

EMX-TGLP

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

User's Manual



4th Ed – 03 October 2023

FCC Statement



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

- (1) THIS DEVICE MAY NOT CAUSE HARMFUL INTERFERENCE.
- (2) THIS DEVICE MUST ACCEPT ANY INTERFERENCE RECEIVED INCLUDING INTERFERENCE THAT MAY CAUSE 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.

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

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

Notice

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

Copyright Notice

Copyright © 2023 Avalue Technology Inc., ALL RIGHTS RESERVED.

No part of this document may be reproduced, copied, translated, or transmitted in any form or by any means, electronic or mechanical, for any purpose, without the prior written permission of the original manufacturer.

Trademark Acknowledgement

Brand and product names are trademarks or registered trademarks of their respective owners.

Disclaimer

Avalue Technology Inc. reserves the right to make changes, without notice, to any product, including circuits and/or software described or contained in this manual in order to improve design and/or performance. Avalue Technology assumes no responsibility or liability for the use of the described product(s), conveys no license or title under any patent, copyright, or masks work rights to these products, and makes no representations or warranties that

these products are free from patent, copyright, or mask work right infringement, unless otherwise specified. Applications that are described in this manual are for illustration purposes only. Avalue Technology Inc. makes no representation or warranty that such application will be suitable for the specified use without further testing or modification.

Life Support Policy

Avalue Technology's PRODUCTS ARE NOT FOR USE AS CRITICAL COMPONENTS IN LIFE SUPPORT DEVICES OR SYSTEMS WITHOUT THE PRIOR WRITTEN APPROVAL OF Avalue Technology Inc.

As used herein:

1. Life support devices or systems are devices or systems which, (a) are intended for surgical implant into body, or (b) support or sustain life and whose failure to perform, when properly used in accordance with instructions for use provided in the labeling, can be reasonably expected to result in significant injury to the user.
2. A critical component is any component of a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or system, or to affect its safety or effectiveness.

A Message to the Customer

Avalue Customer Services

Each and every Avalue's product is built to the most exacting specifications to ensure reliable performance in the harsh and demanding conditions typical of industrial environments. Whether your new Avalue device is destined for the laboratory or the factory floor, you can be assured that your product will provide the reliability and ease of operation for which the name Avalue has come to be known.

Your satisfaction is our primary concern. Here is a guide to Avalue's customer services. To ensure you get the full benefit of our services, please follow the instructions below carefully.

Technical Support

We want you to get the maximum performance from your products. So if you run into technical difficulties, we are here to help. For the most frequently asked questions, you can easily find answers in your product documentation. These answers are normally a lot more detailed than the ones we can give over the phone. So please consult the user's manual first.

To receive the latest version of the user's manual; please visit our Web site at:

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

Product Warranty

Avalue warrants to you, the original purchaser, that each of its products will be free from defects in materials and workmanship for two years from the date of purchase.

This warranty does not apply to any products which have been repaired or altered by persons other than repair personnel authorized by Avalue, or which have been subject to misuse, abuse, accident or improper installation. Avalue assumes no liability under the terms of this warranty as a consequence of such events. Because of Avalue's high quality-control standards and rigorous testing, most of our customers never need to use our repair service. If any of Avalue's products is defective, it will be repaired or replaced at no charge during the warranty period. For out-of-warranty repairs, you will be billed according to the cost of replacement materials, service time, and freight. Please consult your dealer for more details. If you think you have a defective product, follow these steps:

1. Collect all the information about the problem encountered. (For example, CPU type and speed, Avalue's products model name, hardware & BIOS revision number, other hardware and software used, etc.) Note anything abnormal and list any on-screen messages you get when the problem occurs.
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.

Content

1. Getting Started	8
1.1 Safety Precautions	8
1.2 Packing List	8
1.3 Document Amendment History	9
1.4 Manual Objectives	10
1.5 System Specifications	11
1.6 Architecture Overview—Block Diagram	15
2. Hardware Configuration	16
2.1 Product Overview	17
2.2 Jumper and Connector List	18
2.3 Setting Jumpers & Connectors	20
2.3.1 Serial port 1/2 pin9 signal select (JRI1/JRI2)	20
2.3.2 LVDS Back Light power selection (JSBKL1)	20
2.3.3 AT/ATX Power Mode Select (JSATX1)	21
2.3.4 M2KB1 Voltage setting (JP1)	21
2.3.5 Clear CMOS (JBAT1)	22
2.3.6 LCD Inverter connector (JBKL1)	22
2.3.7 LCD Inverter connector (JBKL2)	23
2.3.8 LVDS connector (LVDS1)	23
2.3.9 eDP_Panel connector (EDP1)	24
2.3.10 General purpose I/O connector (DIO1)	24
2.3.11 Serial port1 connector (JCOM1)	25
2.3.12 Serial port2 connector (JCOM2)	25
2.3.13 Serial port 3/4/5/6 connector (JCOM3/4/5/6)	26
2.3.14 Serial Port 1/2 RS485/422 Mode connector (JRS485_1/2)	26
2.3.15 SATA Power connector 1 (SPWR1)	27
2.3.16 Power connector (PWR1)	27
2.3.17 USB connector 3 (JUSB3)	28
2.3.18 USB connector 4 (JUSB4)	28
2.3.19 Speaker connector (SPK1)	29
2.3.20 SPI connector (JSPI1)	29
2.3.21 Battery connector (BT1)	30
2.3.22 Audio connector (JFAUD1)	30
2.3.23 EC Debug (JEC_SPI)	31
2.3.24 Miscellaneous setting connector 1 (JFPT1)	31
2.3.25 Miscellaneous setting connector 2 (FPT2)	32

EMX-TGLP User's Manual

2.3.26	LPC connector (JLPC1).....	32
2.3.27	CPU fan connector (CPU_FAN1).....	33
2.3.28	Power connector (DCIN1)	33
3	BIOS Setup	34
3.1	Introduction	35
3.2	Starting Setup	35
3.3	Using Setup	36
3.4	Getting Help	37
3.5	In Case of Problems.....	37
3.6	BIOS setup.....	38
3.6.1	Main Menu.....	38
3.6.1.1	TDP-28W BIOS.....	38
3.6.1.2	TDP-15W BIOS.....	39
3.6.1.3	System Language	39
3.6.1.4	System Date.....	39
3.6.1.5	System Time	40
3.6.2	Advanced Menu	40
3.6.2.1	Connectivity Configuration.....	41
3.6.2.2	CPU Configuration.....	41
3.6.2.3	Power & Performance	42
3.6.2.3.1	CPU - Power Management Control (TDP-28W BIOS).....	42
3.6.2.3.2	CPU - Power Management Control (TDP-15W BIOS).....	43
3.6.2.4	PCH-FW Configuration	44
3.6.2.4.1	Firmware Update Configuration.....	44
3.6.2.5	Trusted Computing	45
3.6.2.6	ACPI Settings	45
3.6.2.7	IT8528 Super IO Configuration.....	46
3.6.2.7.1	Serial Port 1 Configuration	47
3.6.2.7.2	Serial Port 2 Configuration	47
3.6.2.7.3	Serial Port 3 Configuration	48
3.6.2.7.4	Serial Port 4 Configuration	48
3.6.2.7.5	Serial Port 5 Configuration	49
3.6.2.7.6	Serial Port 6 Configuration	49
3.6.2.8	EC 8528 H/W monitor.....	50
3.6.2.9	S5 RTC Wake Settings.....	50
3.6.2.10	Serial Port Console Redirection	51
3.6.2.10.1	Legacy Console Redirection Settings	52
3.6.2.11	USB Configuration	52
3.6.2.12	Network Stack Configuration	53
3.6.2.13	NVMe Configuration	54

3.6.3	Chipset	54
3.6.3.1	System Agent (SA) Configuration.....	55
3.6.3.1.1	Memory Configuration	55
3.6.3.1.2	Graphics Configuration	56
3.6.3.1.3	VMD Configuration	56
3.6.3.2	PCH-IO Configuration.....	57
3.6.3.2.1	PCI Express Configuration	57
3.6.3.2.2	SATA And RST Configuration	63
3.6.3.2.3	HD Audio Configuration	63
3.6.3.3	Board & Panel Configuration	64
3.6.4	Security.....	66
3.6.4.1	Secure Boot menu	67
3.6.5	Boot	68
3.6.6	Save and exit.....	69
3.6.6.1	Save Changes and Reset.....	69
3.6.6.2	Discard Changes and Reset.....	69
3.6.6.3	Restore Defaults	70
3.6.6.4	Launch EFI Shell from filesystem device	70
4.	Drivers Installation.....	71
4.1	Install Chipset Driver	72
4.2	Install VGA Driver.....	73
4.3	Install ME Driver	74
4.4	Install Audio Driver (For Realtek ALC897 and ALC888S HD Audio).....	75
4.5	Install LAN Driver	76
4.6	Install RST for RAID Driver	78
4.7	Ascending Network Adapter.....	79
5.	Mechanical Drawing	81
5.1	This is 4LAN4DP (Full height) version.	82
5.2	This is 2LAN2DP (Thin) version.	83

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	Avalue	Initial Release
2 nd	March 2022	Avalue	Update System Specifications
3 rd	April 2023	Avalue	Update Setting Jumpers & Connectors
4 th	October 2023	Avalue	Update Jumper and Connector List

1.4 Manual Objectives

This manual describes in details Avalue Technology EMX-TGLP 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-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	Onboard Tiger Lake U 11th Intel® Core™ SoC i7/i5/i3 & Celeron®BGA Processor Intel® Core™ i7-1185G7E, i7-1185GRE (up to 4.4GHz, quad-core, 12M Cache, TDP: 28/15/12W)* Intel® Core™ i5-1145G7E, i5-1145GRE (up to 4.1GHz, quad-core, 8M Cache, TDP: 28/15/12W)* Intel® Core™ i3-1115G4E, i3-1115GRE (up to 3.9GHz, dual-core, 6M Cache, TDP: 28/15/12W)* Intel® Celeron® 6305E (up to 1.8GHz, dual-core, 4M Cache, TDP: 15W) *Intel spec, check with PM's order information.
BIOS	AMI uEFI BIOS, 256Mbit SPI Flash ROM
I/O Chip	EC-IT8528E Fintek F81216HD-I
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	CPU temperature monitoring Voltages monitoring CPU fan speed control
RAID	Core i SKU CPU support RAID Celeron SKU CPU no support RAID SATA1 & 2 (RAID0/1)
TPM	Onboard NuvoTon NPCT754AADYX support TPM 2.0
iAMT	Core i 5/7 SKU CPU support iAMT Celeron SKU CPU no support iAMT
Expansion Slot	
M.2	1 x M.2 Type B 3042/3052/2242/2260/2280 Support (*1)2x PCIE X1 / (*2)1x SATA/1xUSB3.0/1xUSB2.0 with 1 x SIM card slot, support WWAN+GNSS or NVMe (SATA) SSD * 1: If M.2 Key B needs to support 2 x PCI-e x1, The LAN4 needs to be removed by BOM optional. Support PCI-e x2 function, need to modify the ME settings. *1: Where there is no LAN4, 2nd PCI-e functionable (By BOM) ; When support PCI-e x2 function, need request ME setting. *2 : SATA 2 share with M.2 key B SATA Only supports one SIM card Does not support I2S and PCM functions

EMX-TGLP User's Manual

	1 x M.2 Key E 2230 support WiFi module and CNVi (1 x PCI-e x1 & USB 2.0 Signal) Does not support PCM/I2S and UART/SDIO functions * Due to support Intel CNVI function, please do not use support UART or SDIO module to avoid misfunction.
Storage	
M.2	1 x M.2 Type B 3042/3052/2242/2260/2280 NVMe SSD * SATA 2 share with M.2 key B SATA
SATA	2 x SATA III, 1 x SATA Power *SATA 2 share with M.2 key B SATA
Edge I/O	
LAN	1 x Intel® I225IT 2.5 Gigabit Ethernet 1 x Intel® I219LM Gigabit Ethernet PHY 2 x Intel® I210IT Gigabit Ethernet (BOM optional for Thin Mini ITX design SKU)
USB 3.1	3 x USB3.2 Gen2, 1 x USB 3.2 Gen1 at I/O
DP	2 x DP++ (Thin Mini ITX) 2 x DP++, 2 x DP (Full height Mini ITX)
DC Input	Mini Din 4-pin DC in Jack
Onboard I/O	
COM	COM: COM 1 & COM2: COM 1 & COM2 support RS232/422/485 connector, with / +5V & +12V Supported and RS422/485 by BIOS setting 2 x 2 x 5 pin, pitch 2.00mm connector support RS-232 connector, Pin 9 with / +5V & +12V Supported 2 x 2 x 3 pin, pitch 2.00mm connector support RS422/485 connector, Pin 5 with / +5V Supported COM3 to 6: 1 x 2 x 20 pin, pitch 2.00mm connector for COM3~6: support RS-232 connector
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 (with passive Displayport (DP) to HDMI Dongle/Adapter) 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)

EMX-TGLP User's Manual

	1 x Intel® I219LM Gigabit Ethernet PHY (LAN1) 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:

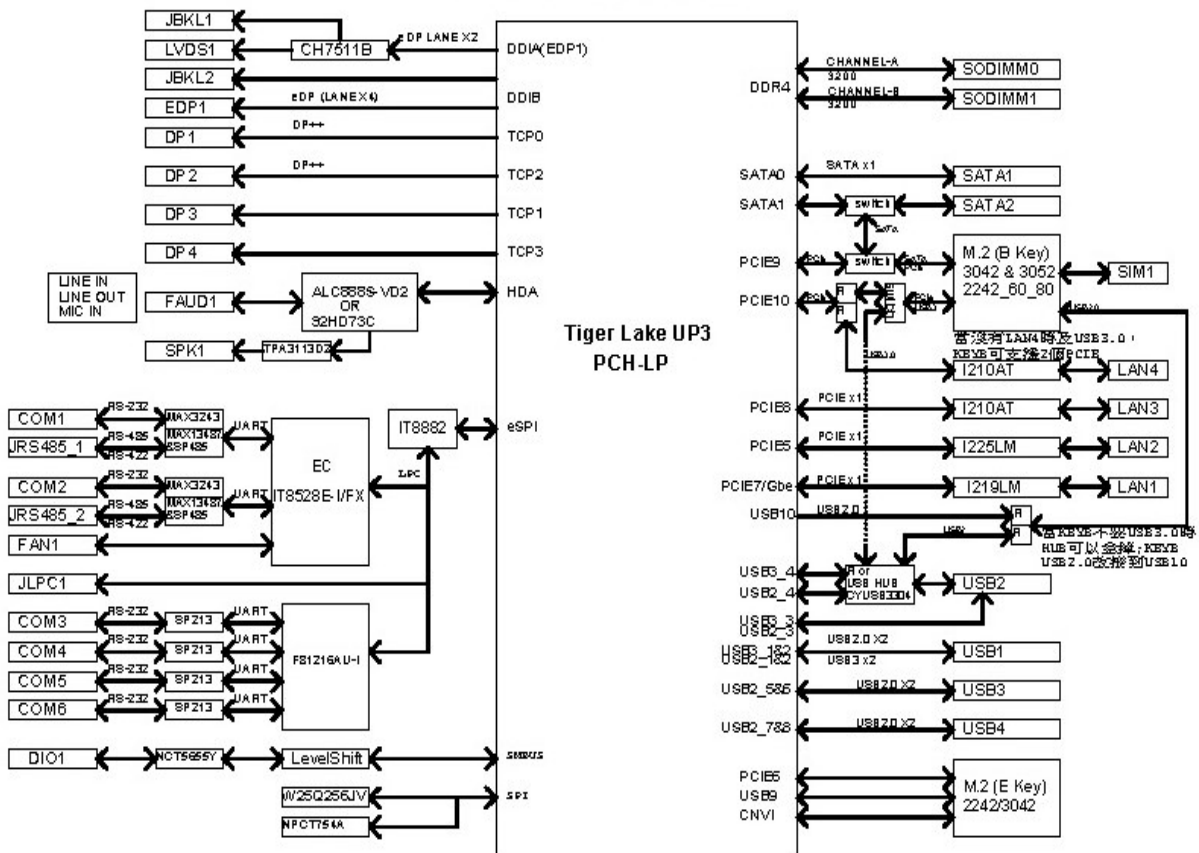
Specifications are subject to change without notice.

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.

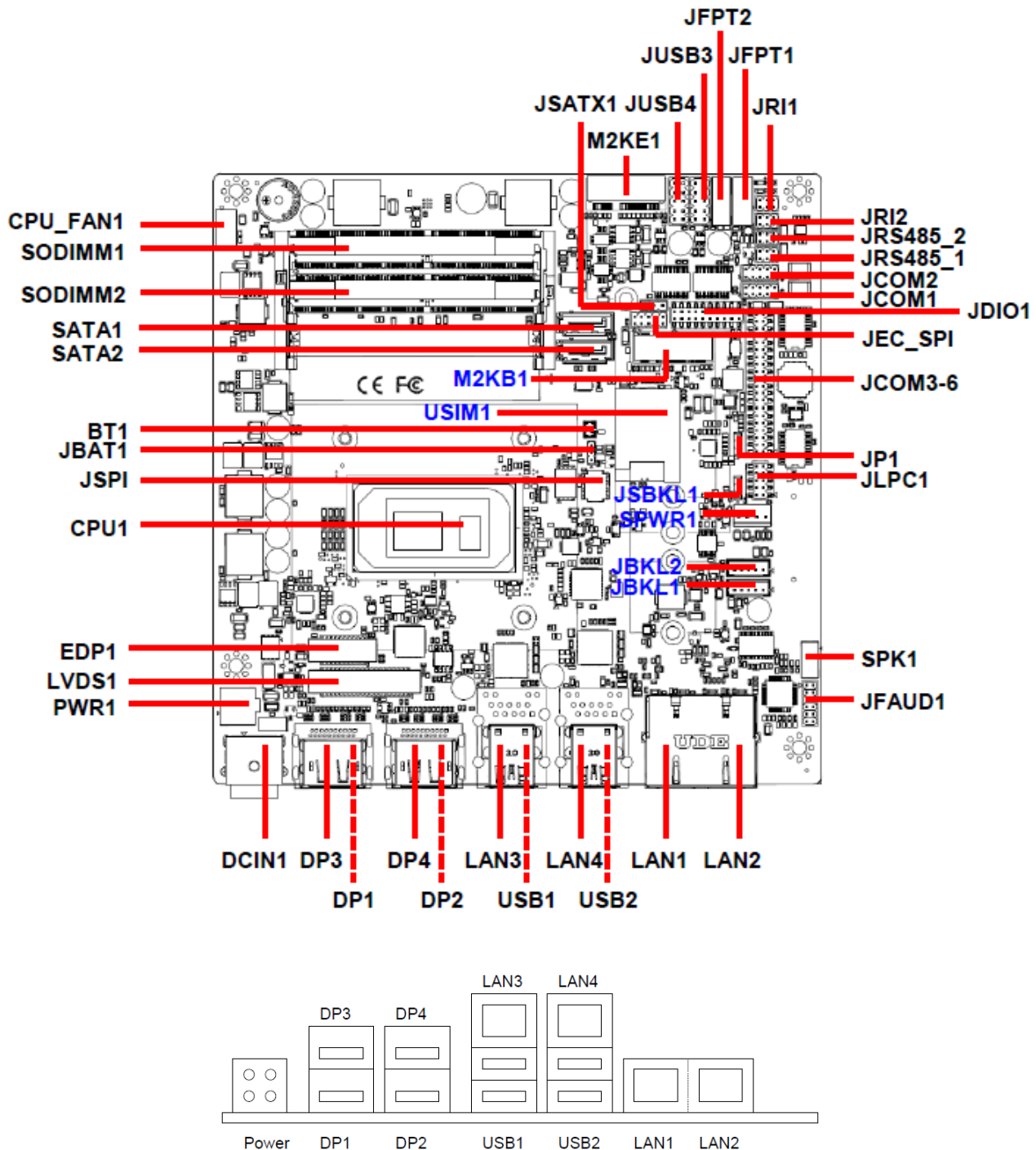
1.6 Architecture Overview—Block Diagram

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



2. Hardware Configuration

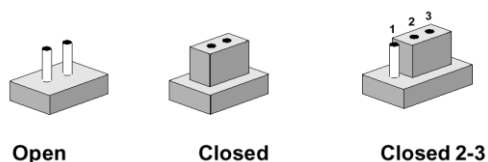
2.1 Product Overview



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

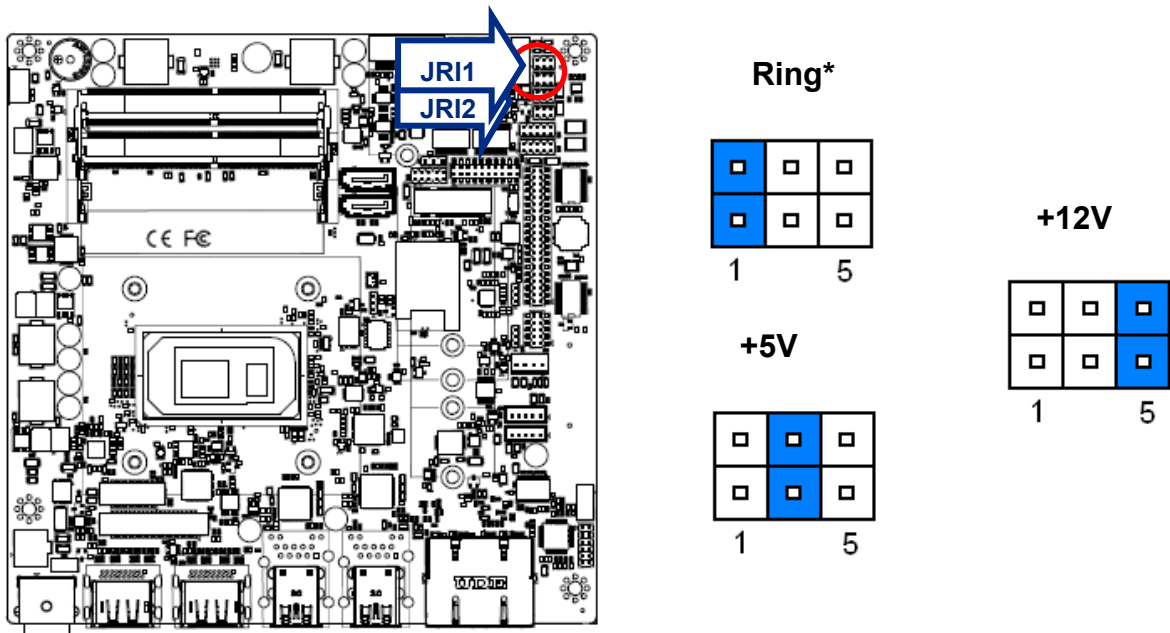
Connectors

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

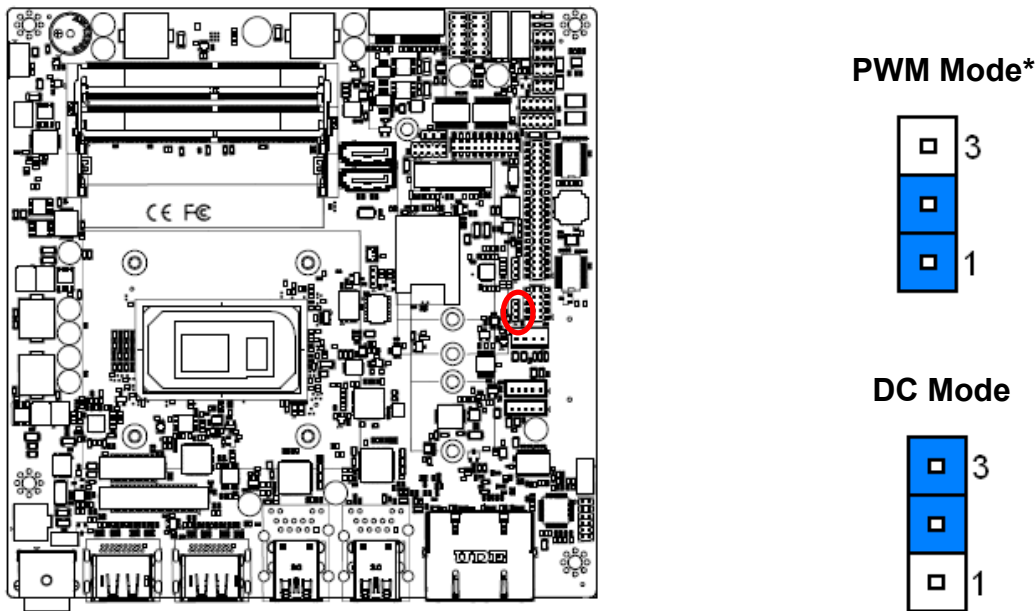
2.3 Setting Jumpers & Connectors

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



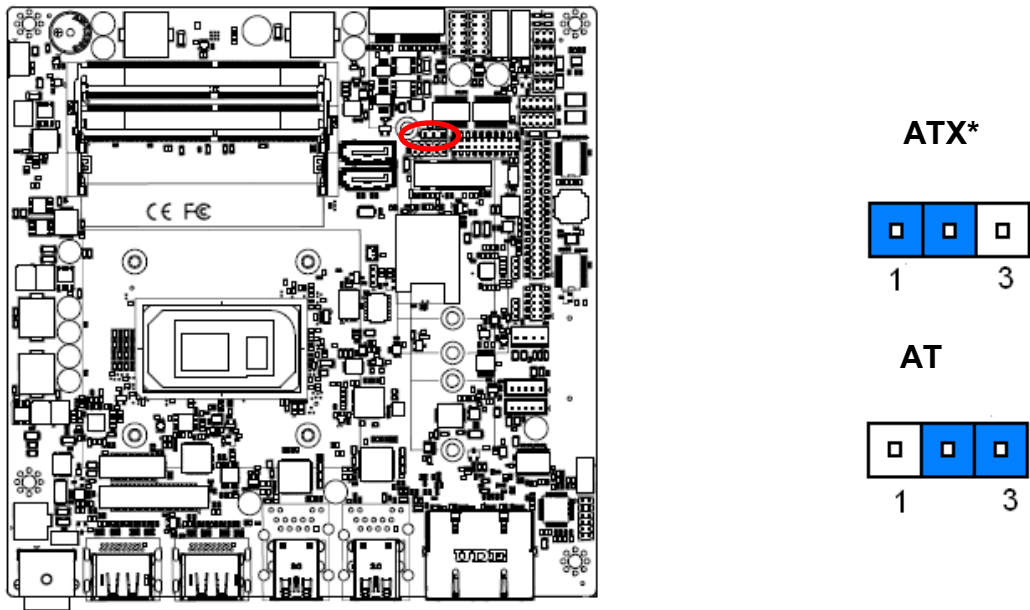
* Default

2.3.2 LVDS Back Light power selection (JSBKL1)



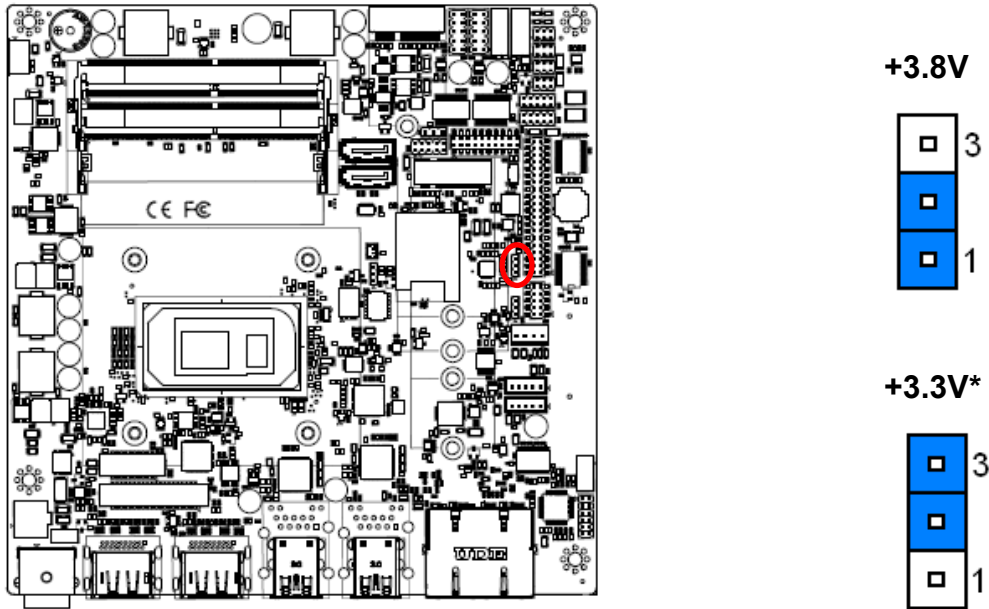
* Default

2.3.3 AT/ATX Power Mode Select (JSATX1)



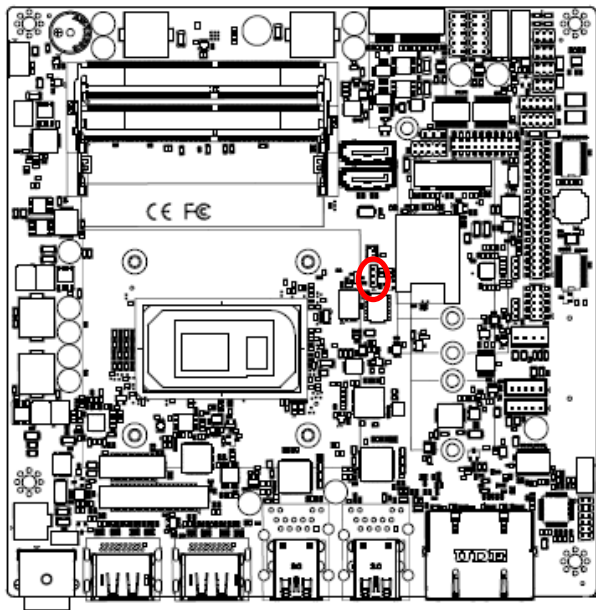
* Default

2.3.4 M2KB1 Voltage setting (JP1)

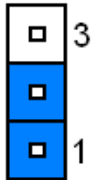


* Default

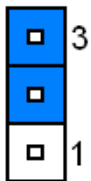
2.3.5 Clear CMOS (JBAT1)



Protect*

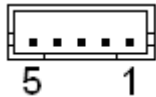
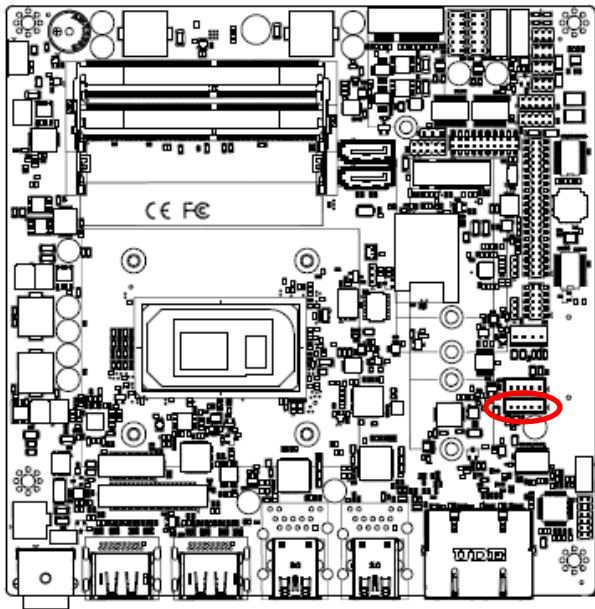


Clear CMOS



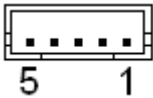
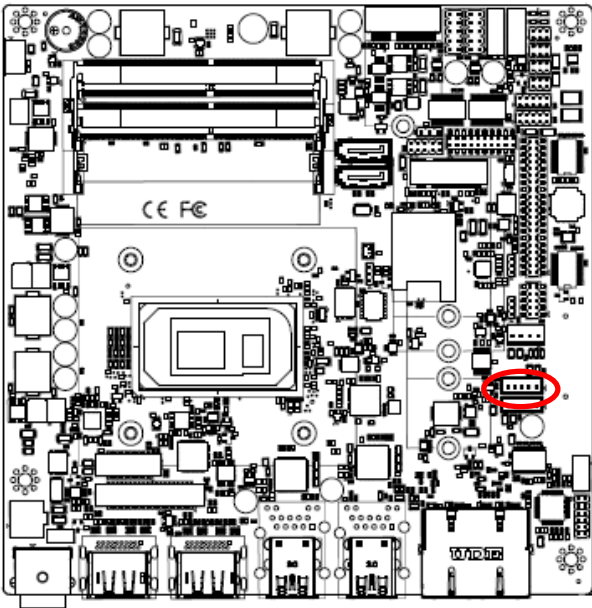
* Default

2.3.6 LCD Inverter connector (JBKL1)



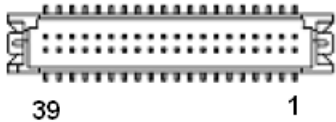
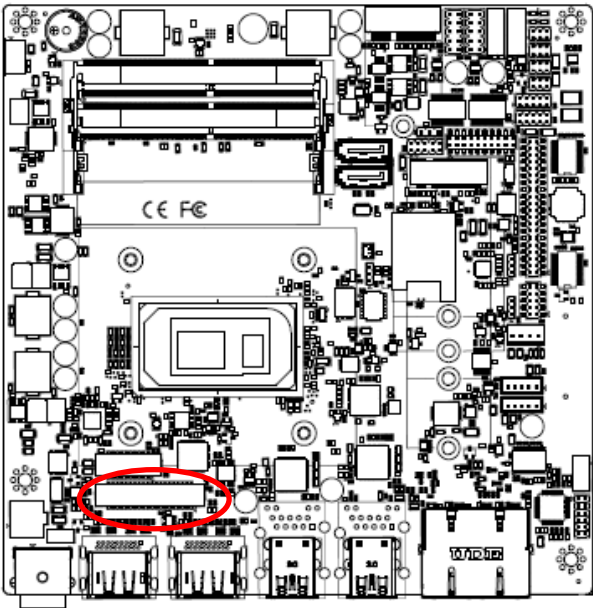
PIN	Signal
1	+12V
2	GND
3	LVDS_BKLT_EN
4	LVDS_BKLTCTL
5	+5V

2.3.7 LCD Inverter connector (JBKL2)



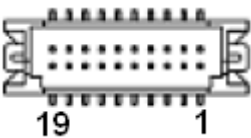
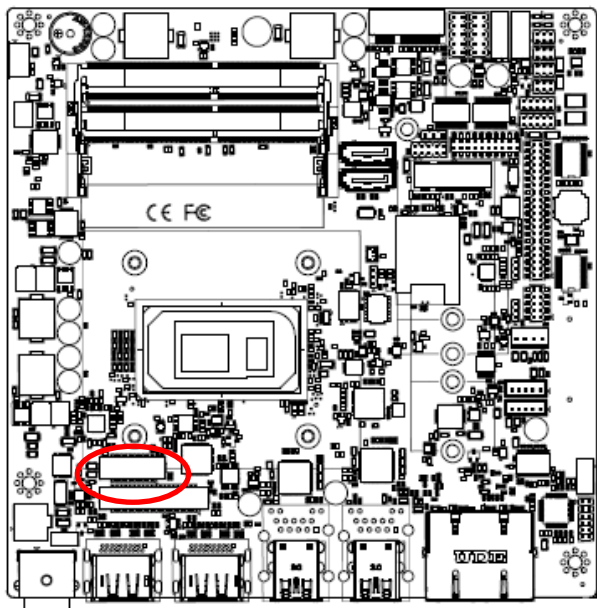
PIN	Signal
1	+12V
2	GND
3	EDP2_BKLTEN
4	EDP2_BKLT_CTL
5	+5V

2.3.8 LVDS connector (LVDS1)



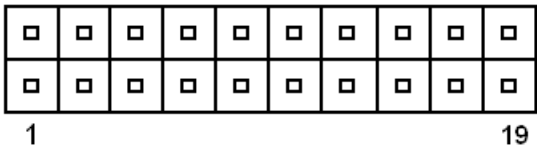
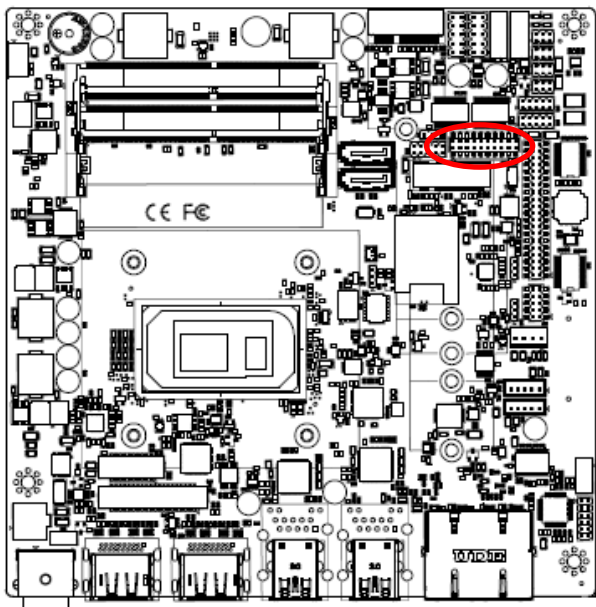
Signal	PIN	PIN	Signal
+V5S_LVDS	2	1	+ V3.3S_LVDS
+V5S_LVDS	4	3	+ V3.3S_LVDS
NC	6	5	NC
GND	8	7	GND
LVDS_DATA0_P	10	9	LVDS_DATA1_P
LVDS_DATA0_N	12	11	LVDS_DATA1_N
GND	14	13	GND
LVDS_DATA2_P	16	15	LVDS_DATA3_P
LVDS_DATA2_N	18	17	LVDS_DATA3_N
GND	20	19	GND
LVDS_DATA4_P	22	21	LVDS_DATA5_P
LVDS_DATA4_N	24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



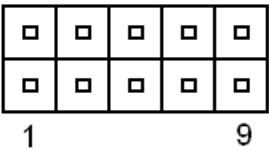
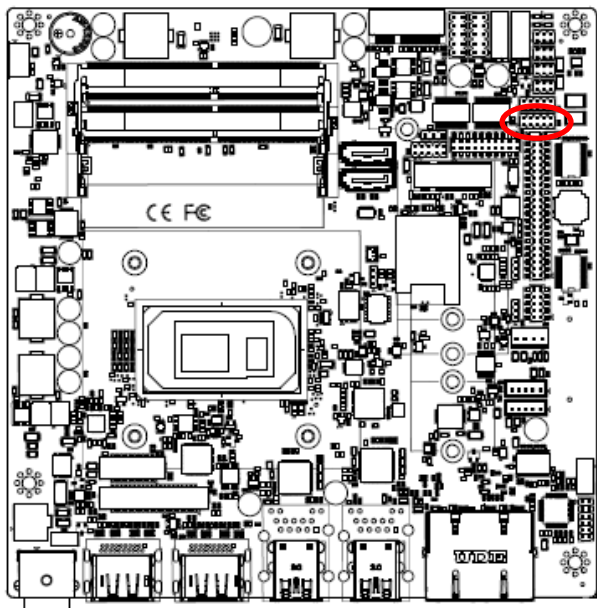
Signal	PIN	PIN	Signal
GND	1	2	GND
EDP_PANEL_TXN0	3	4	EDP_PANEL_TXN3
EDP_PANEL_TXP0	5	6	EDP_PANEL_TXP3
GND	7	8	NC
EDP_PANEL_TXN1	9	10	GND
EDP_PANEL_TXP1	11	12	EDP_PANEL_AUXN
GND	13	14	EDP_PANEL_AUXP
EDP_PANEL_TXN2	15	16	GND
EDP_PANEL_TXP2	17	18	EDP_PANEL_HPDP
+V35_EDP	19	20	+V35_EDP

2.3.10 General purpose I/O connector (DIO1)



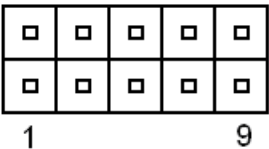
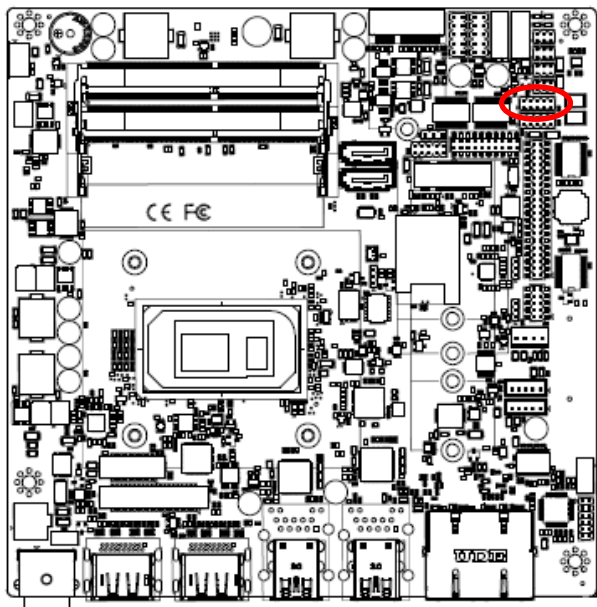
Signal	PIN	PIN	Signal
DI0	1	2	DO0
DI1	3	4	DO1
DI2	5	6	DO2
DI3	7	8	DO3
DI4	9	10	DO4
DI5	11	12	DO5
DI6	13	14	DO6
DI7	15	16	DO7
SMB_SCL_S0_3P3EXT	17	18	SMB_SDA_S0_3P3EXT
GND	19	20	+5V (Max current = 0.5A)

2.3.11 Serial port1 connector (JCOM1)



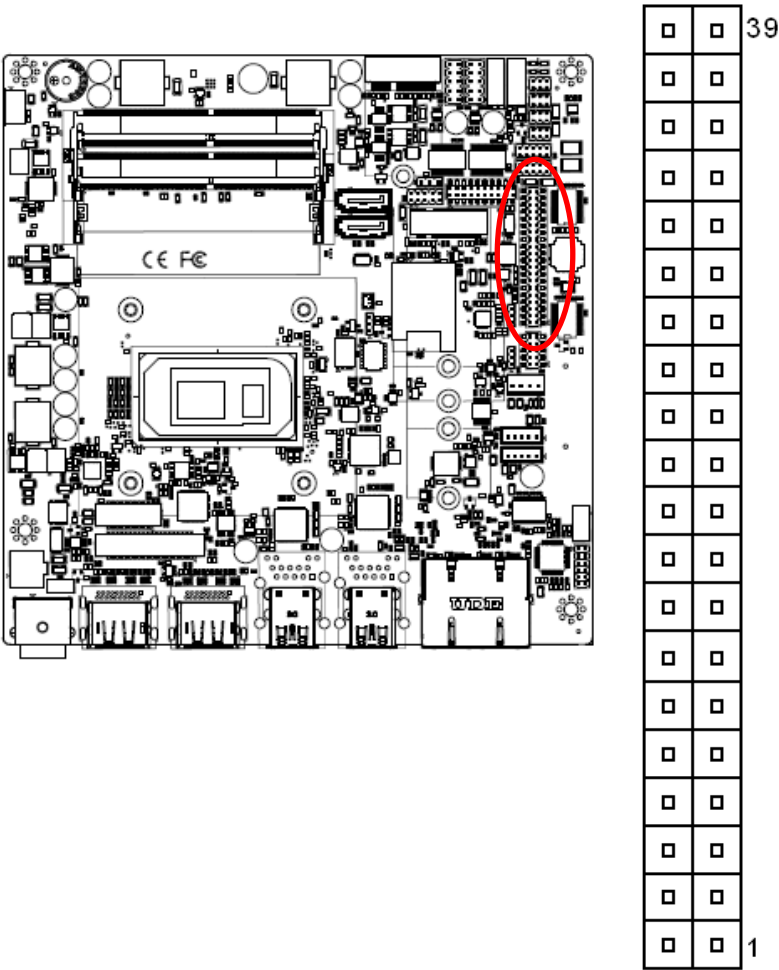
Signal	PIN	PIN	Signal
COM_DCD#_1	1	2	COM_RXD_1
COM_TXD_1	3	4	COM_DTR#_1
GND	5	6	COM_DSR#_1
COM_RTS#_1	7	8	COM_CTS#_1
COM_RI#_1	9	10	NC

2.3.12 Serial port2 connector (JCOM2)



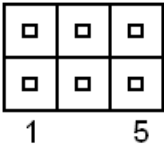
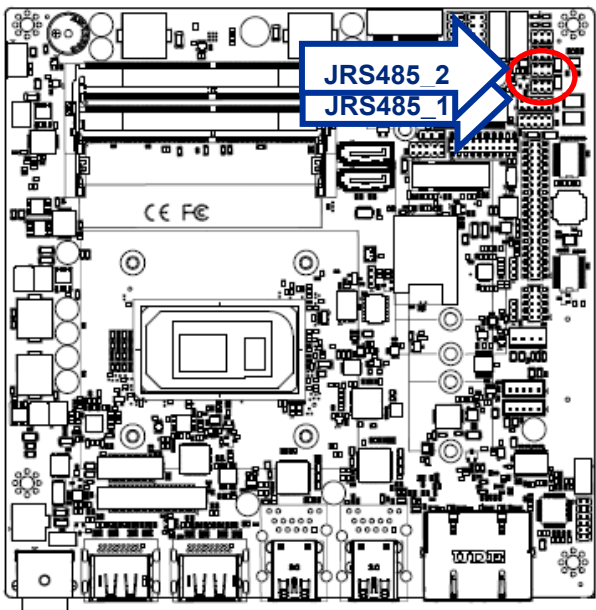
Signal	PIN	PIN	Signal
COM_DCD#_2	1	2	COM_RXD_2
COM_TXD_2	3	4	COM_DTR#_2
GND	5	6	COM_DSR#_2
COM_RTS#_2	7	8	COM_CTS#_2
COM_RI#_2	9	10	NC

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



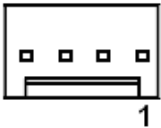
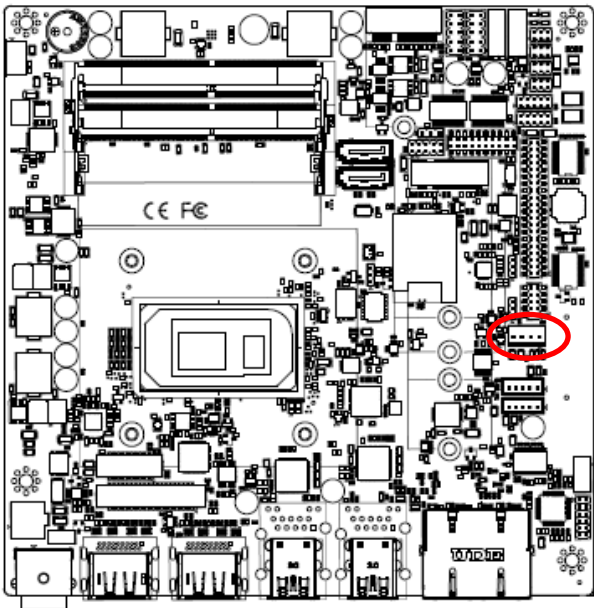
Signal	PIN	PIN	Signal
NC	40	39	COM_RI#_6
COM_CTS#_6	38	37	COM_RTS#_6
COM_DSR#_6	36	35	GND
COM_DTR#_6	34	33	COM_TXD_6
COM_RXD_6	32	31	COM_DCD#_6
NC	30	29	COM_RI#_5
COM_CTS#_5	28	27	COM_RTS#_5
COM_DSR#_5	26	25	GND
COM_DTR#_5	24	23	COM_TXD_5
COM_RXD_5	22	21	COM_DCD#_5
NC	20	19	COM_RI#_4
COM_CTS#_4	18	17	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)



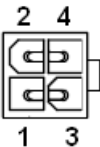
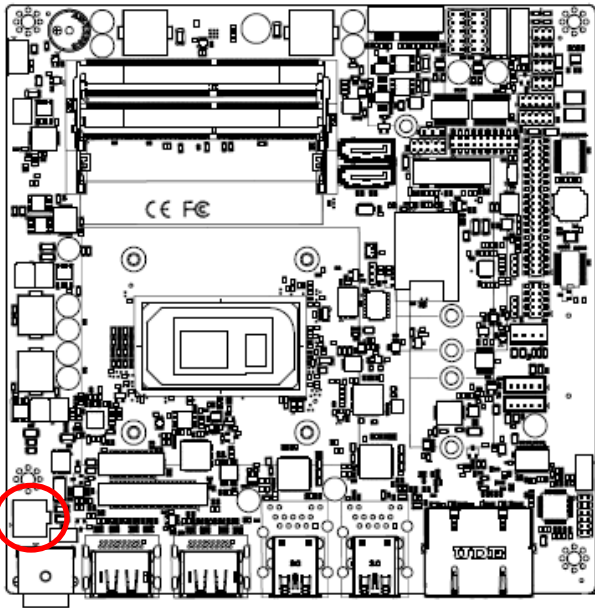
Signal	PIN	PIN	Signal
485_422TX-	1	2	422RX-
485_422TX+	3	4	422RX+
+5V	5	6	GND

2.3.15 SATA Power connector 1 (SPWR1)



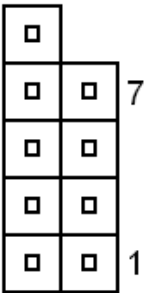
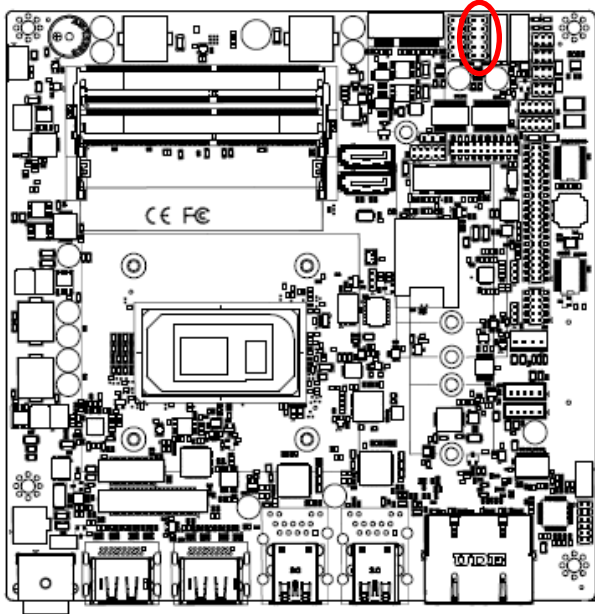
PIN	Signal
1	+V5S_SATA
2	GND
3	GND
4	+V12S_SATA

2.3.16 Power connector (PWR1)



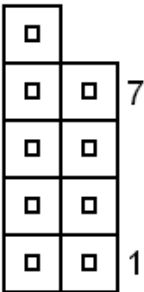
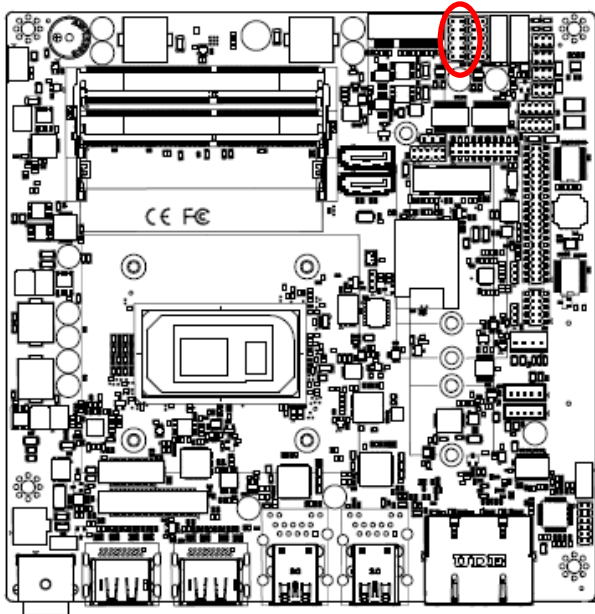
Signal	PIN	PIN	Signal
GND	2	4	+VIN
GND	1	3	+VIN

2.3.17 USB connector 3 (JUSB3)



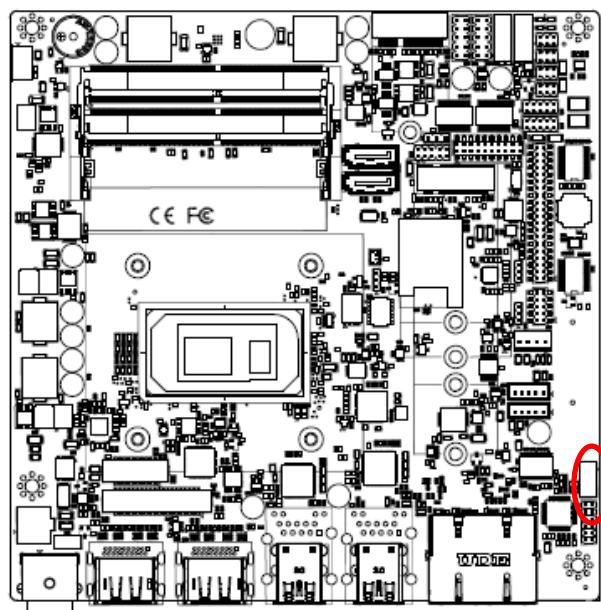
Signal	PIN	PIN	Signal
+V5A_USB56	1	2	+V5A_USB56
USB_DN5	3	4	USB_DN6
USB_DP5	5	6	USB_DP6
GND	7	8	GND
		10	GND

2.3.18 USB connector 4 (JUSB4)



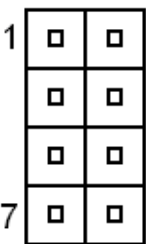
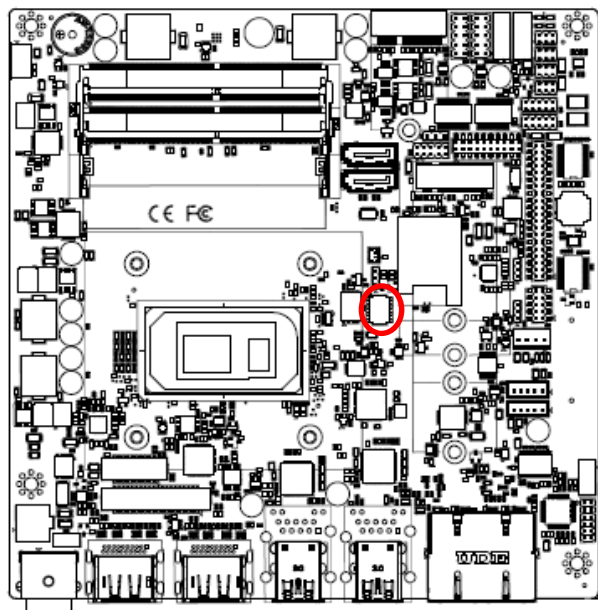
Signal	PIN	PIN	Signal
+V5A_USB78	1	2	+V5A_USB78
USB_DN7	3	4	USB2_DN8
USB_DP7	5	6	USB2_DP8
GND	7	8	GND
		10	GND

2.3.19 Speaker connector (SPK1)



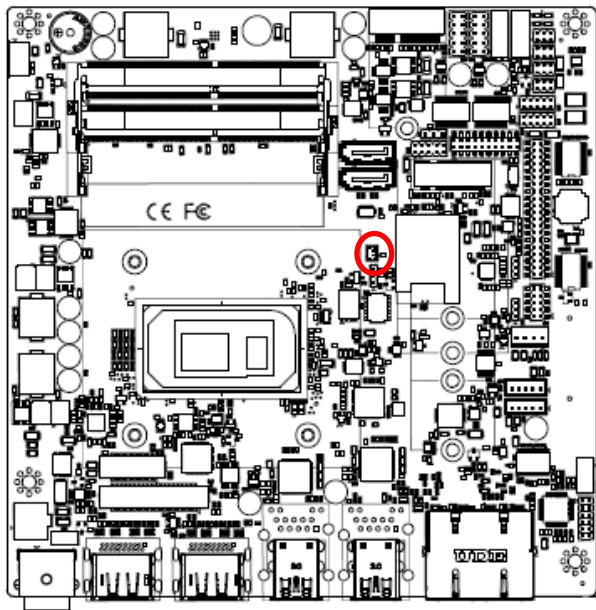
Signal	PIN
SPK_L+	1
SPK_L-	2
SPK_R+	3
SPK_R-	4

2.3.20 SPI connector (JSPI1)



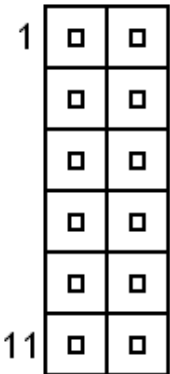
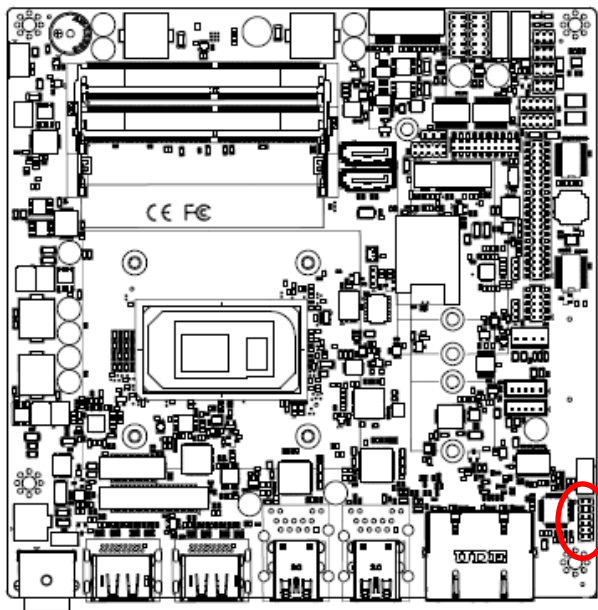
Signal	PIN	PIN	Signal
+V3.3A_1.8A_SPI	1	2	GND
SPI0_CS0#	3	4	SPI0_BIOS_CLK
SPI0_BIOS_MISO	5	6	SPI0_BIOS_MOSI
BIOS_HOLD#	7	8	BIOS_WP#

2.3.21 Battery connector (BT1)



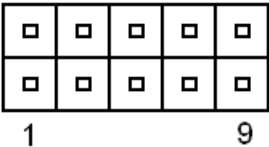
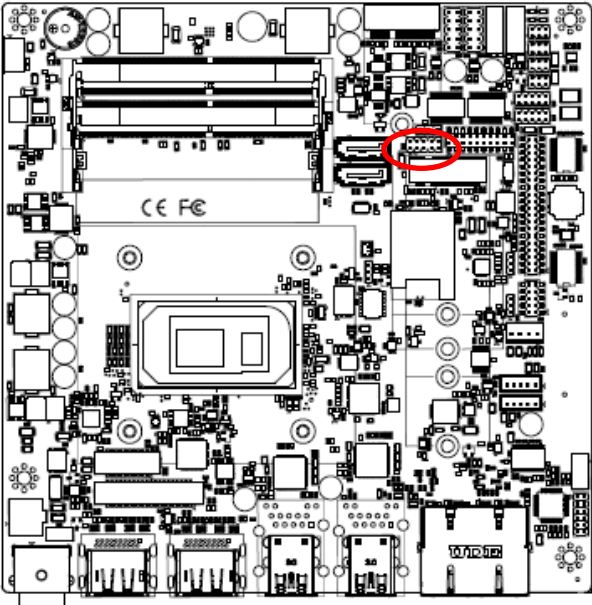
PIN	Signal
1	+RTCBAT
2	GND

2.3.22 Audio connector (JFAUD1)



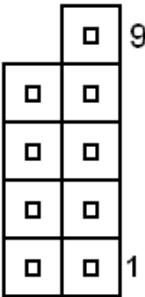
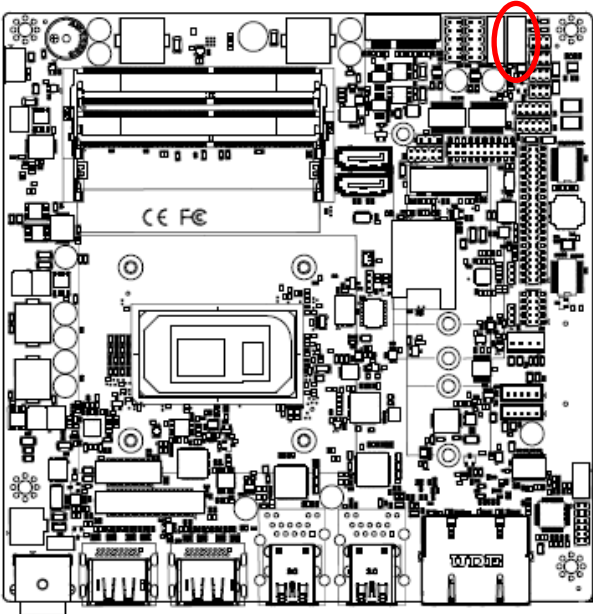
Signal	PIN	PIN	Signal
LINEOUT_R	1	2	LINEOUT_L
GND_AUD	3	4	GND_AUD
LINEIN_R	5	6	LINEIN_L
MICIN_R	7	8	MICIN_L
LINEOUT1_JD	9	10	LINE1-JD
MIC1_JD	11	12	GND_AUD

2.3.23 EC Debug (JEC_SPI)



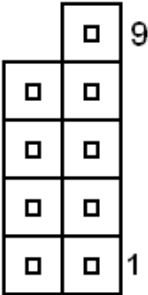
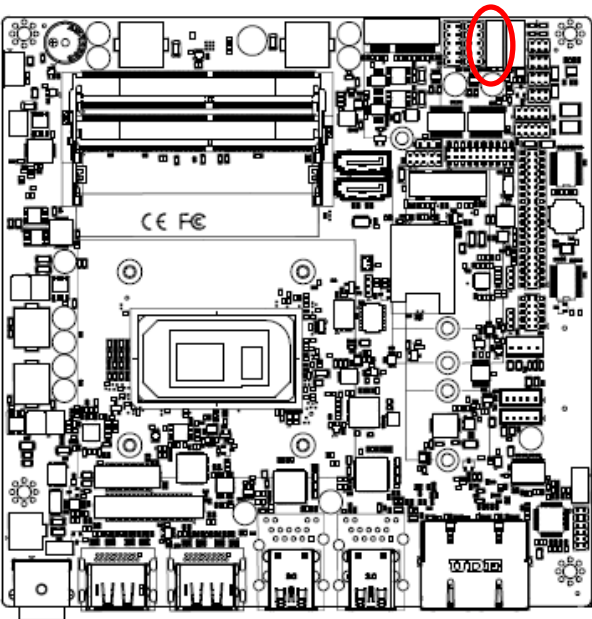
Signal	PIN	PIN	Signal
+V3.3A_EC	1	2	GND
EC_FSCE#	3	4	EC_FSCK
EC_FMISO	5	6	EC_FMOSI
EC_HOLD#	7	8	NC
EC_SMCLK_DEBUG	9	10	EC_SMDAT_DEBUG

2.3.24 Miscellaneous setting connector 1 (JFPT1)



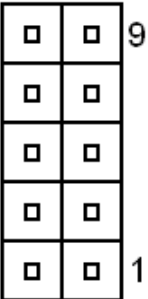
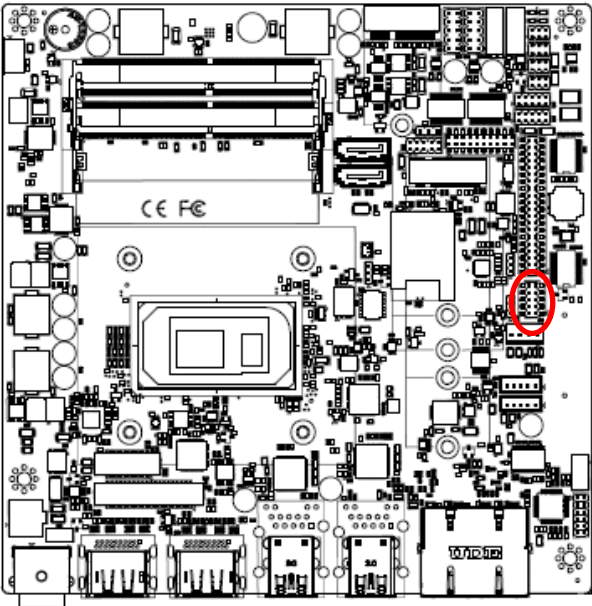
Signal	PIN	PIN	Signal
		9	NC
-PWR_BNT	8	7	-Reset
+PWR_BNT	6	5	+Reset
-PWR_LED	4	3	-HD_LED
+PWR_LED	2	1	+HD_LED

2.3.25 Miscellaneous setting connector 2 (FPT2)



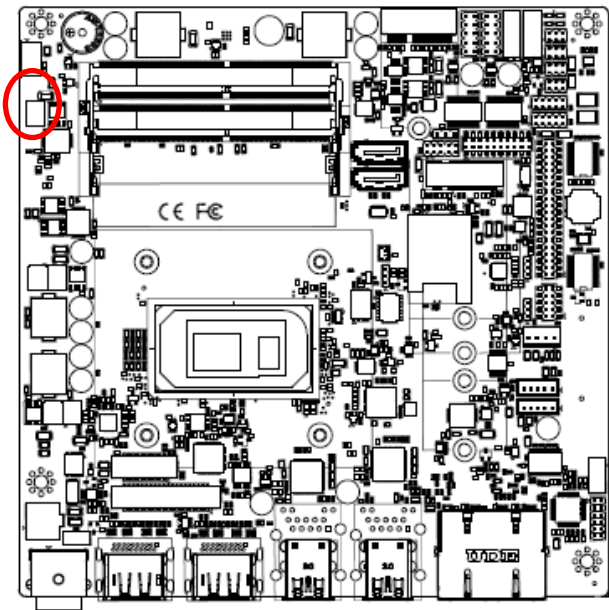
Signal	PIN	PIN	Signal
		9	NC
GND	8	7	Speaker-
BLK_DN	6	5	NC
BLK_UP	4	3	NC
BLK_VR(10K)	2	1	Speaker+

2.3.26 LPC connector (JLPC1)



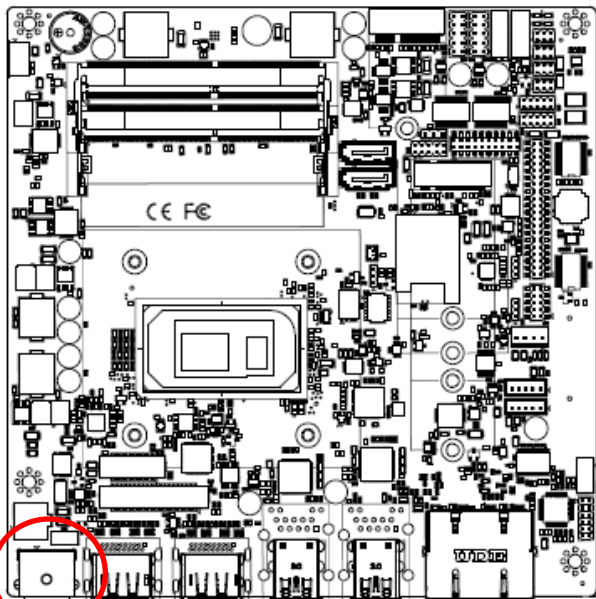
Signal	PIN	PIN	Signal
LPC_AD0	1	2	+3.3V
LPC_AD1	3	4	PLT_BUF_RST#
LPC_AD2	5	6	LPC_LFRAME#
LPC_AD3	7	8	CLK_24M_80
LPC_SERIRQ	9	10	GND

2.3.27 CPU fan connector (CPU_FAN1)



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

2.3.28 Power connector (DCIN1)



Signal	PIN	PIN	Signal
+VIN_12-24V	1	2	+VIN_12-24V
GND	3	4	GND

Note: Vin = 12~24V

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.

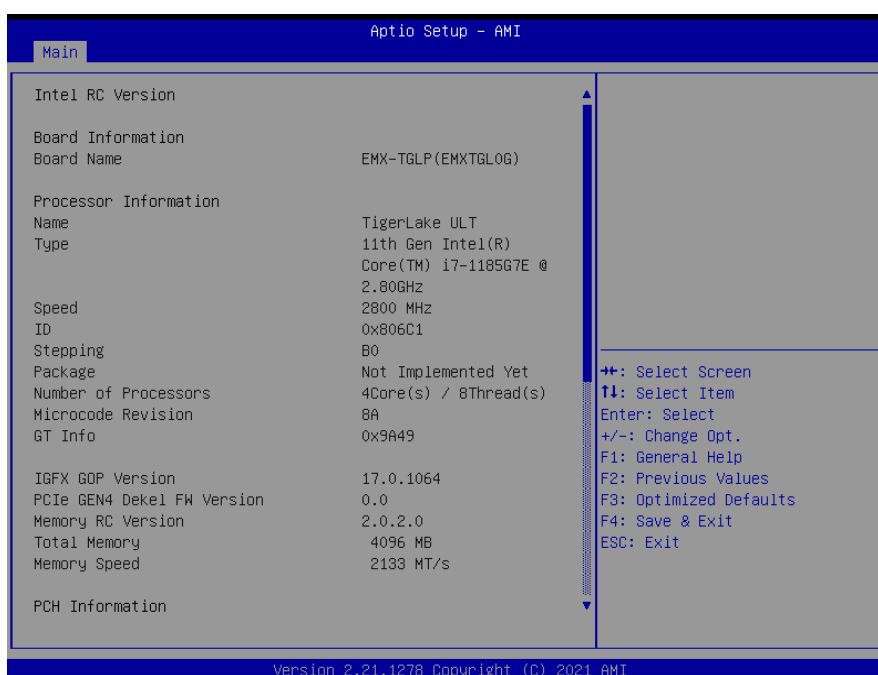
3.6 BIOS setup

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.

EMX-TGLP User's Manual

3.6.1.5 System Time

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

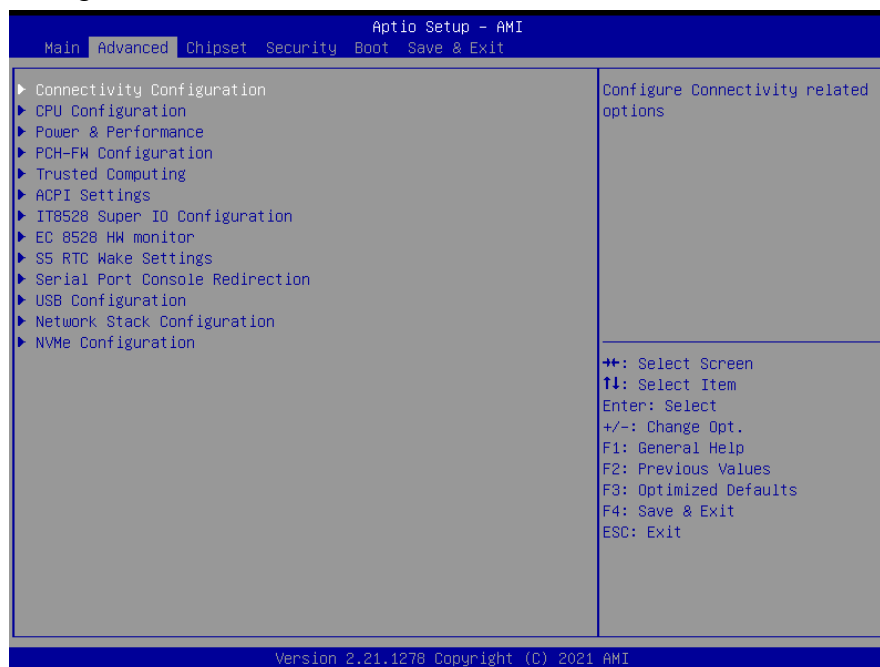


Note: The BIOS setup screens shown in this chapter are for reference purposes only, and may not exactly match what you see on your screen.

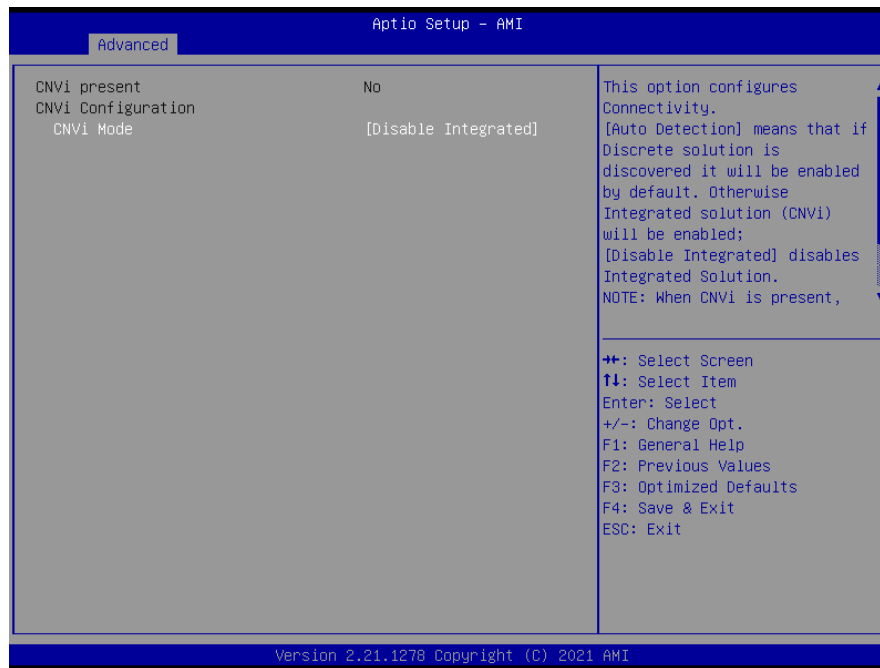
Visit the Avalue website (www.avalue.com.tw) to download the latest product and BIOS information.

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 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

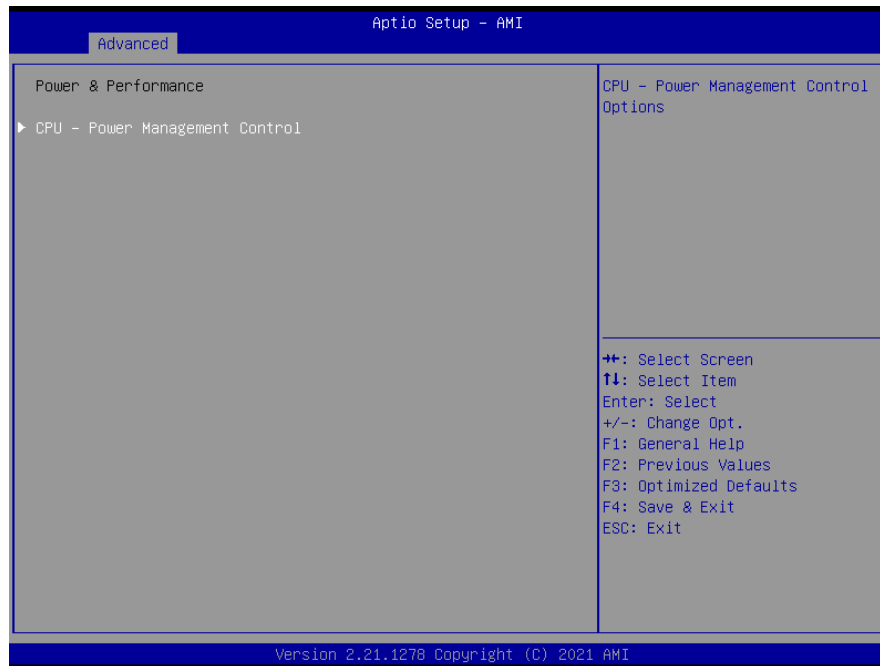
3.6.2.2 CPU Configuration



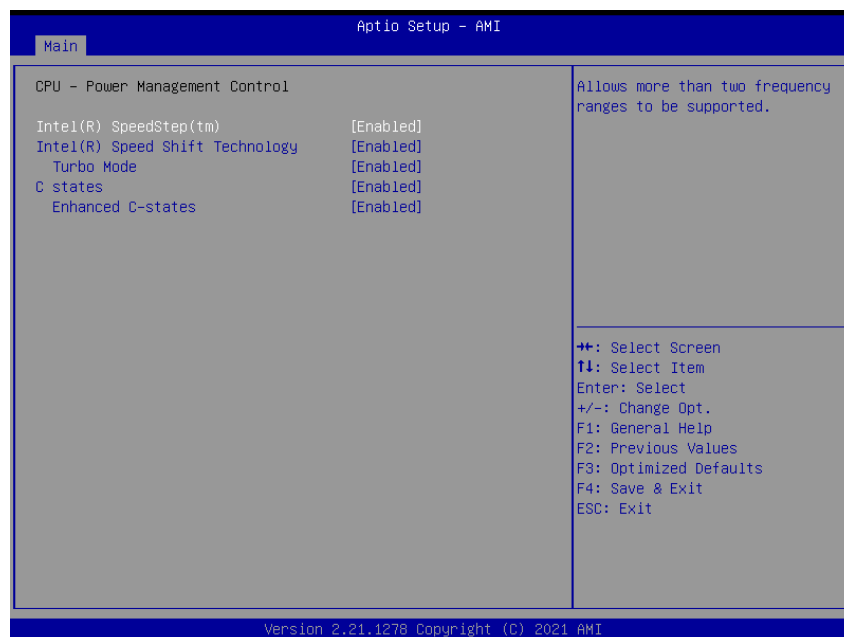
EMX-TGLP User's Manual

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

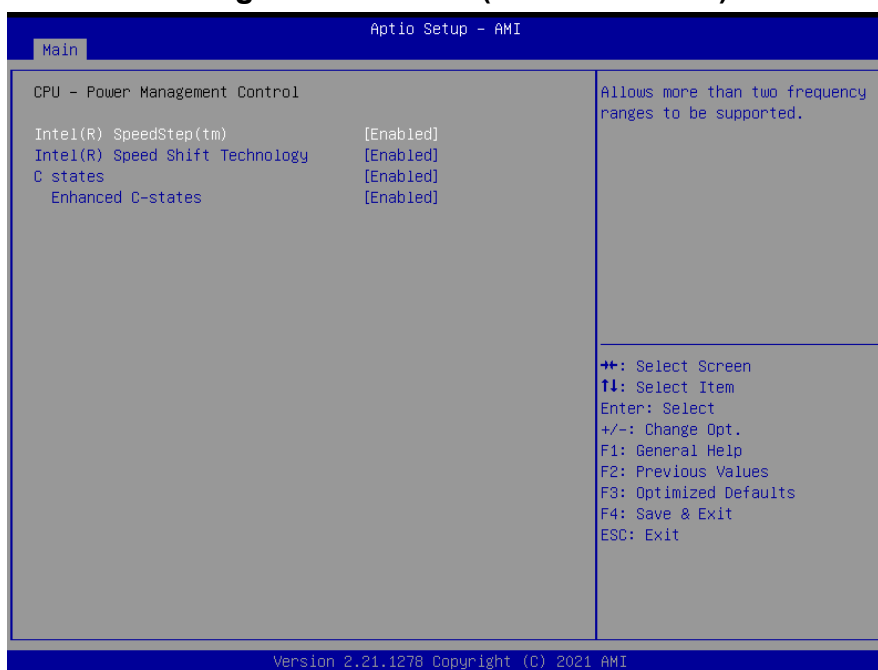


3.6.2.3.1 CPU - Power Management Control (TDP-28W BIOS)



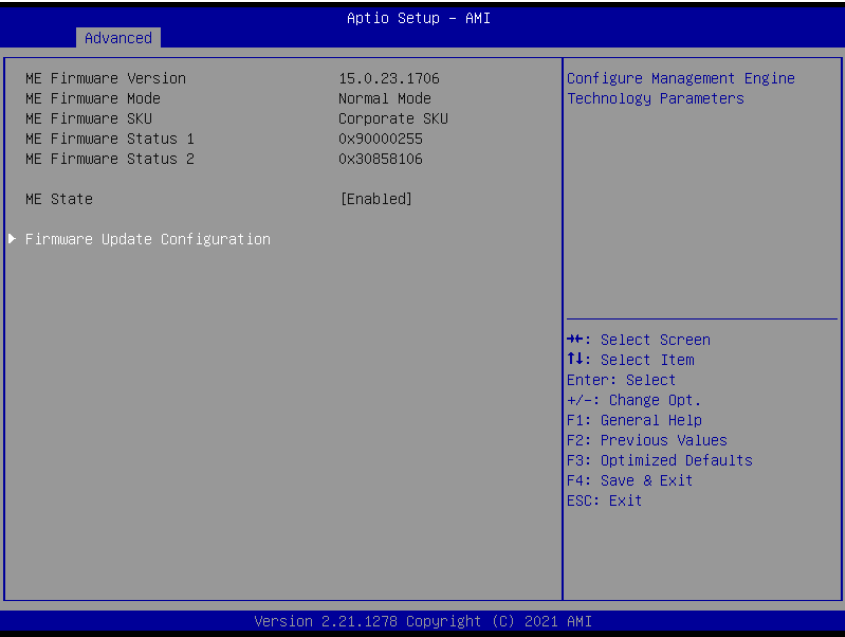
Item	Options	Description
Intel(R) SpeedStep(tm)	Disabled Enabled[Default],	Allows more than two frequency ranges to be supported.
Intel(R) Speed Shift Technology	Disabled Enabled[Default],	Enable/Disable Intel(R) Speed Shift Technology support. Enabling will expose the CPPC v2 interface to allow for 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.

3.6.2.4 PCH-FW Configuration



3.6.2.4.1 Firmware Update Configuration



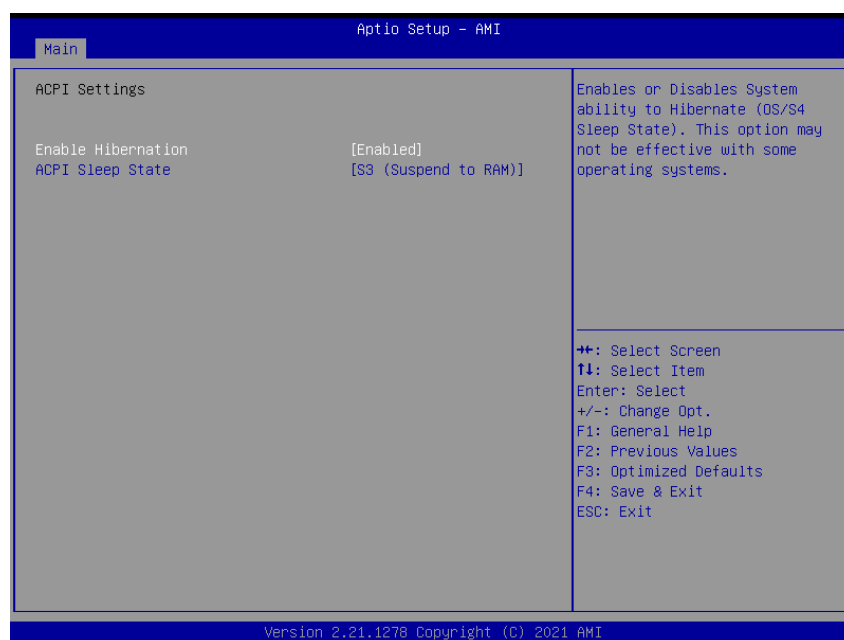
Item	Options	Description
Me FW Image Re-Flash	Disabled[Default], Enabled	Enable/Disable Me FW Image Re-Flash function.

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



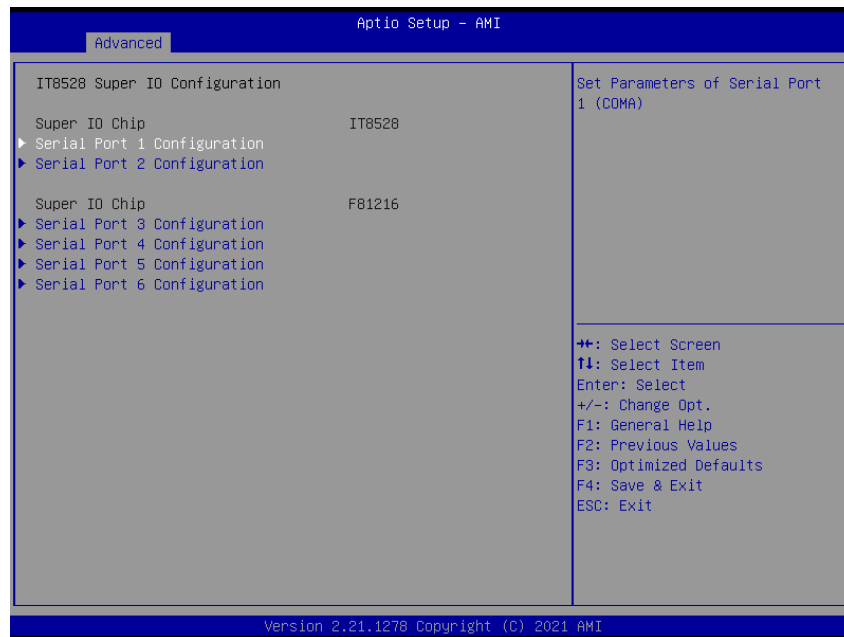
Item	Options	Description
Enable Hibernation	Disabled Enabled[Default],	Enables or Disables System ability to Hibernate (OS/S4 Sleep State). This

EMX-TGLP User's Manual

		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.

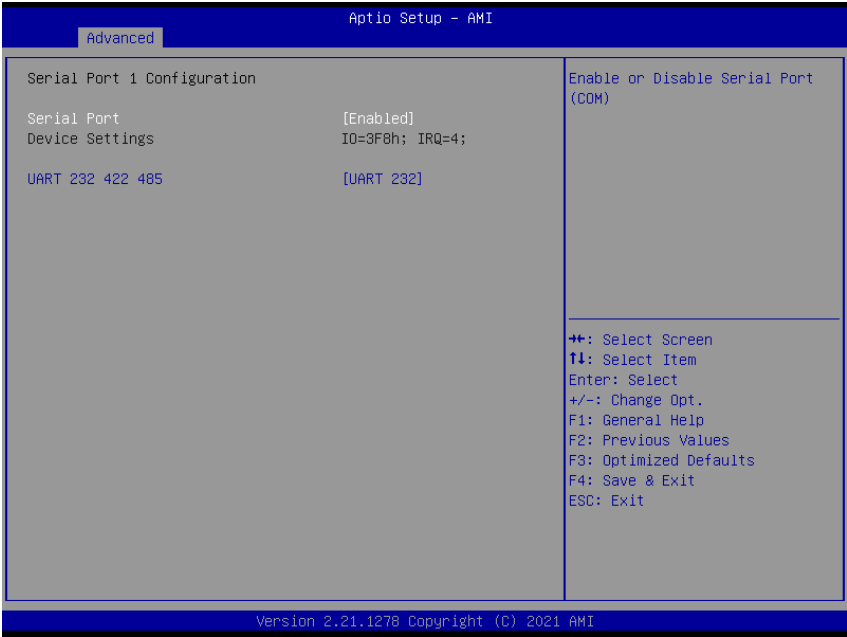
3.6.2.7 IT8528 Super IO Configuration

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.

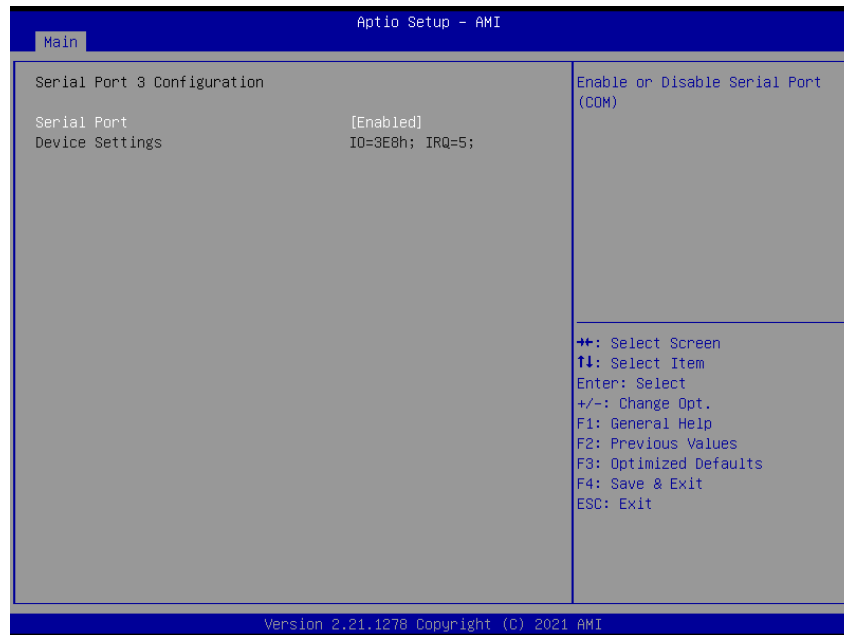
3.6.2.7.2 Serial Port 2 Configuration



EMX-TGLP User's Manual

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



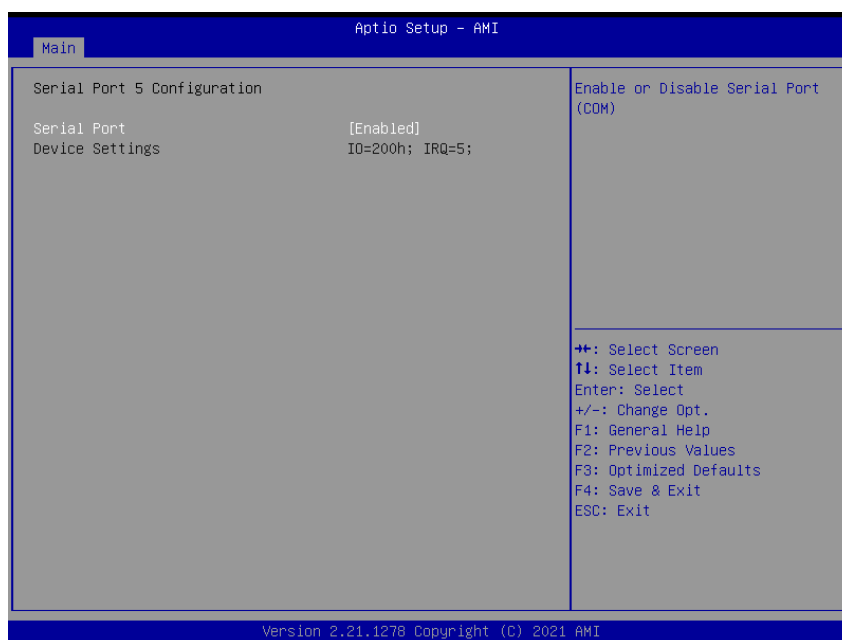
Item	Option	Description
Serial Port	Enabled[Default], Disabled	Enable or Disable Serial Port (COM).

3.6.2.7.4 Serial Port 4 Configuration



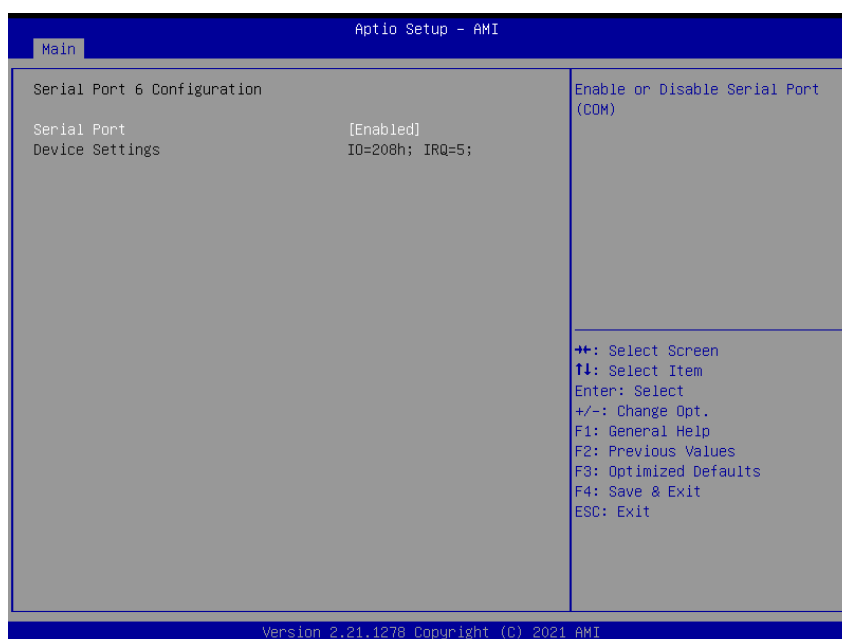
Item	Option	Description
Serial Port	Enabled[Default], Disabled	Enable or Disable Serial Port (COM).

3.6.2.7.5 Serial Port 5 Configuration



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

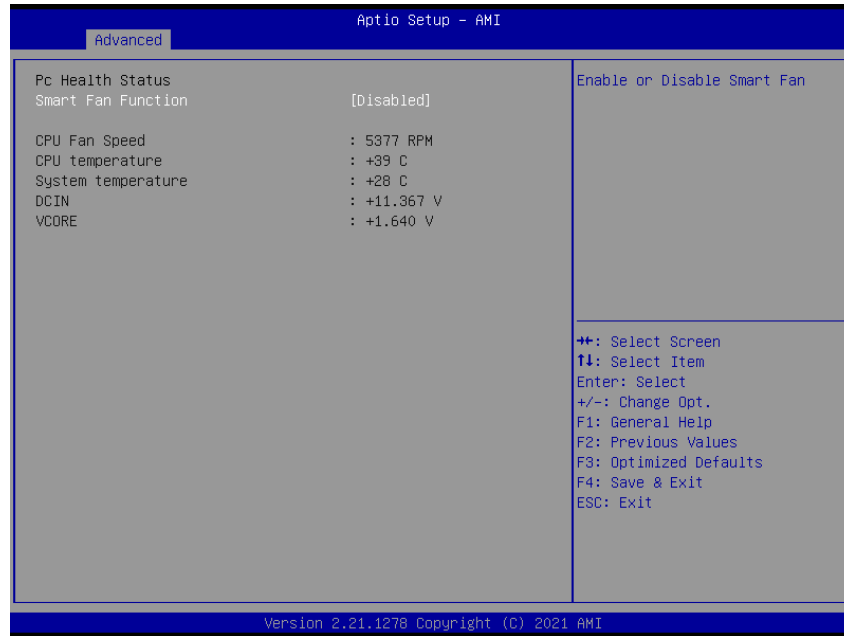
3.6.2.7.6 Serial Port 6 Configuration



EMX-TGLP User's Manual

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

3.6.2.8 EC 8528 H/W monitor



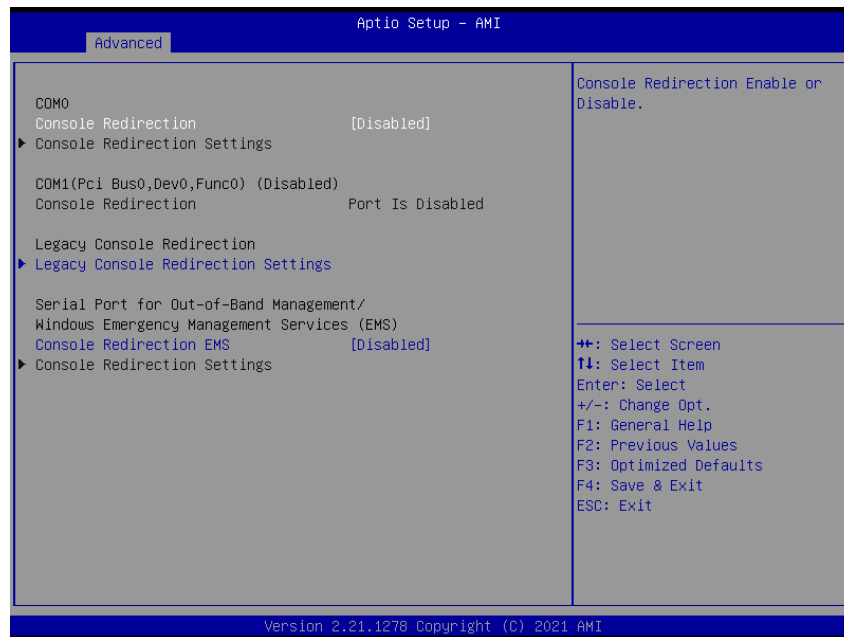
Item	Options	Description
Smart Fan Function	Disabled[Default], Enabled	Enable or Disable Smart Fan.

3.6.2.9 S5 RTC Wake Settings



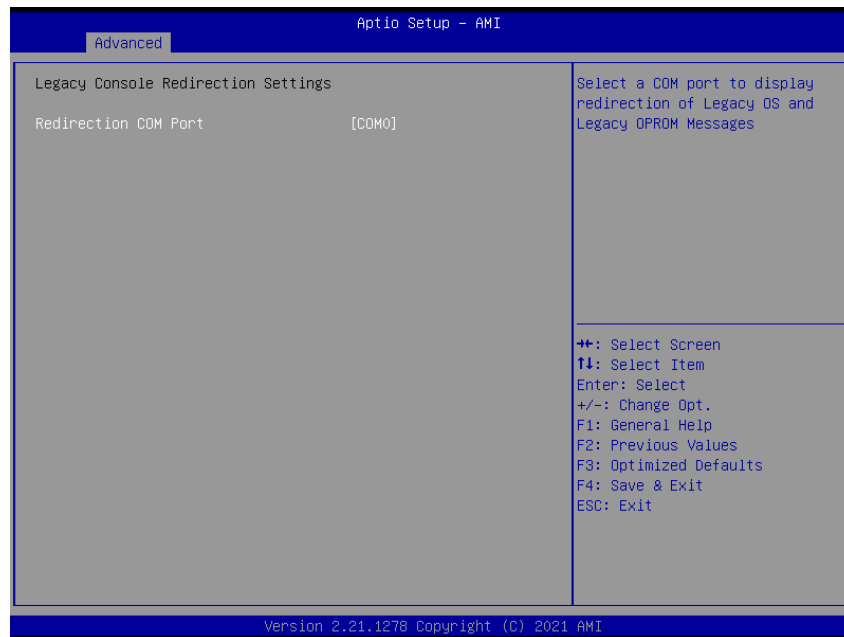
Item	Options	Description
Wake system from S5	Disabled[Default], Fixed Time Dynamic Time	Enable or disable System wake on alarm event. Select FixedTime, system will wake on the hr::min::sec specified. Select DynamicTime, System will wake on the current time + Increase minutes(s).

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.

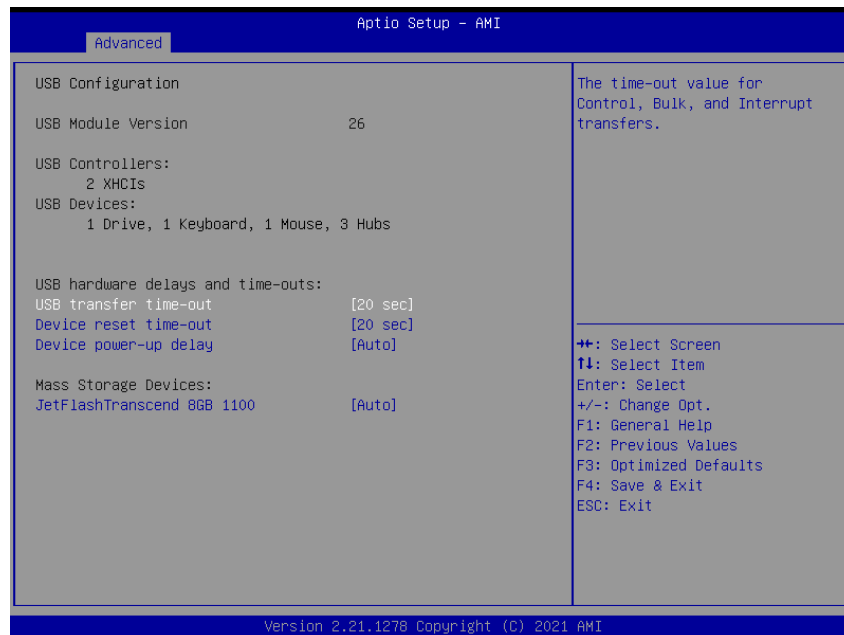
3.6.2.10.1 Legacy Console Redirection Settings



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.

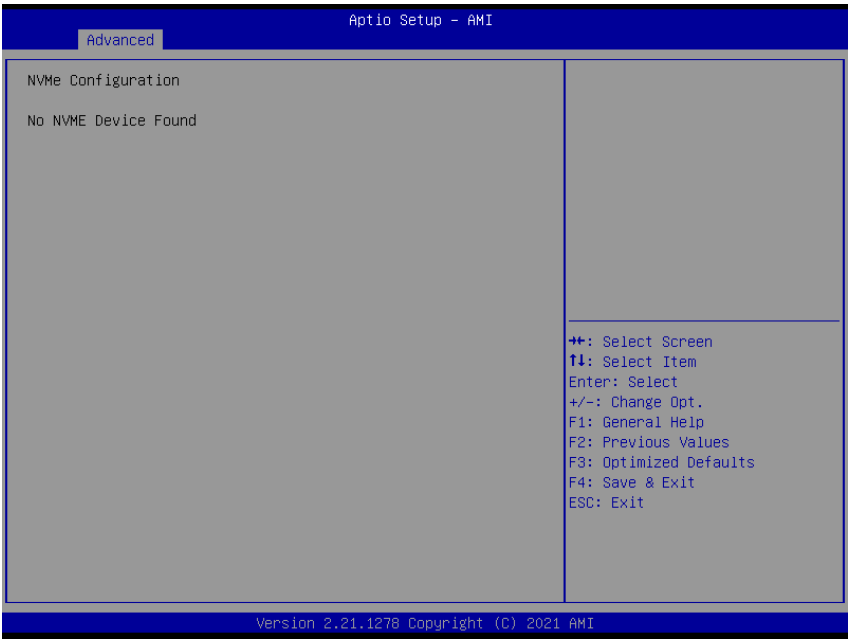
	10 sec 20 sec [Default]	
Device reset time-out	10 sec 20 sec [Default] 30 sec 40 sec	USB mass storage device Start Unit command time-out.
Device power-up delay	Auto [Default] Manual	Maximum time the device will take before it properly reports itself to the Host Controller. 'Auto' uses default value: for a Root port it is 100ms, for a Hub port the delay is taken from 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.

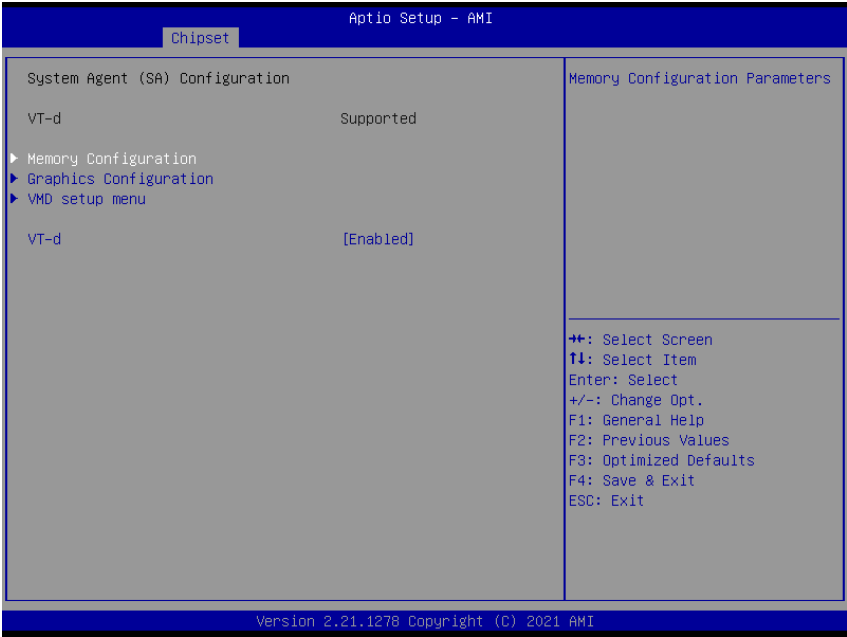
3.6.2.13 NVMe Configuration



3.6.3 Chipset

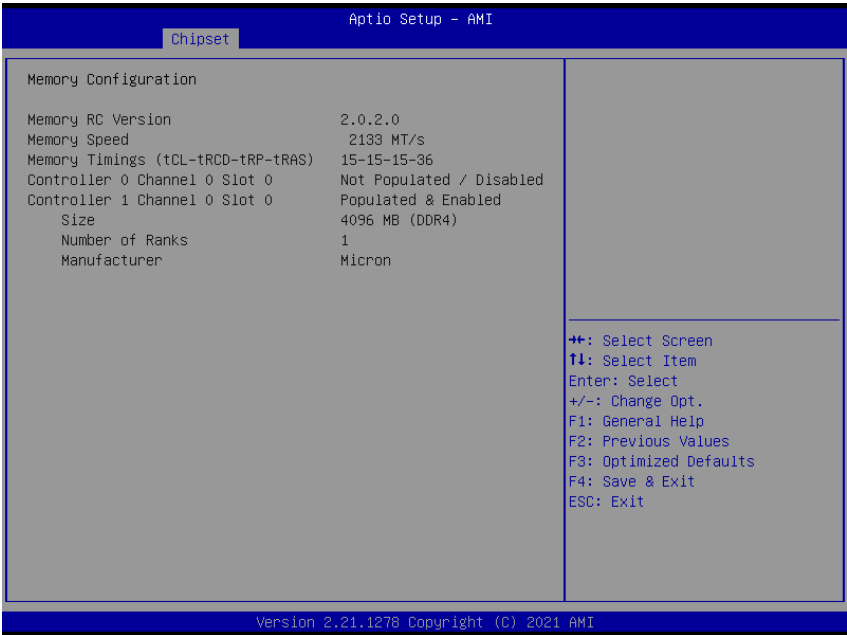


3.6.3.1 System Agent (SA) Configuration



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

3.6.3.1.1 Memory Configuration

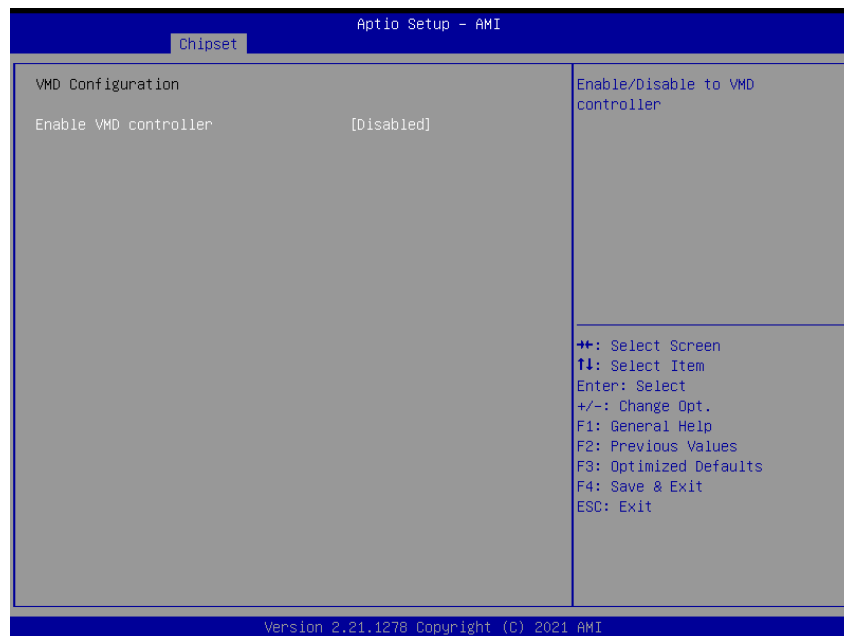


3.6.3.1.2 Graphics Configuration



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



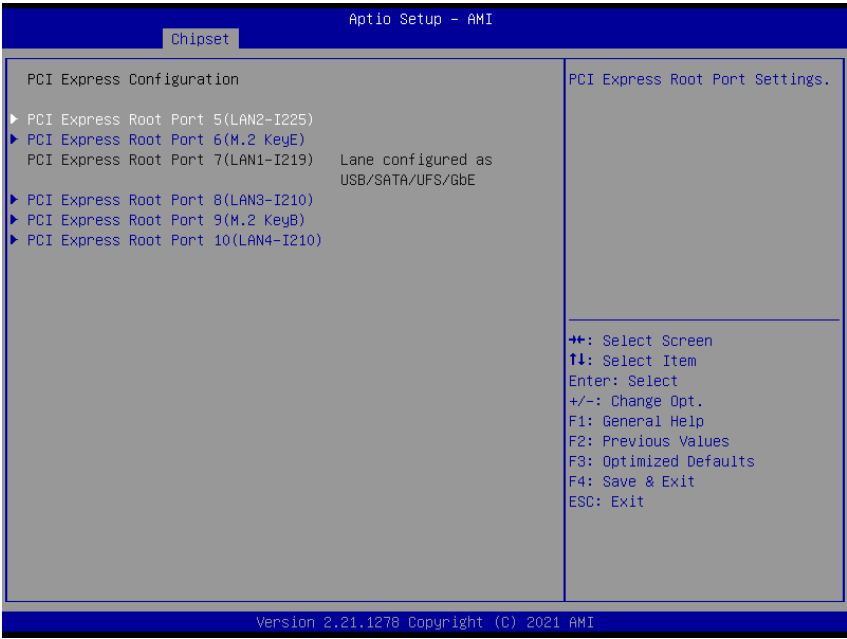
Item	Option	Description
Enable VMD controller	Disabled[Default] Enabled	Enable/Disable to VMD controller

3.6.3.2 PCH-IO Configuration

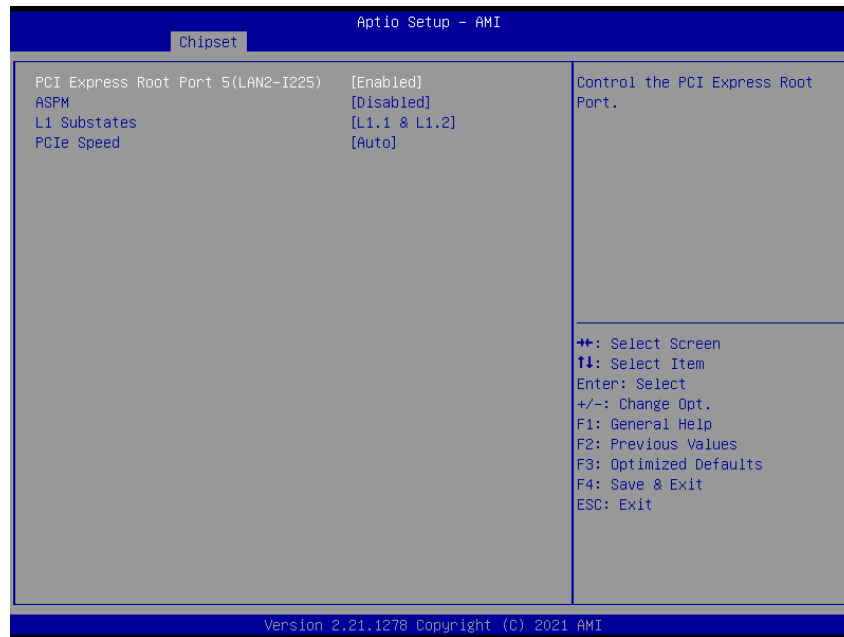


Item	Option	Description
PCH LAN Controller	Enabled[Default] Disabled	Enable/Disable onboard NIC.

3.6.3.2.1 PCI Express Configuration



3.6.3.2.1.1 PCI Express Root Port 5(LAN2-I225)



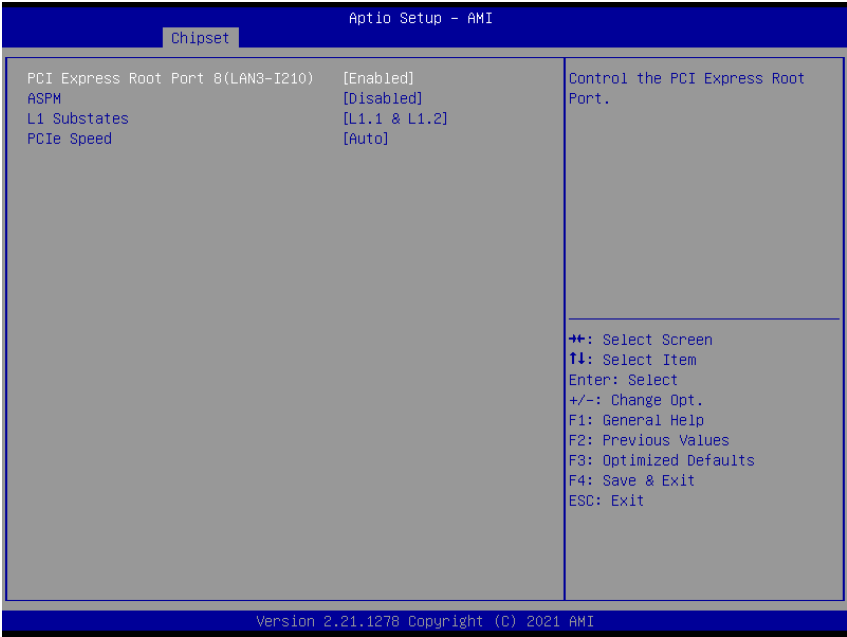
Item	Option	Description
PCI Express Root Port 5(LAN2-I225)	Disabled Enabled [Default]	Control the PCI Express Root Port.
ASPM	Disabled [Default] L0s L1 L0sL1 Auto	Set the ASPM Level: Force L0s – Force all links to L0s State AUTO – BIOS auto configure DISABLE – Disables ASPM.
L1 Substates	Disabled L1.1 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)



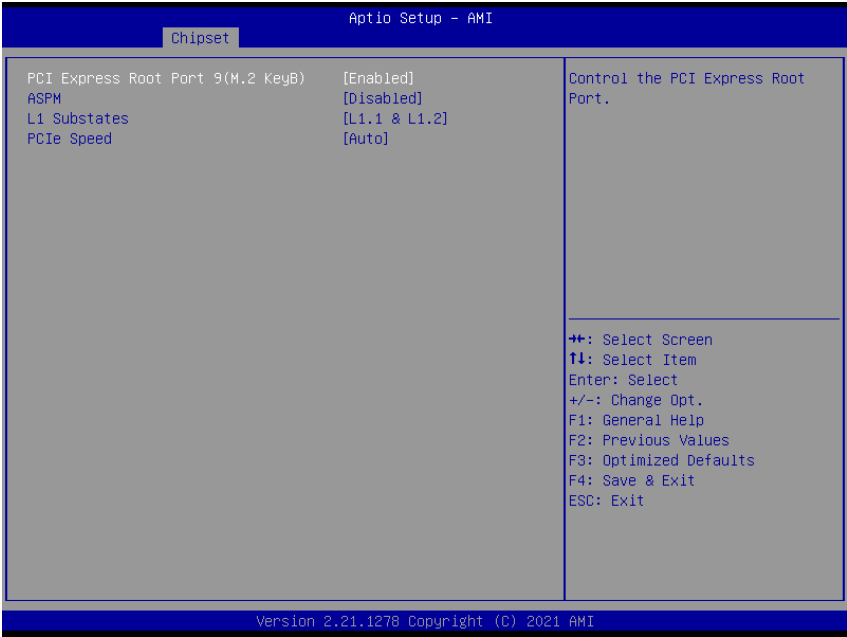
Item	Option	Description
PCI Express Root Port 6(M.2 KeyE)	Disabled Enabled [Default]	Control the PCI Express Root Port.
ASPM	Disabled [Default] L0s L1 L0sL1 Auto	Set the ASPM Level: Force L0s – Force all links to L0s State AUTO – BIOS auto configure DISABLE – Disables ASPM.
L1 Substates	Disabled L1.1 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)



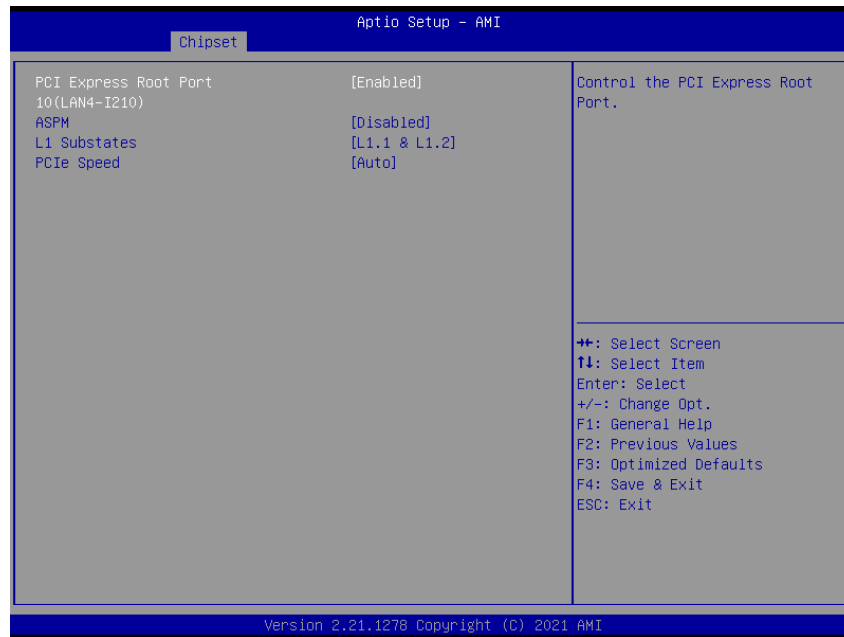
Item	Option	Description
PCI Express Root Port 8(LAN3-I210)	Disabled Enabled [Default] ,	Control the PCI Express Root Port.
ASPM	Disabled [Default] L0s L1 L0sL1 Auto	Set the ASPM Level: Force L0s – Force all links to L0s State AUTO – BIOS auto configure DISABLE – Disables ASPM.
L1 Substates	Disabled L1.1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



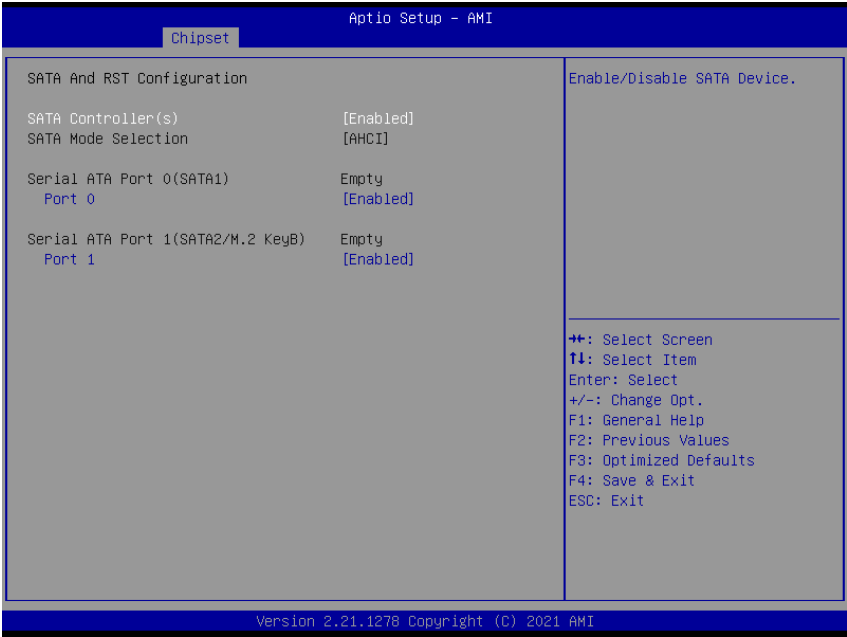
Item	Option	Description
PCI Express Root Port 9 (M.2 KeyB)	Disabled Enabled [Default]	Control the PCI Express Root Port.
ASPM	Disabled [Default] L0s L1 L0sL1 Auto	Set the ASPM Level: Force L0s – Force all links to L0s State AUTO – BIOS auto configure DISABLE – Disables ASPM.
L1 Substates	Disabled L1.1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



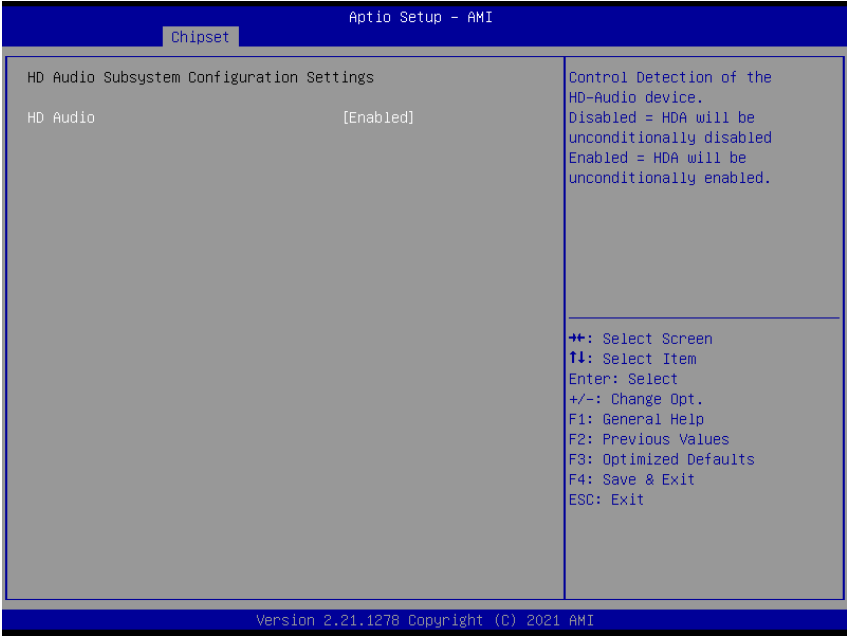
Item	Option	Description
PCI Express Root Port 10(LAN4-I210)	Disabled Enabled [Default]	Control the PCI Express Root Port.
ASPM	Disabled [Default] L0s L1 L0sL1 Auto	Set the ASPM Level: Force L0s – Force all links to L0s State AUTO – BIOS auto configure DISABLE – Disables ASPM.
L1 Substates	Disabled L1.1 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

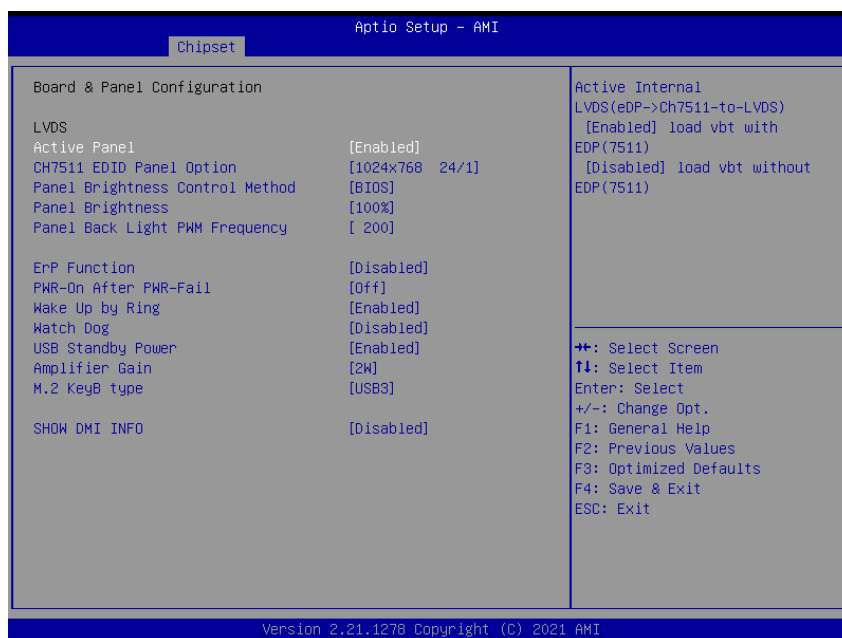
3.6.3.2.3 HD Audio Configuration



EMX-TGLP User's Manual

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.

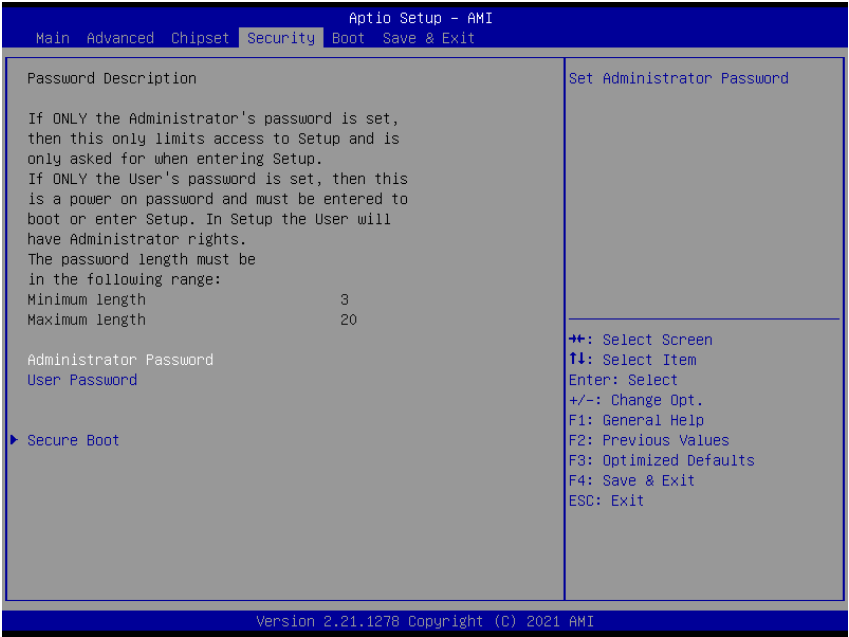
3.6.3.3 Board & Panel Configuration



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



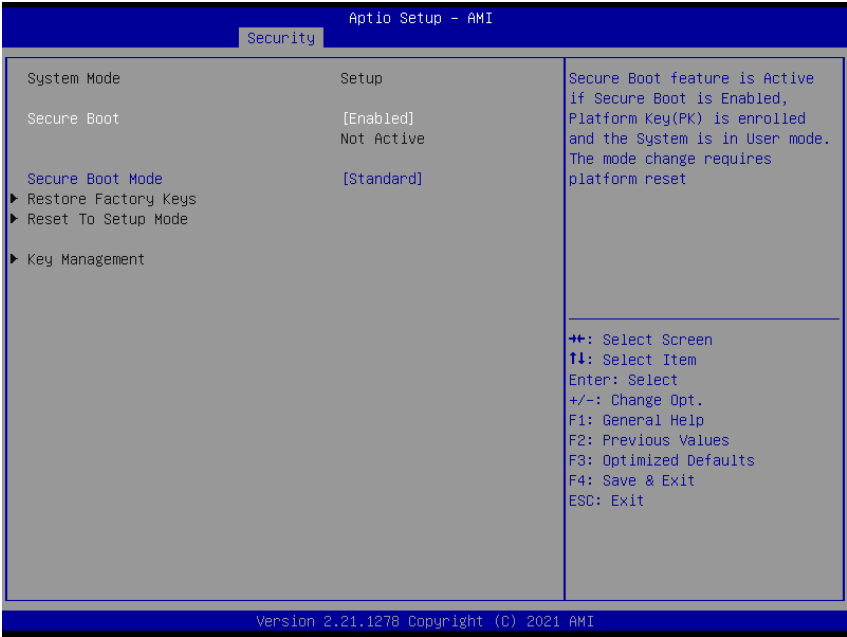
● Administrator Password

Set setup Administrator Password

● User Password

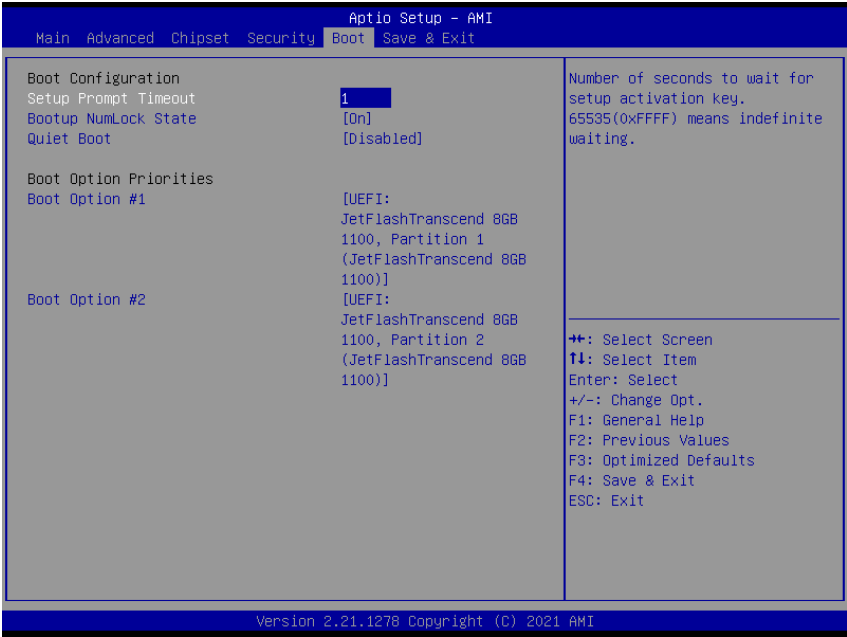
Set User Password

3.6.4.1 Secure Boot menu



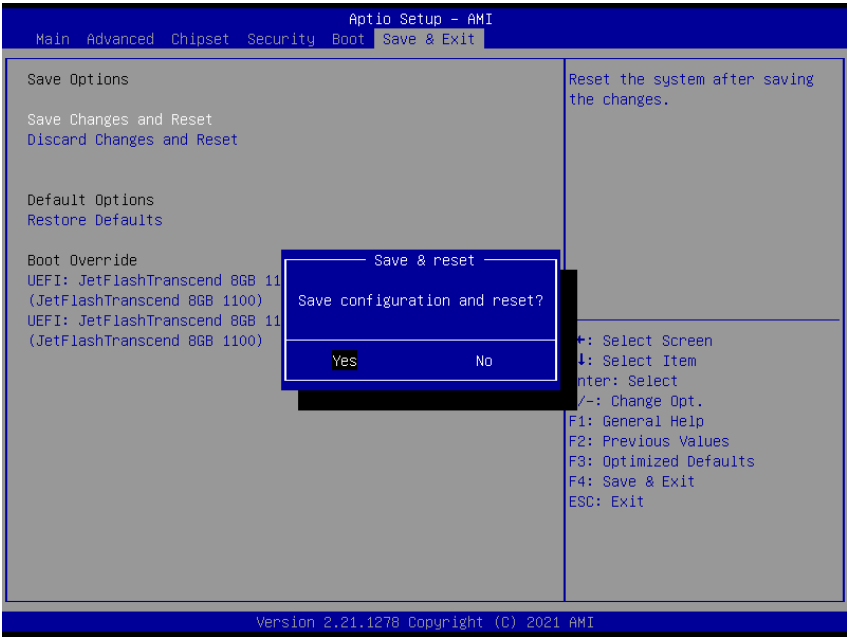
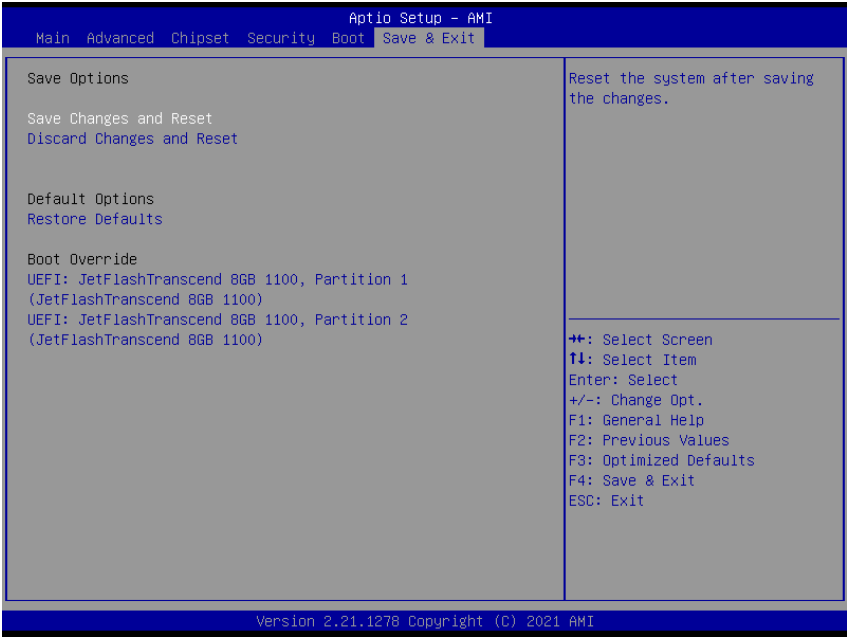
Item	Option	Description
Secure Boot	Disabled Enabled [Default]	Secure Boot feature is Active if Secure Boot is Enabled, Platform Key(PK) is enrolled and the System is in User mode. The mode change requires platform reset
Secure Boot Mode	Standard [Default] Custom	Secure Boot mode options: Standard or 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.

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.

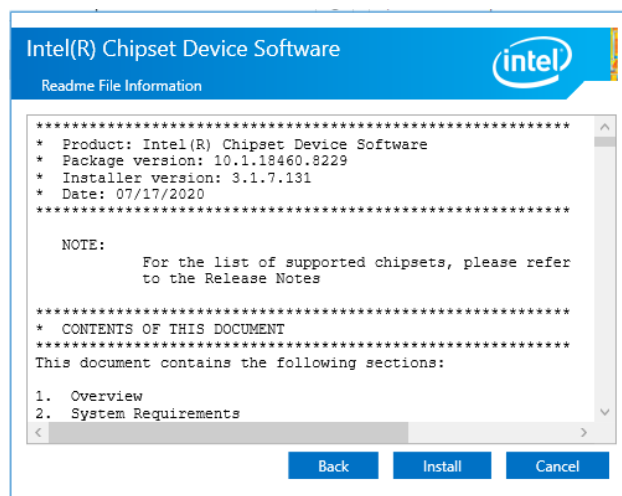
4.1 Install Chipset Driver

All drivers can be found on the Avalue Official Website:

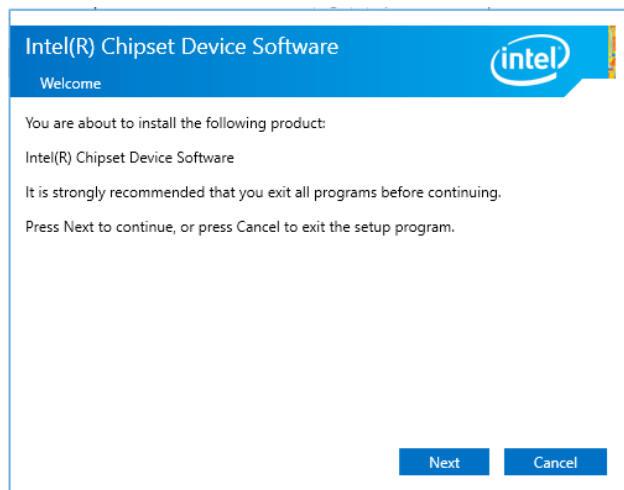
<http://www.avalue.com.tw>.



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.



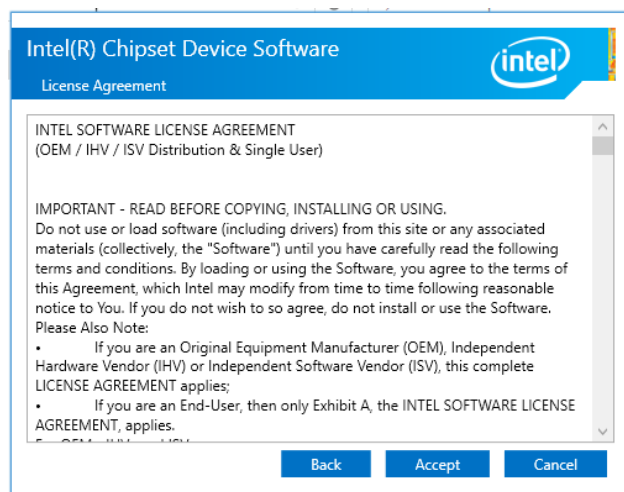
Step 3. Click Install.



Step1. Click Next.



Step 4. Complete setup.



Step 2. Click Accept.

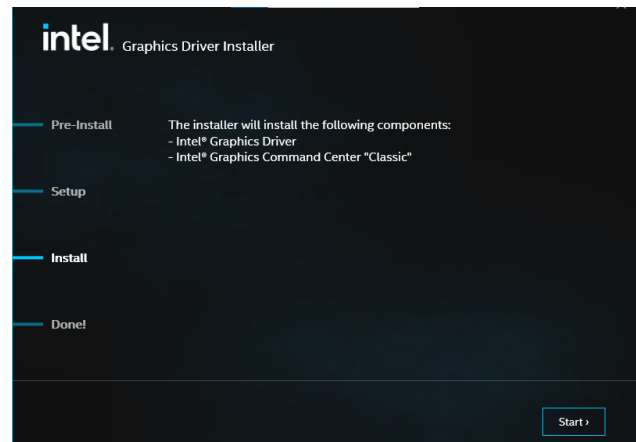
4.2 Install VGA Driver

All drivers can be found on the Avalue Official Website:

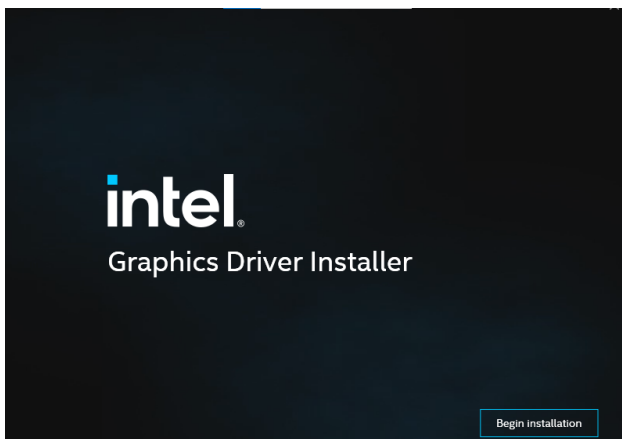
<http://www.avalue.com.tw>.



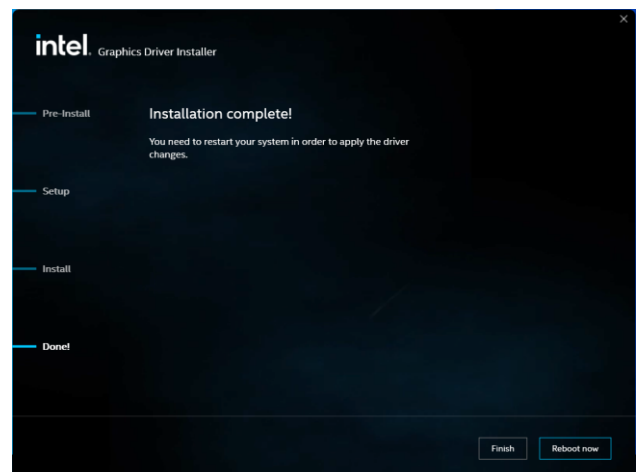
Note: The installation procedures and screen shots in this section are based on Windows 10 operation system. If the warning message appears while the installation process, click Continue to go on.



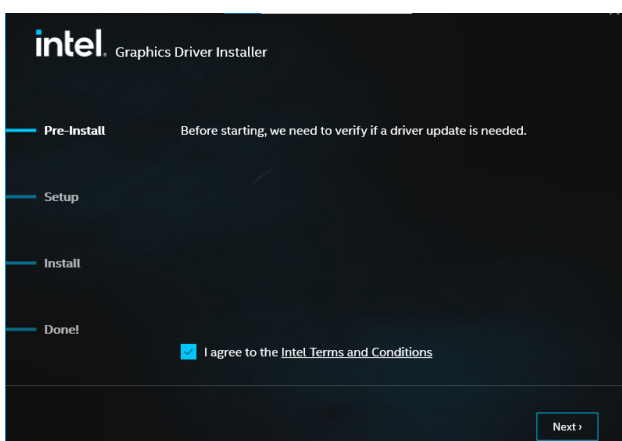
Step 3. Click Start.



Step 1. Click Begin installation.



Step 4. Click Reboot now.



Step 2.

Click **Next** to accept license agreement.

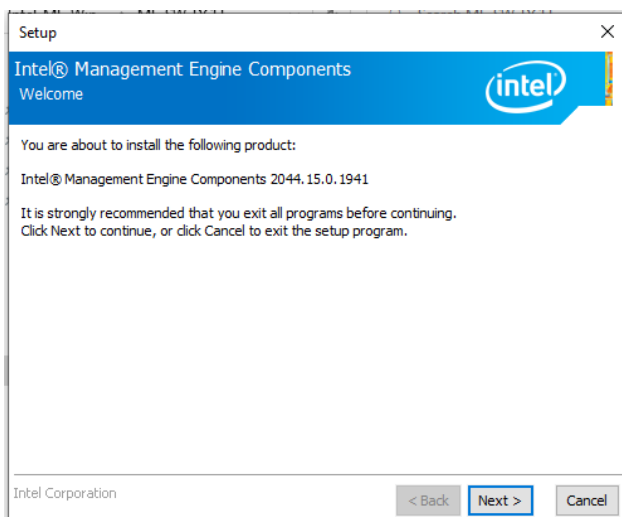
4.3 Install ME Driver

All drivers can be found on the Avalue Official Website:

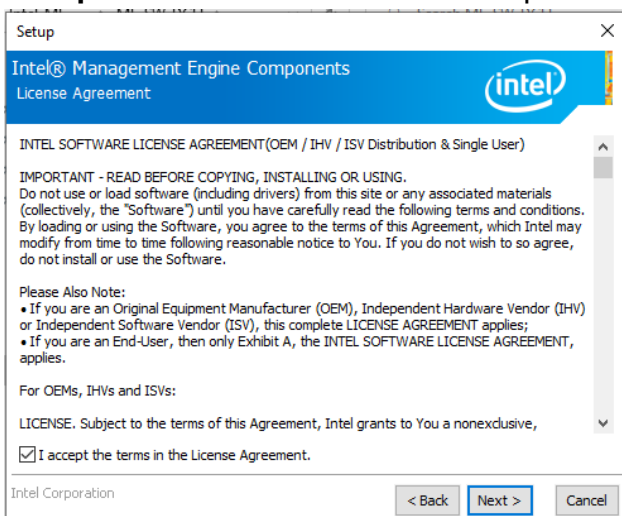
<http://www.avalue.com.tw>.



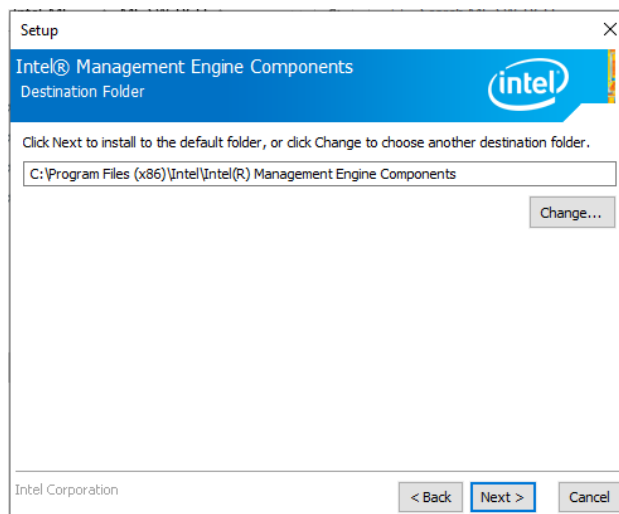
Note: The installation procedures and screen shots in this section are based on Windows 10 operation system. If the warning message appears while the installation process, click Continue to go on.



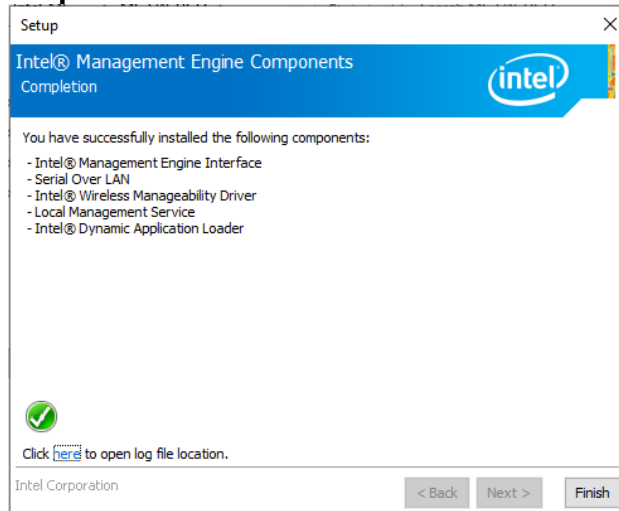
Step 1. Click Next to continue setup.



Step 2. Click Next.



Step 3. Click Next.



Step 4. Click Finish to complete setup.

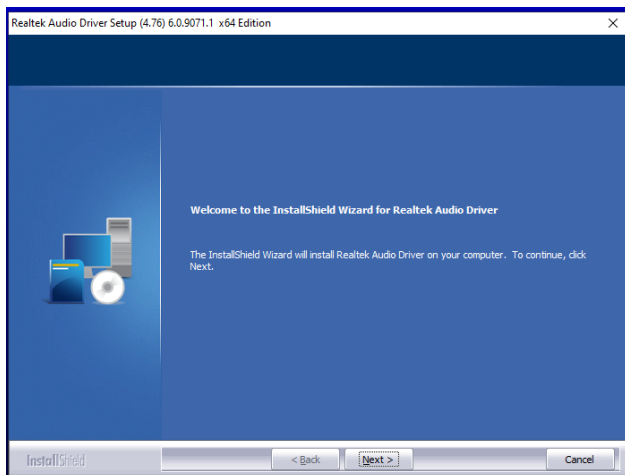
4.4 Install Audio Driver (For Realtek ALC897 and ALC888S HD Audio)

All drivers can be found on the Avalue Official Website:

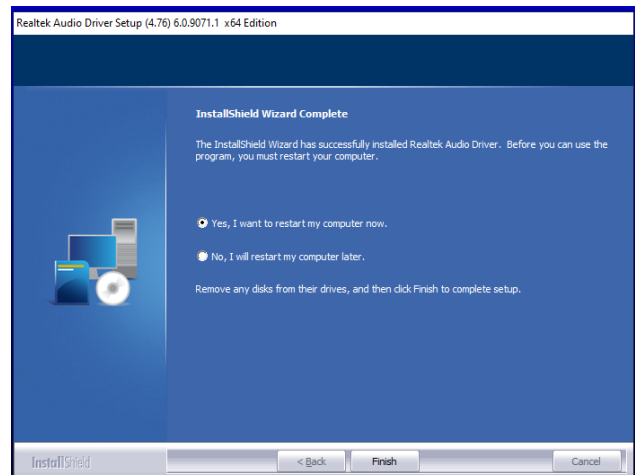
<http://www.avalue.com.tw>.



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.

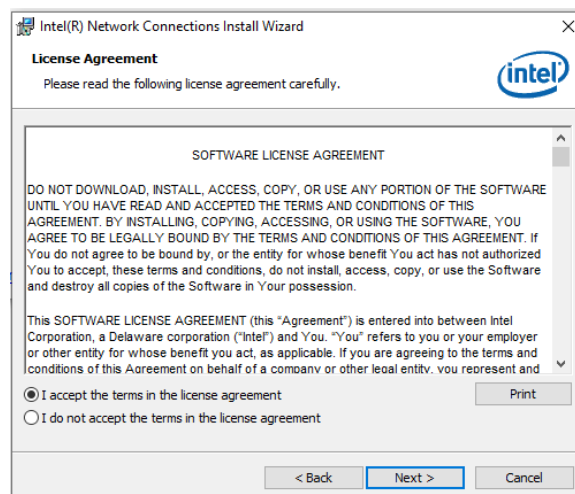
4.5 Install LAN Driver

All drivers can be found on the Avalue Official Website:

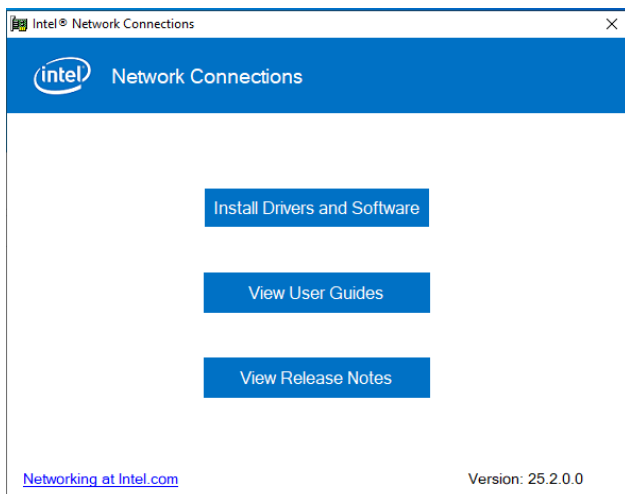
<http://www.avalue.com.tw>.



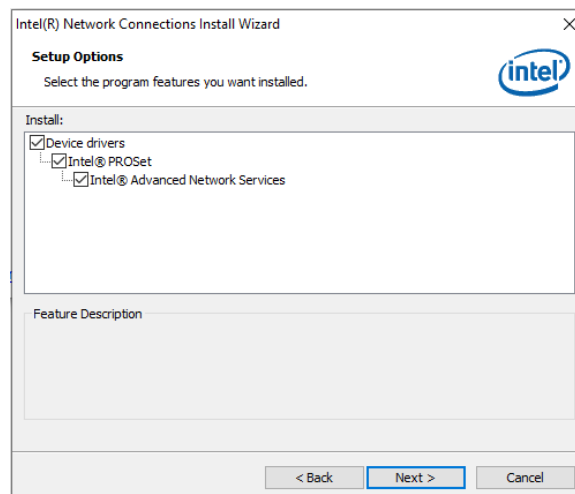
Note: The installation procedures and screen shots in this section are based on Windows 10 operation system. If the warning message appears while the installation process, click Continue to go on.



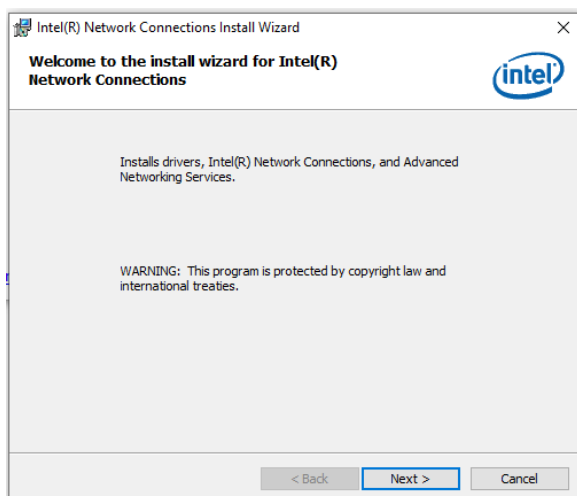
Step 3. Click Next.



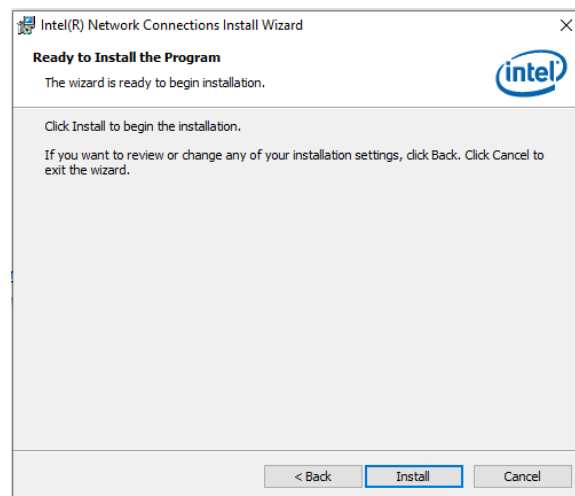
Step 1. Click Next to continue installation.



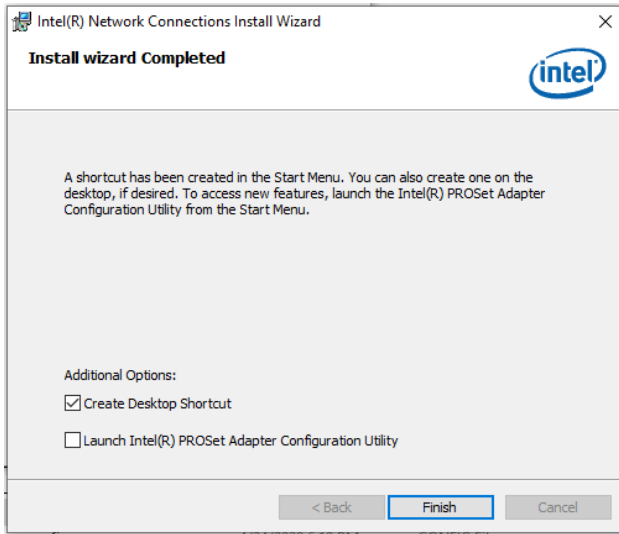
Step 4. Click Yes.



Step 2. Click Next.



Step 5. Click Install.



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

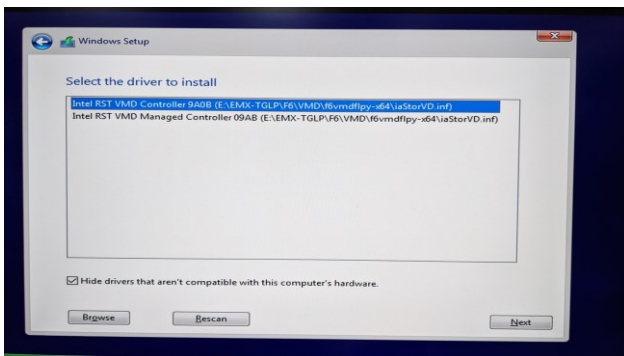
4.6 Install RST for RAID Driver

All drivers can be found on the Avalue Official Website:

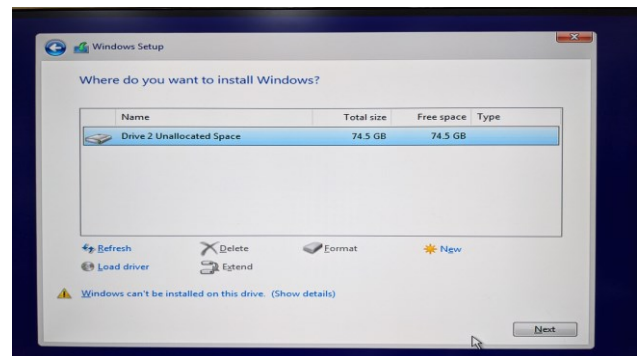
<http://www.avalue.com.tw>.



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



Step 2. Click **Next**.

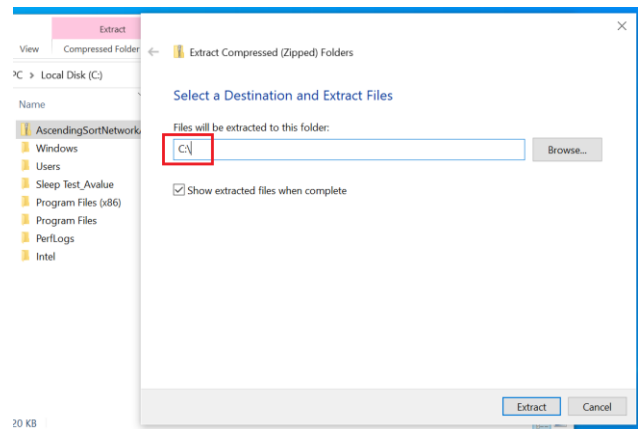
4.7 Ascending Network Adapter

All drivers can be found on the Avalue Official Website:

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

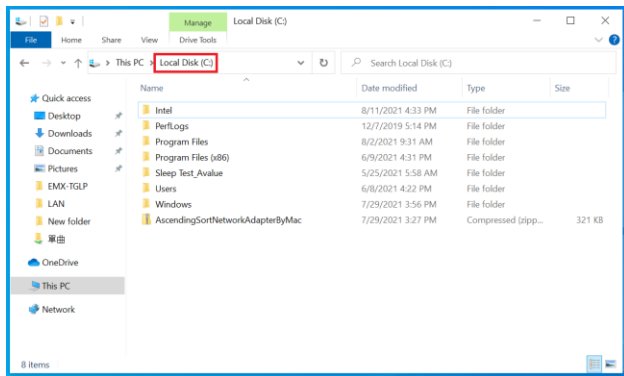


Note: The installation procedures and screen shots in this section are based on Windows 10 operation system. If the warning message appears while the installation process, click Continue to go on.



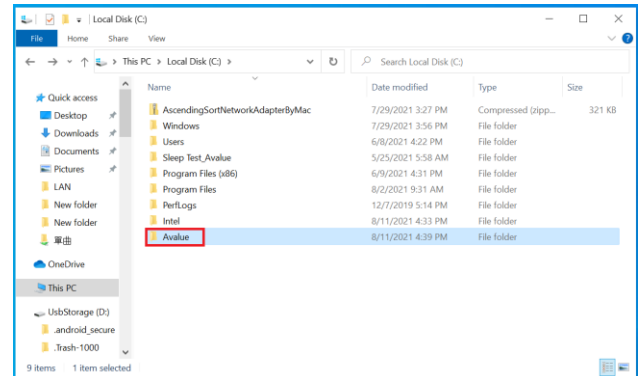
Step 3.

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

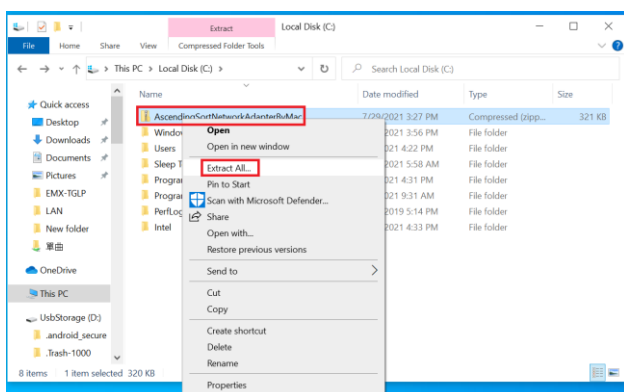


Step 1. Copy file:

“AscendingSortNetworkAdapterByMac.zip”
to C:\

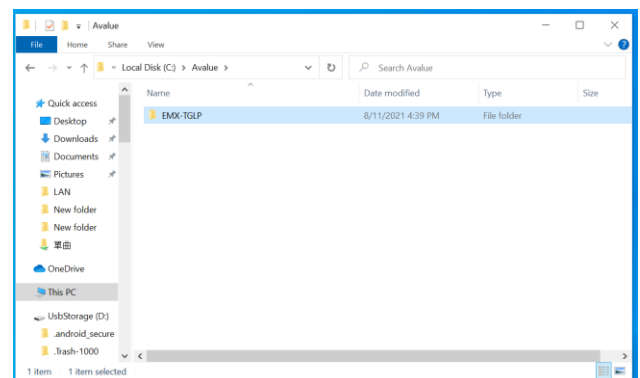


Step 4. it will generate **Avalue** folder.



Step 2. Unzip file:

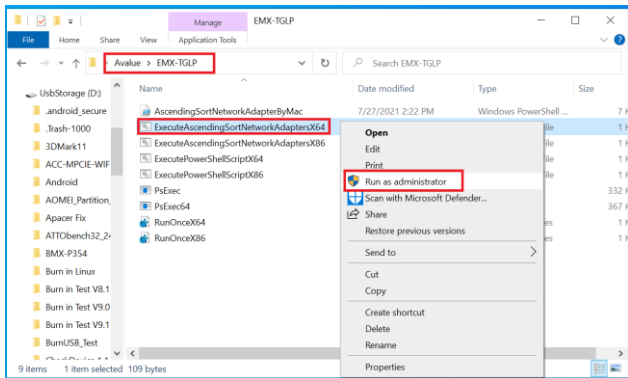
“AscendingSortNetworkAdapterByMac.zip”



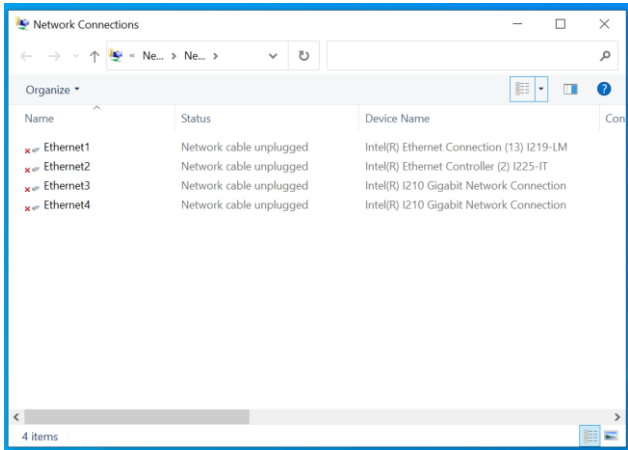
Step 5.

Click and enter C:\Avalue\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



Note:

If customer would like to patch LAN order sequence, please refer to Avalue website for EMX-TGLP Sort Network Adapter By Mac Address.

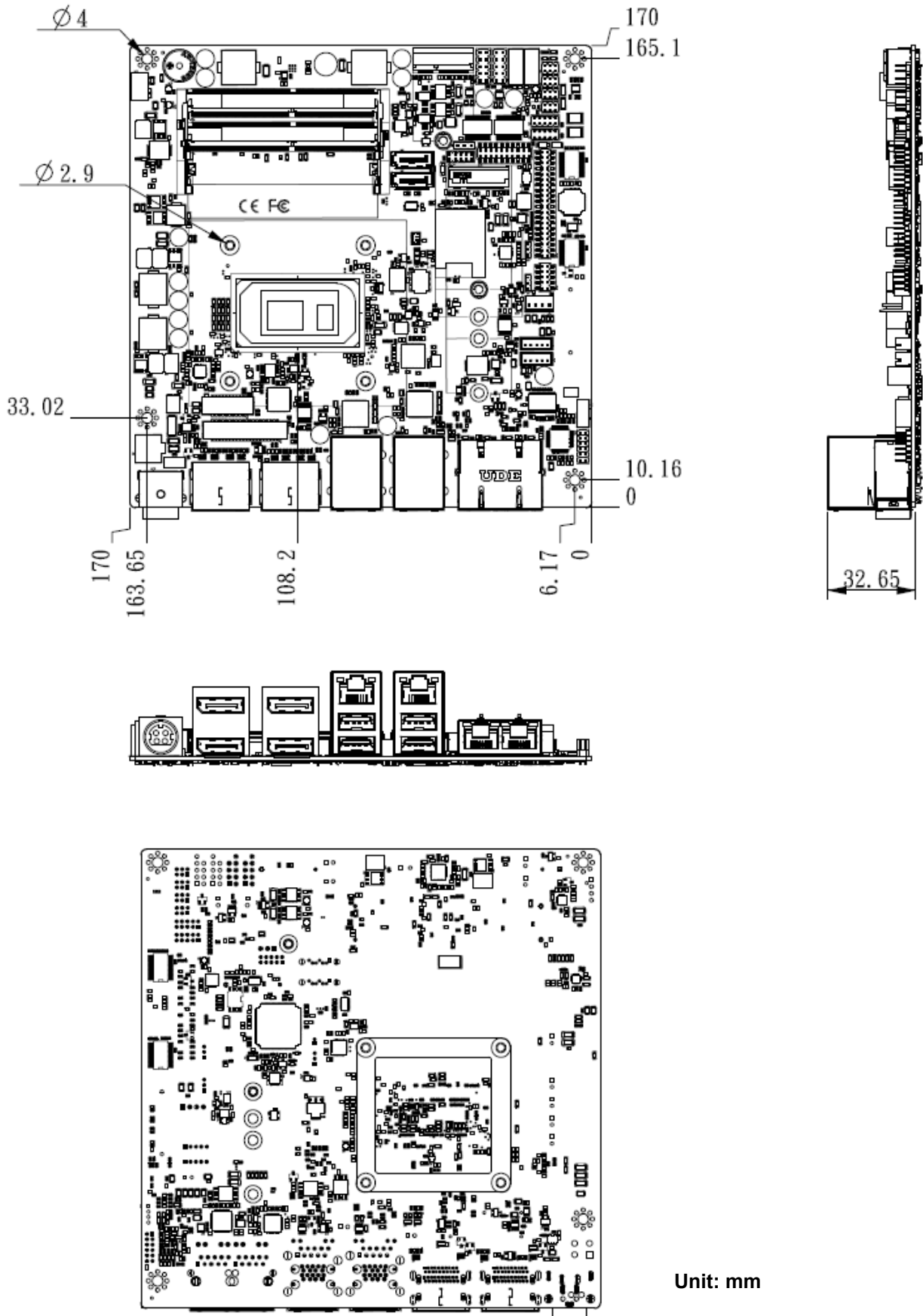
[Products](#)
[Solutions](#)
[Services](#)
[My Avalue](#)
[Contact Us](#)
[COVID-19 INFO](#)

Other

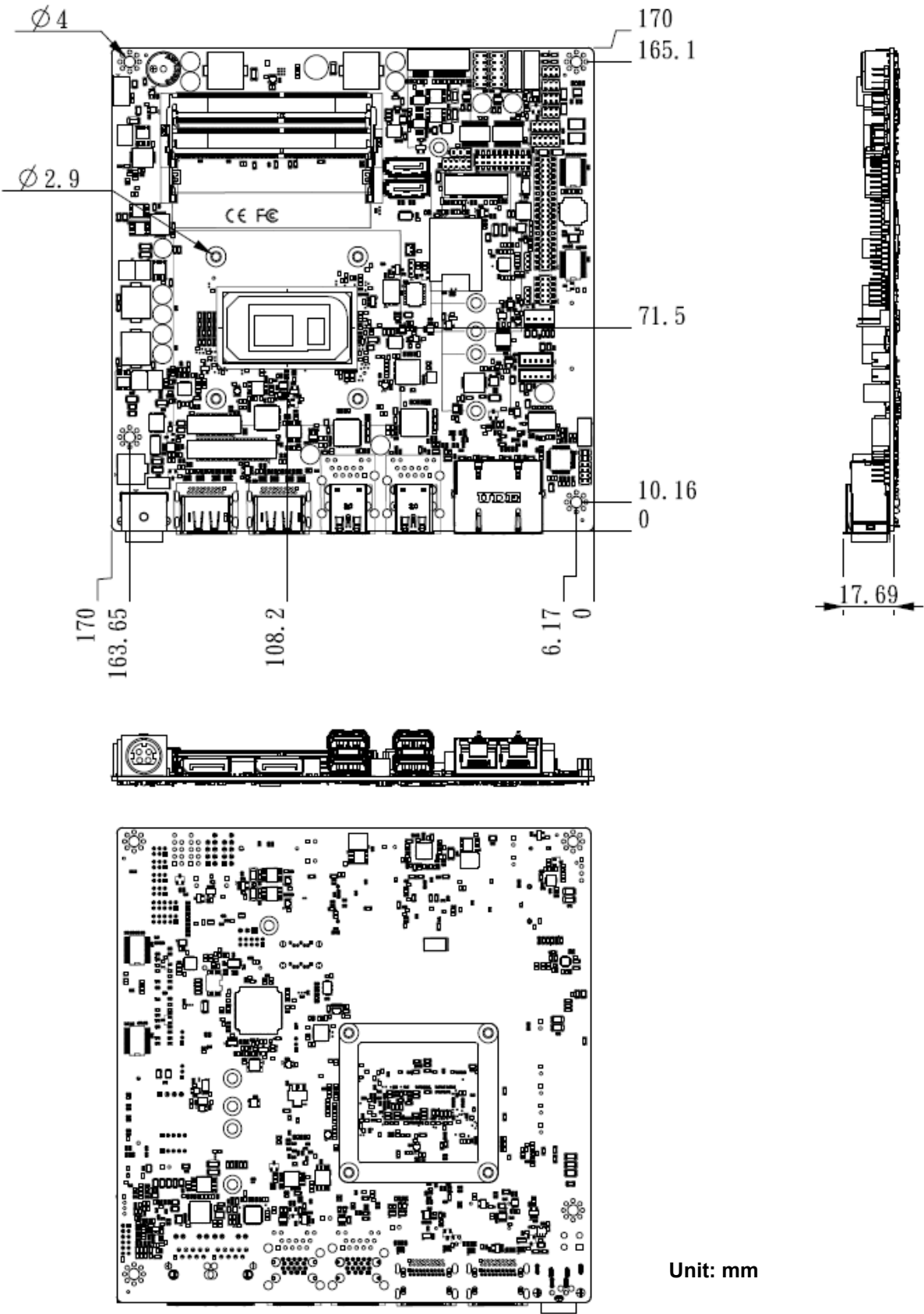
No.	Release Date	Model	Description	Download
1	2021-08-12	EMX-TGLP	SortNetwork Tool Device:Other	

5. Mechanical Drawing

5.1 This is 4LAN4DP (Full height) version.

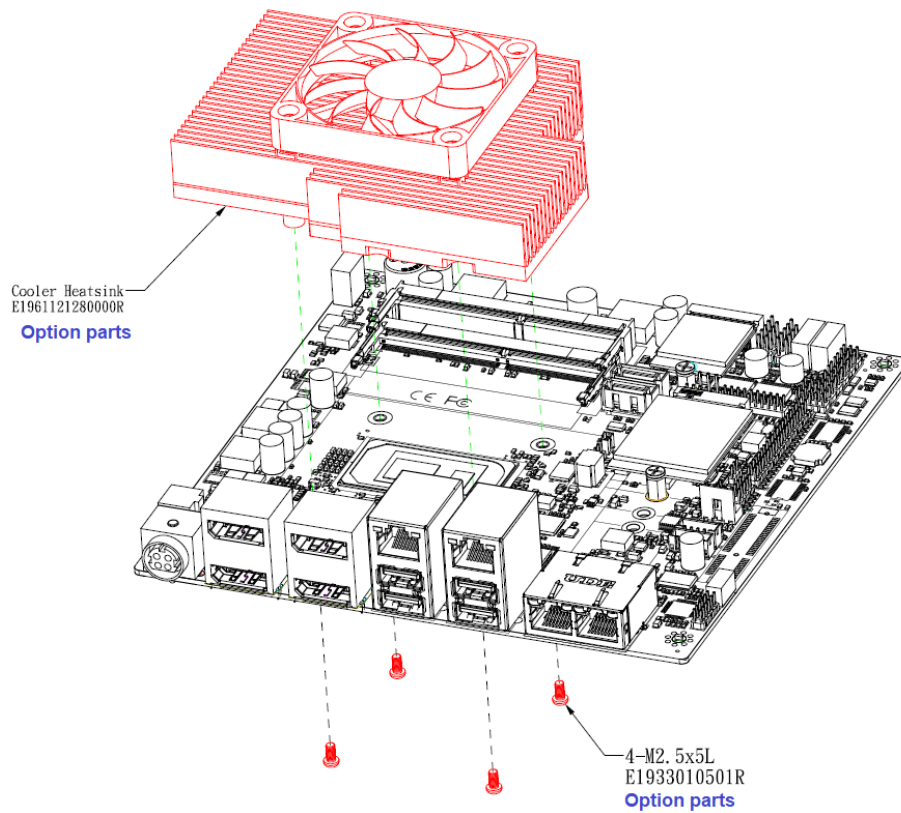


5.2 This is 2LAN2DP (Thin) version.

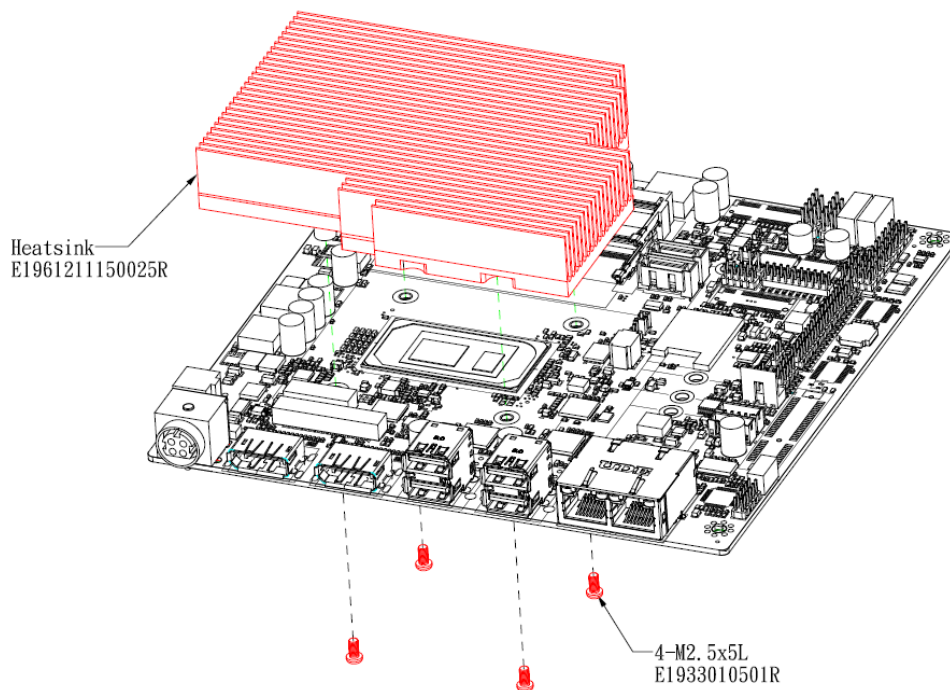


For thermal solutions:

- 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.

