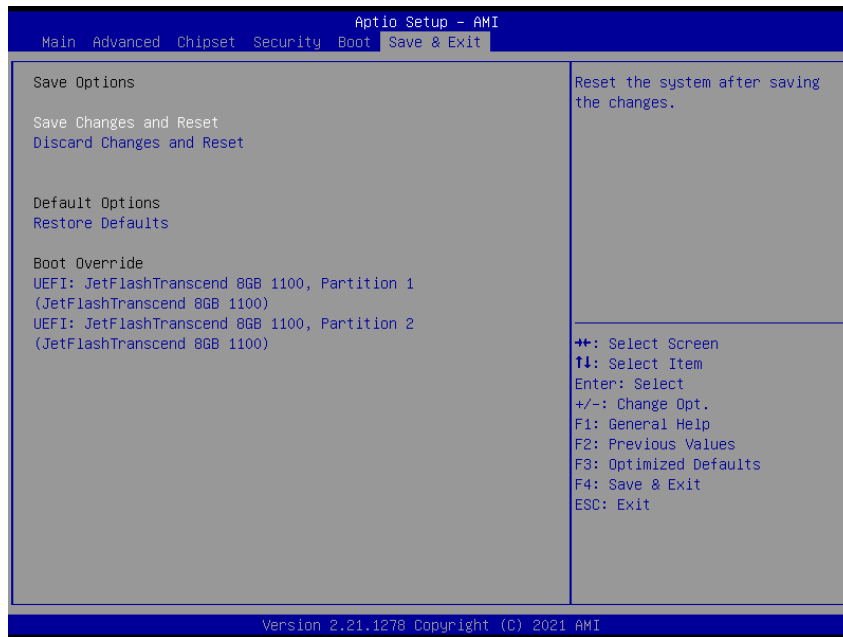
Item	Option	Description
Secure Boot	Disabled Enabled[Default]	Secure Boot feature is Active if Secure Boot is Enabled, Platform Key(PK) is enrolled and the System is in User mode. The mode change requires platform reset
Secure Boot Mode	Standard[Default] Custom	Secure Boot mode options: Standard or Custom. In Custom mode, Secure Boot Policy variables can be configured by a physically present user without full authentication

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.	
Boot Option #2	Set the system boot order.	

3.6.6 Save and exit



3.6.6.1 Save Changes and Reset

Reset the system after saving the changes.

3.6.6.2 Discard Changes and Reset

Reset system setup without saving any changes.

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3.6.6.3 *Restore Defaults*

Restore/Load Default values for all the setup options.

3.6.6.4 *Launch EFI Shell from filesystem device*

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

4. Drivers Installation

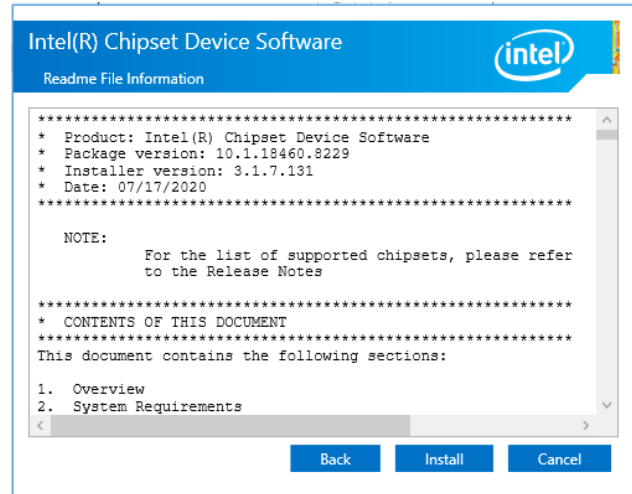


Note: Installation procedures and screen shots in this section are for your reference and may not be exactly the same as shown on your screen.

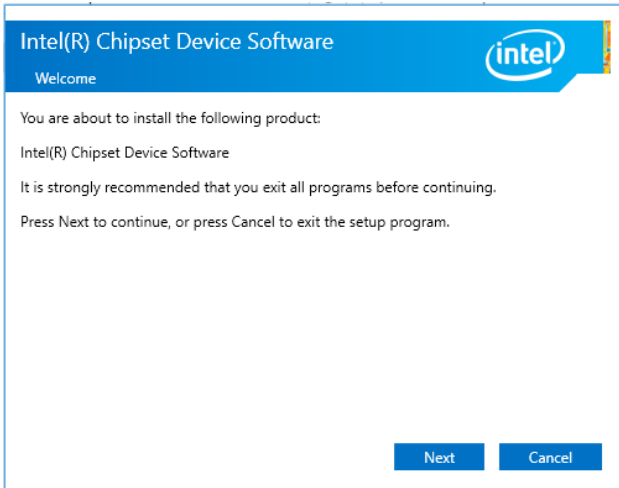
4.1 Install Chipset Driver



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.



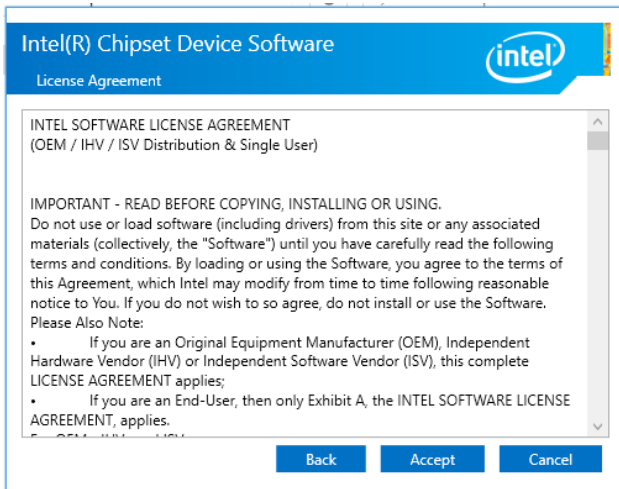
Step 3. Click Install.



Step1. Click Next.



Step 4. Complete setup.

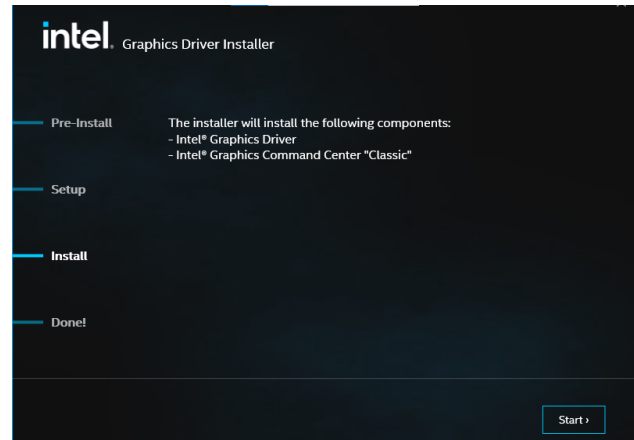


Step 2. Click Accept.

4.2 Install VGA Driver



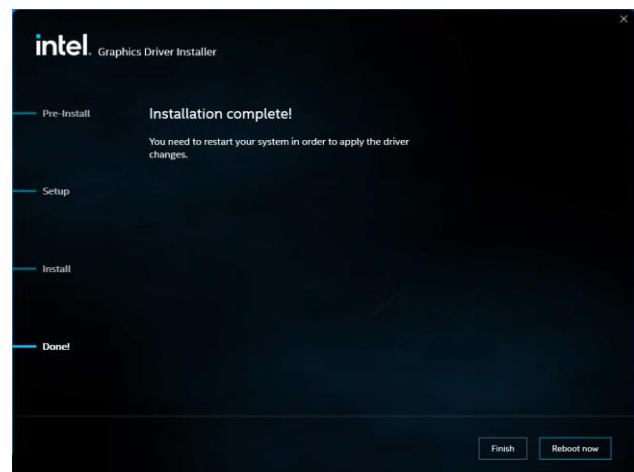
Note: The installation procedures and screen shots in this section are based on Windows 10 operation system. If the warning message appears while the installation process, click Continue to go on.



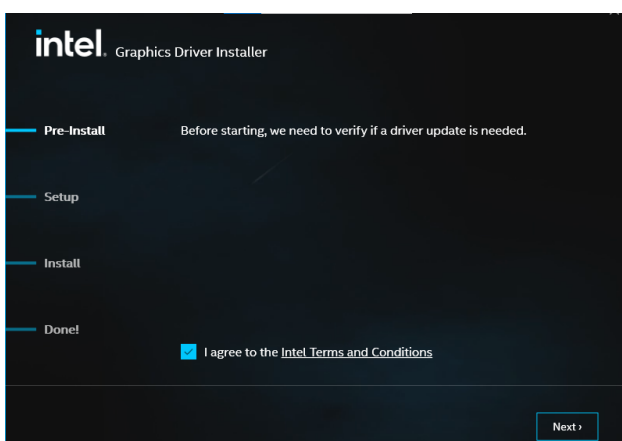
Step 3. Click Start.



Step 1. Click Begin installation.



Step 4. Click Reboot now.

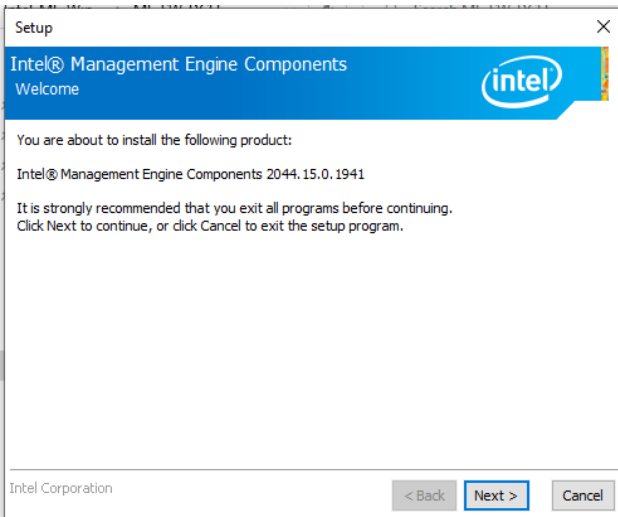


Step 2.
Click **Next** to accept license agreement.

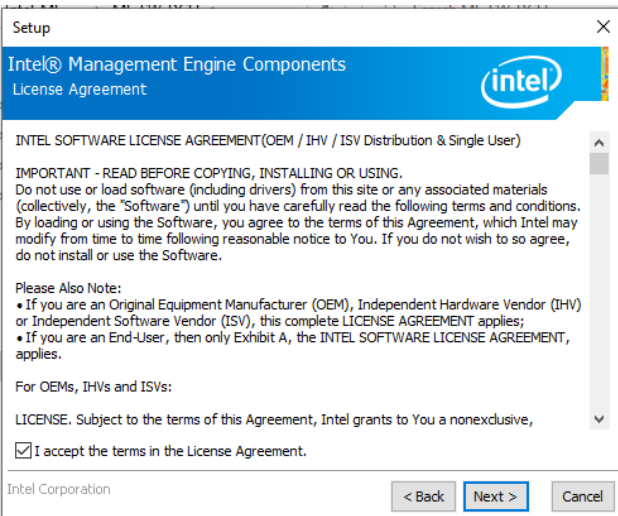
4.3 Install ME Driver



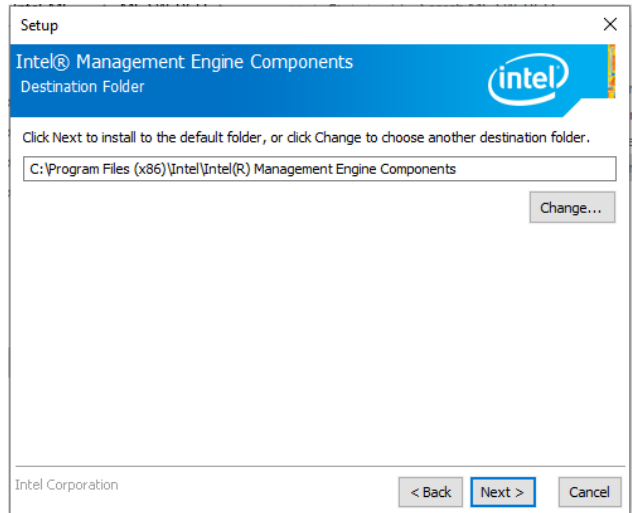
Note: The installation procedures and screen shots in this section are based on Windows 10 operation system. If the warning message appears while the installation process, click Continue to go on.



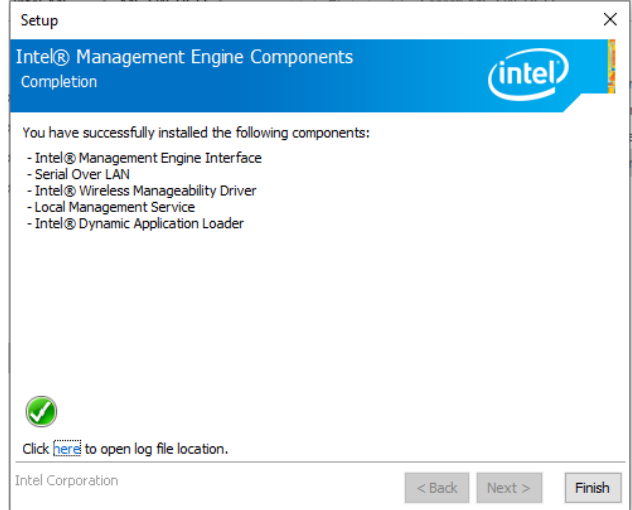
Step 1. Click **Next** to continue setup.



Step 2. Click **Next**.



Step 3. Click **Next**.

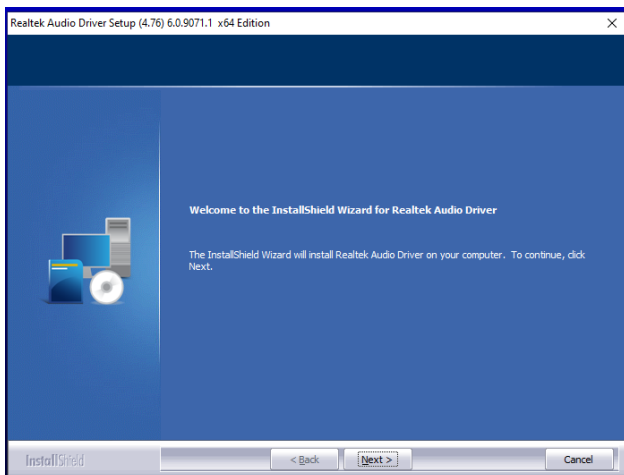


Step 4. Click **Finish** to complete setup.

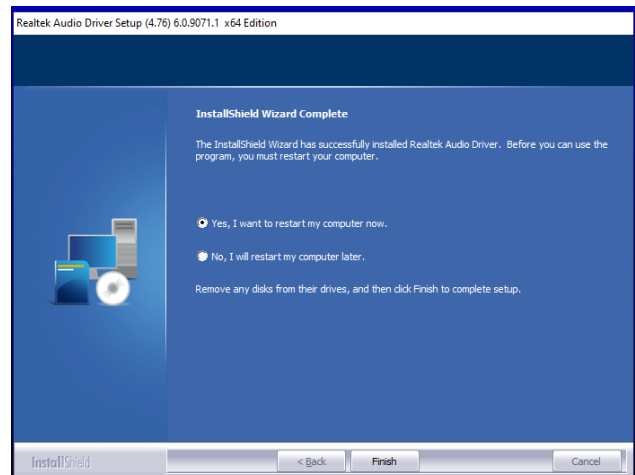
4.4 Install Audio Driver (For Realtek ALC897 and ALC888S HD Audio)



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.

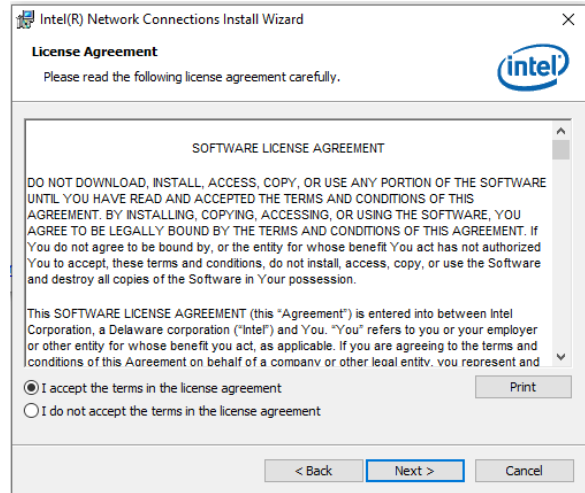


Step 2. Click **Finish** to complete setup.

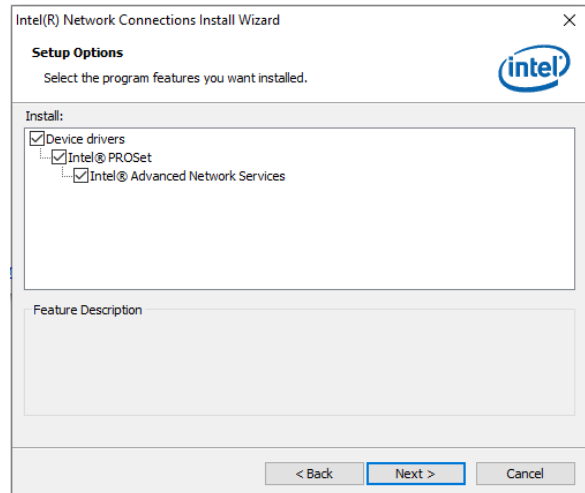
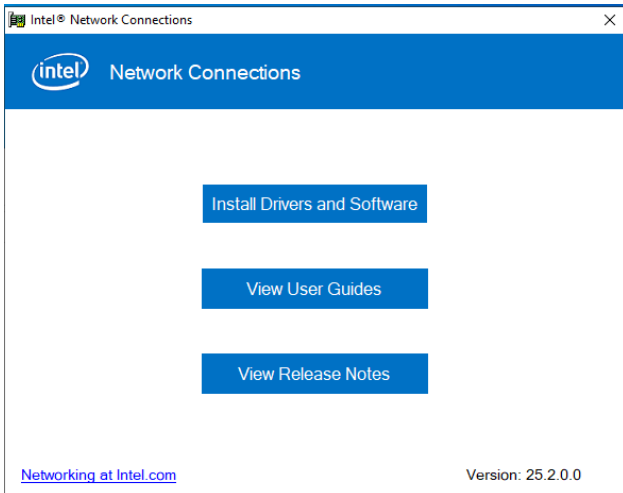
4.5 Install LAN Driver



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.

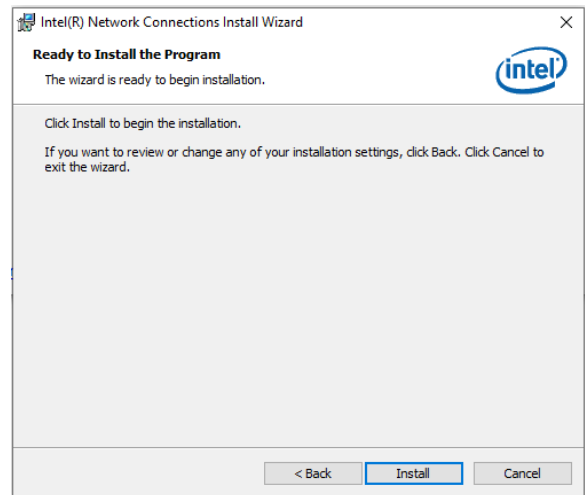
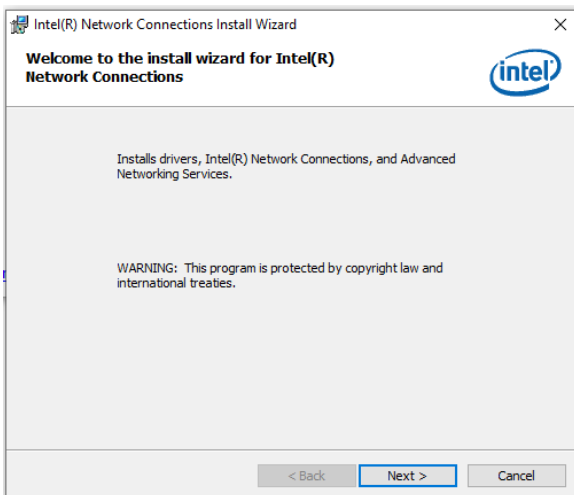


Step 3. Click Next.



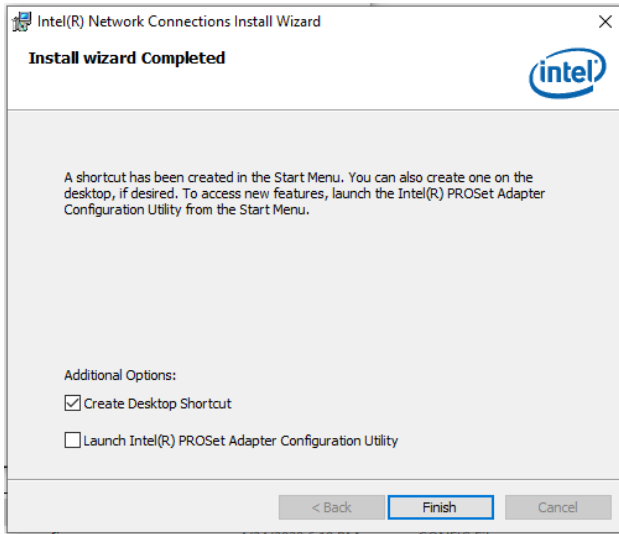
Step 1. Click Next to continue installation.

Step 4. Click Yes.



Step 2. Click Next.

Step 5. Click Install.

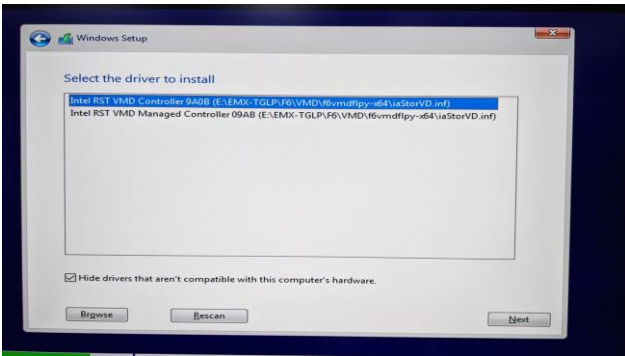


Step 6. Click **Finish** to complete setup.

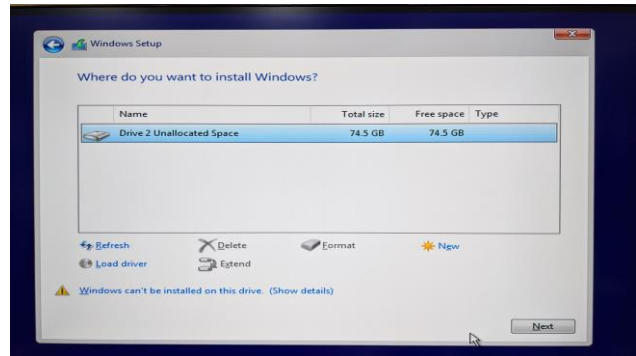
4.6 Install RST for RAID Driver



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

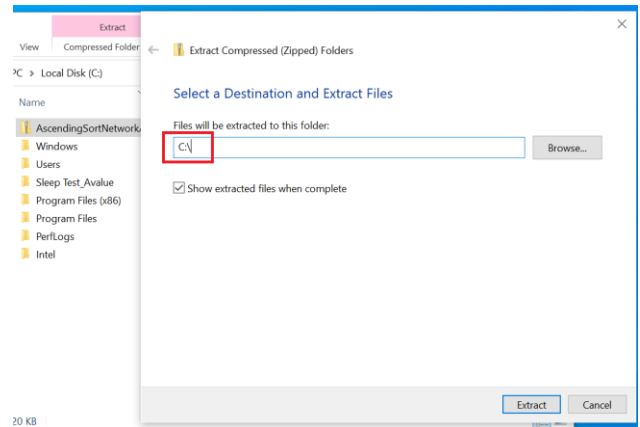


Step 2. Click **Next**.

4.7 Ascending Network Adapter

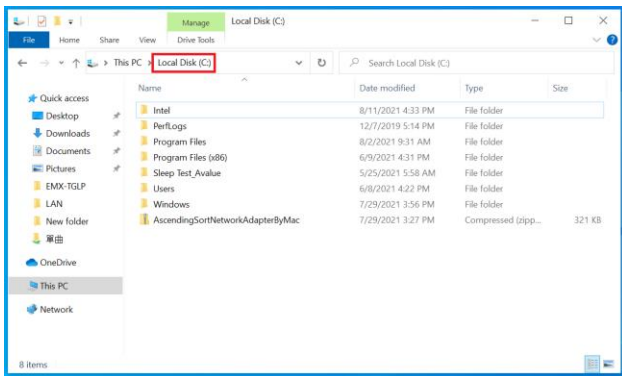


Note: The installation procedures and screen shots in this section are based on Windows 10 operation system. If the warning message appears while the installation process, click Continue to go on.



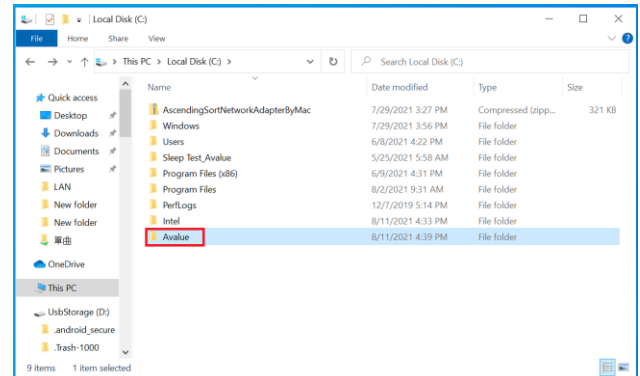
Step 3.

change path to **C:** and execute the file

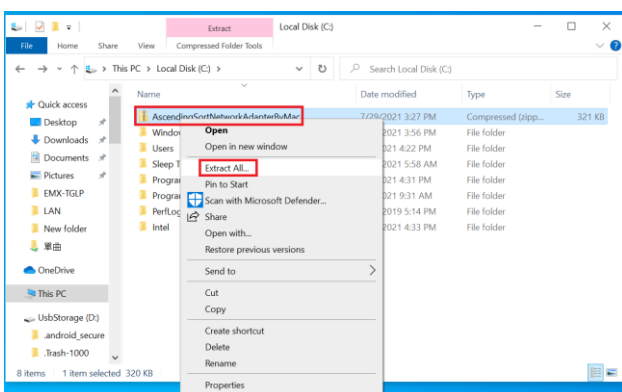


Step 1. Copy file:

“AscendingSortNetworkAdapterByMac.zip”
to **C:**

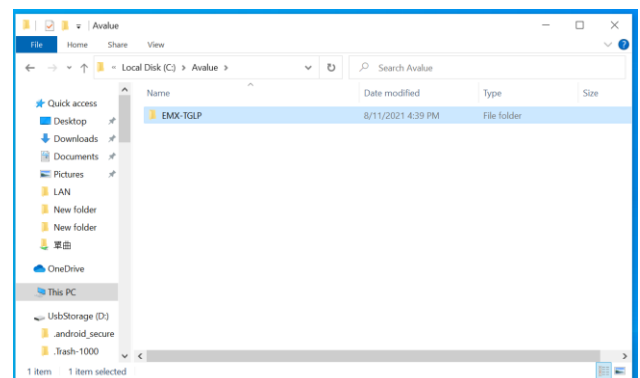


Step 4. it will generate a new folder.



Step 2. Unzip file:

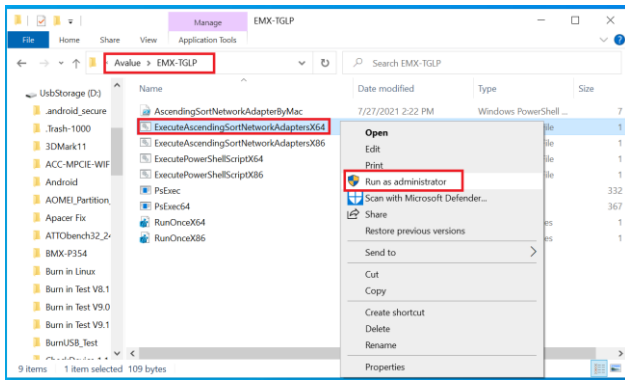
“AscendingSortNetworkAdapterByMac.zip”



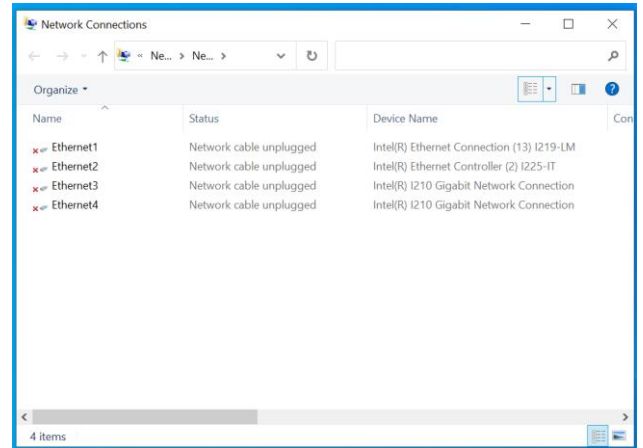
Step 5.

Click and enter **C:\newfolder\EMX-TGLP** folder ,
execute administrator mode
“ExecuteAscendingSortNetworkAdaptersX64.bat”.

EMX-TGLP User's Manual



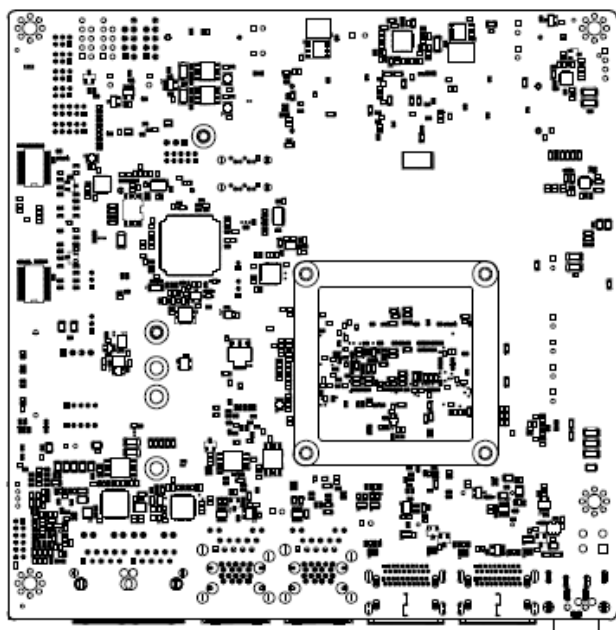
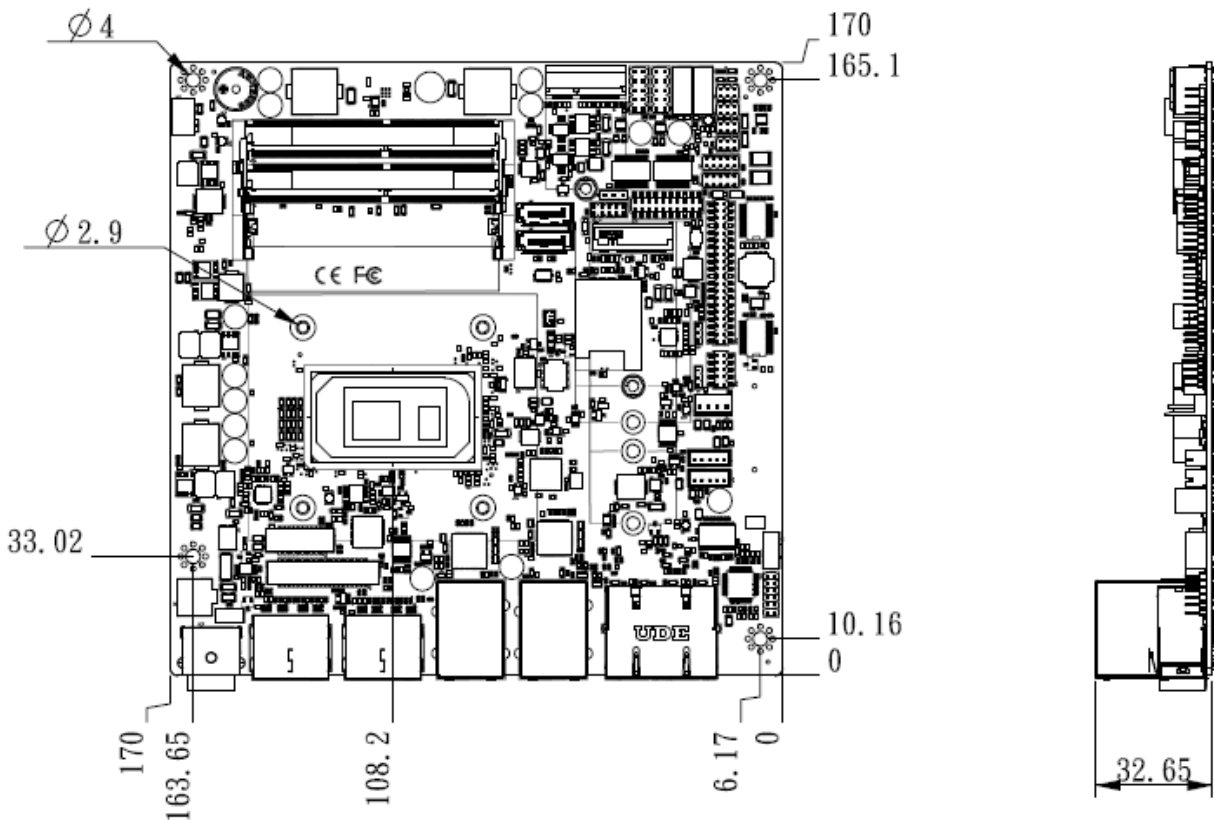
Step 6. After execute "ExecuteAscendingSortNetworkAdaptersX64.bat", it will auto Restart.



Step 7.
Ethernet1=>INTEL I219LM
Ethernet2=>INTEL I225IT
Ethernet3=>INTEL I210
Ethernet4=>INTEL I210

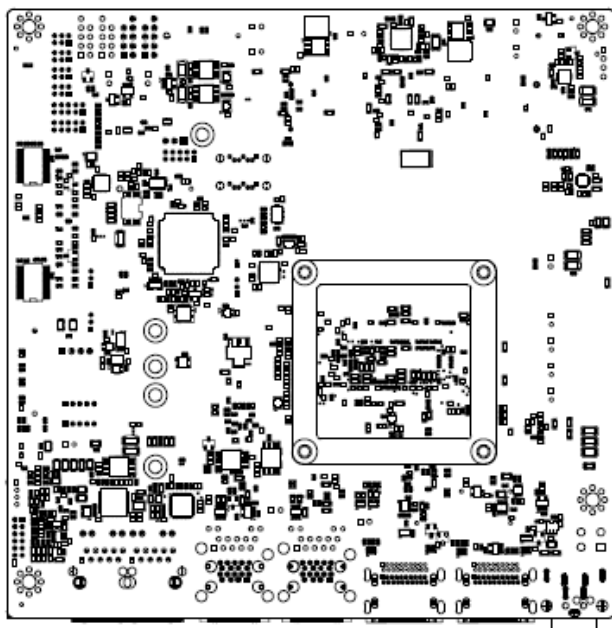
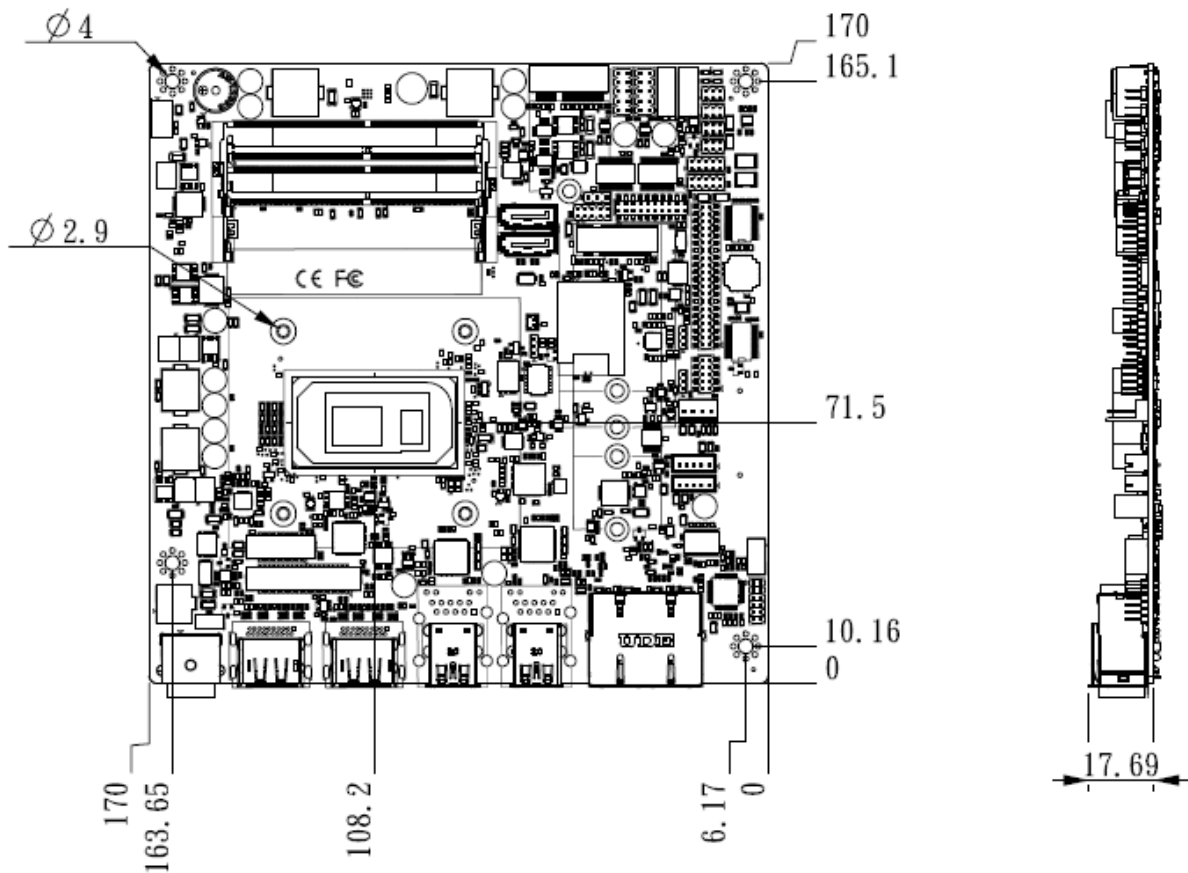
5. Mechanical Drawing

5.1 This is 4LAN4DP (Full height) version.



Unit: mm

5.2 This is 2LAN2DP (Thin) version.

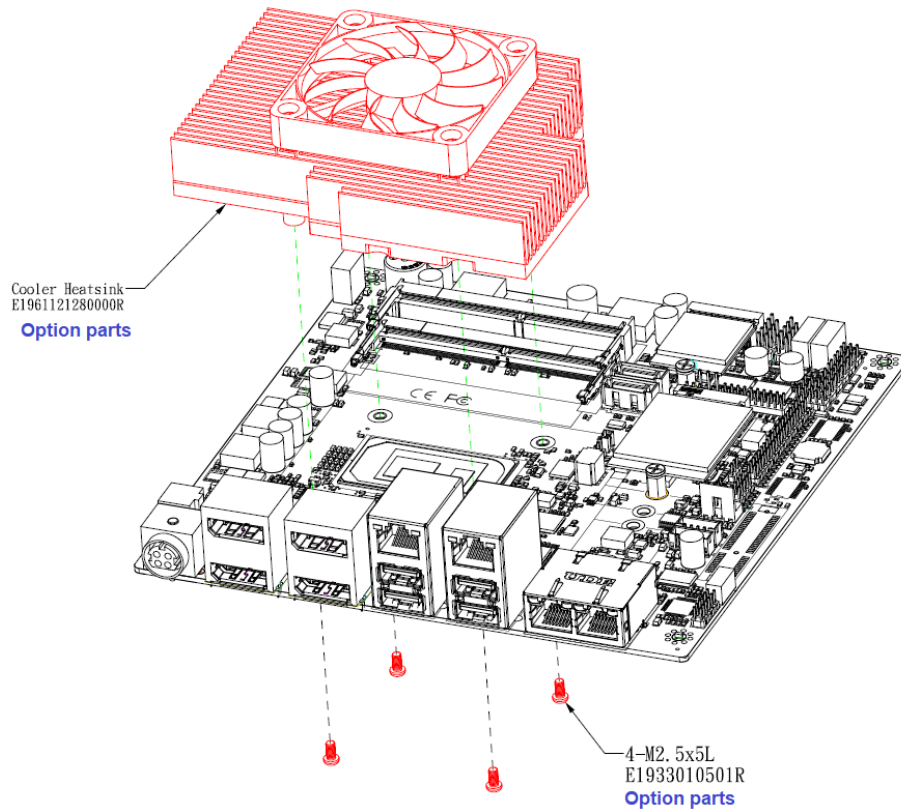


Unit: mm

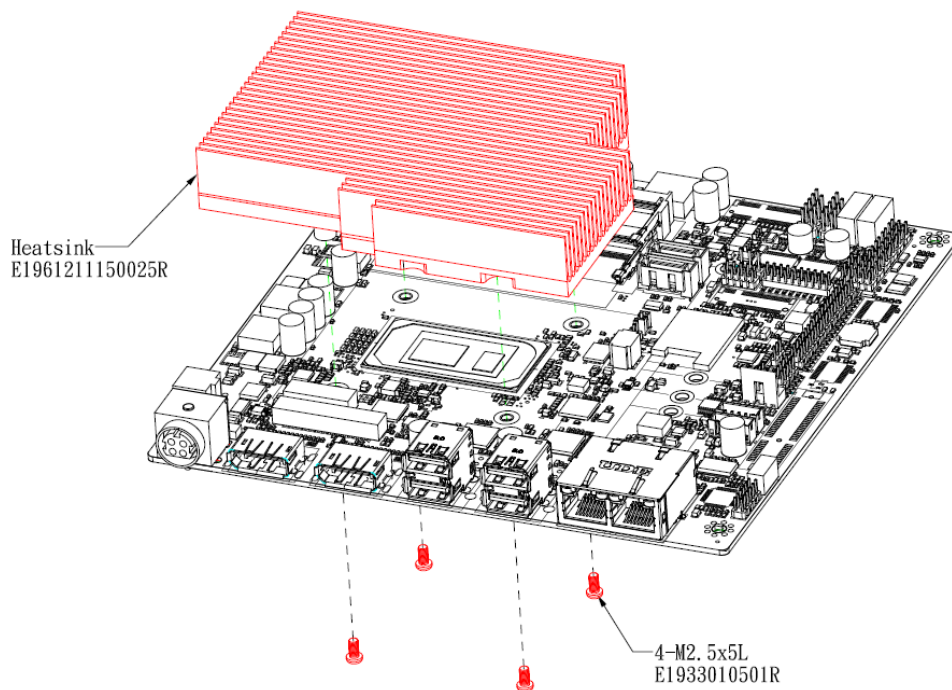
EMX-TGLP User's Manual

For thermal solutions:

- Standard 4LAN4DP (Full height) motherboard BIOS default for TDP: 28W, CPU heatsink and screws are option parts.



- Standard 2LAN2DP (Thin) motherboard BIOS default for TDP: 15W, heatsink and screws onboard.



- If customer already has heatsink on hand and would like to upgrade thermal solution from heatsink (BIOS TDP: 15W) to CPU cooler (BIOS TDP: 28W), please refer to below.

