EMX-APLP-34

Intel®Celeron® Processor J3455 with Intel®APLP ITX Motherboard

User's Manual

3rd Ed – 21 November 2022

Part No. E2047EMAB02R

FCC Statement

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

(1) THIS DEVICE MAY NOT CAUSE HARMFUL INTERFERENCE.

(2) THIS DEVICE MUST ACCEPT ANY INTERFERENCE RECEIVED INCLUDING INTERFERENCE THAT MAY CAUSE UNDESIRED OPERATION.

THIS EQUIPMENT HAS BEEN TESTED AND FOUND TO COMPLY WITH THE LIMITS FOR A CLASS "A" DIGITAL DEVICE, PURSUANT TO PART 15 OF THE FCC RULES.

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

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

Notice

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

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1. 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.
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A Message to the Customer

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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.

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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

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-APLP-34 motherboard
- 2 x SATA cables
- 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
1st	October 2022	Avalue	Initial Release
2nd	November 2022	Avalue	Update System Specifications
3rd	November 2022	Avalue	Update Block Diagram

1.4 Manual Objectives

This manual describes in details Avalue Technology EMX-APLP-34 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-APLP-34 or change the standard configurations. Whilst all the necessary information is available in this manual we would recommend that unless you are confident, you contact your supplier for guidance.

Please be aware that it is possible to create configurations within the CMOS RAM that make booting impossible. If this should happen, clear the CMOS settings, (see the description of the Jumper Settings for details).

If you have any suggestions or find any errors regarding this manual and want to inform us of these, please contact our Customer Service department with the relevant details.

1.5 System Specifications

System	
CPU	Intel® Celeron® Processor J3455 (2M Cache, up to 2.30 GHz)
BIOS	AMI uEFI BIOS, 128Mbit SPI Flash ROM
I/O Chip	EC IT8528E
System Memory	Two 204-pin DDR3L 1600MHz SO-DIMM socket, supports up to 16GB Max
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
Expansion Slot	
mPCIe	1 x Full size Mini PCI-e support mSATA (SATA III and mSATA By auto switch IC) with 1 x SIM card slot
M.2	1 x M.2 (2230) A-Key, support WiFi module (default) or 1 x PCI-e x1 By control EC Note: BIOS selection for M.2 A-Key and PCI-e slot x1. Default setting at PCI-e slot x1, therefore, M.2 function is needed OEM BIOS.
Other	S0/S3/S4/S5
Storage	
mSATA	1 x Full size Mini PCI-e support mSATA (SATA III and mSATA By auto switch IC) with 1 x SIM card slot
SATA	2 x SATA III, 2 x SATA Power
Edge I/O	
LAN	2 x RJ-45
USB 3.1	4 x USB 3.0
DP	1 x DP++
HDMI	1 x HDMI/DP
S-VIDEO	Line-out & Mic-in
DC Input	1 x DC Jack lockable connector type
Onboard I/O	
COM	COM1: COM 1 support RS- RS232/422/485 connector, with / +5V & +12V Supported and RS422/485 by BIOS setting 1 x 2 x 5 pin, pitch 2.00mm connector for COM1: support RS-232 connector, Pin 9 with / +5V & +12V Supported 1 x 2 x 3 pin, pitch 2.00mm connector for COM1: support RS422/485 connector, Pin 5 with / +5V Supported COM2~6:

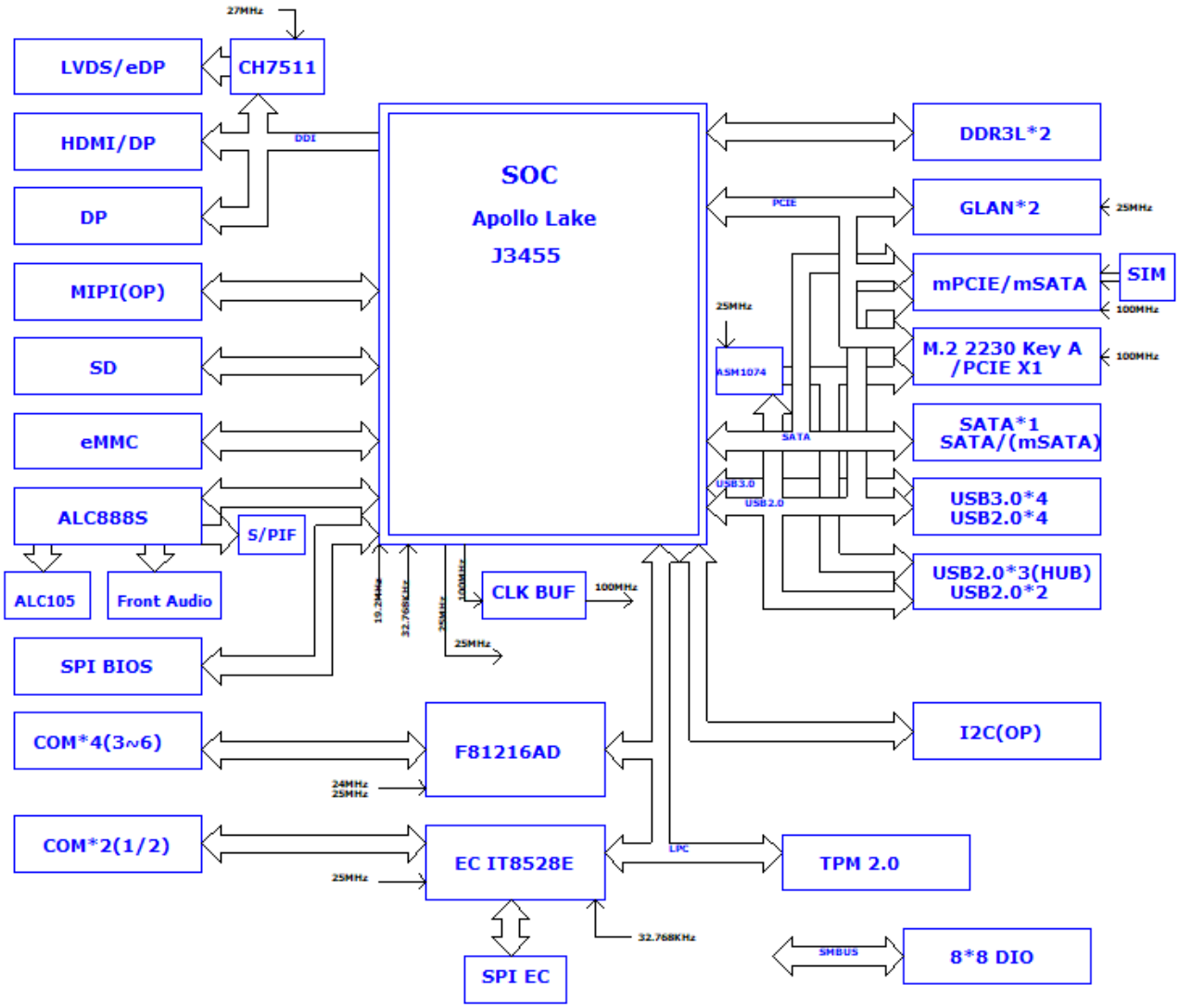
	5 x 2 x 5 pin, pitch 2.00mm connector for COM2~6: support RS-232 connector, Pin 9 with / +5V & +12V Supported
USB 2.0	2 x 2 x 5 pin, pitch 2.54mm connector for 4 USB 2.0 1 x 1 x 5 pin, pitch 2.54mm connector for 1 USB 2.0
GPIO	1 x 2 x 10 pin, pitch 2.00mm connector for GPIO: 16 bits
SATA Power	2 x SATA Power
CPU/System FAN	1 x 1 x 4 pin, pitch 2.54mm CPU fan connector with smart fan function supported
Buzzer	Onboard
Front Panel	1 x 2 x 5 pin, pitch 2.54mm connector for front panel 1 1 x 2 x 5 pin, pitch 2.54mm connector for front panel 2
RTC Battery	1 x horizontal type battery connector (Battery cable 170mm length)
AT/ATX Selector	1 x 1 x 3 pin, pitch 2.54mm connector for AT/ATX mode
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 (must be using DF13-2S-1.25C connector)
LCD Backlight Brightness	1 x 3 pin, pitch 2.54mm connector LCD backlight brightness adjustment (PWM/DC)
LCD Inverter	1 x 1 x 5 pin, pitch 2.00mm Wafer connector for LCD inverter backlight connector (5V/12V)
LPC	1 x 2 x 5 pin, pitch 2.0mm connector for LPC
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 5 pin, pitch 2.54mm connector for front Audio
DC-Input	1 x 2 x 2 pin, pitch 4.20mm connector for power input connector 1 x DC Jack lockable connector type
Other	1 x 2 x 10 pin, pitch 1.25mm connector for eDP 1 x 4 pin, pitch 2.00mm connector for WiFi Activity Indicator LED 1 x 1 x 5 pin, pitch 2.54mm for Digital MIC in (DMIC1)
Display	
Graphic Chipset	Intel® Apollo Lake® SoC integrated Graphics
Spec. & Resolution	1 x HDMI/DP1: (either one by switch IC) HDMI 1.4b: 3840x2160 @30Hz / DP 1.2 4096x2160@60Hz 1 x DP++ (DP2): DisplayPort 1.2: 4096x2160 @60Hz 2CH 18/24bits LVDS 1920 x 1080 (Chrontel. CH7511B eDP to LVDS Converter) Co-lay eDP 1.3: 3840 x2160 @60Hz BOM optional Note: This resolution is actual test result.
Multiple Display	Triple Display Multiple Display: LVDS > (DP1/HDMI) > DP2)

Audio	
Audio Codec	Realtek ALC888S co-lay ALC897 (Default: ALC888S) HD Audio Codec
Amplifier	Realtek ALC105 Stereo Class-D 2W 4Ω x 2
Ethernet	
LAN Chipset	2 x Intel® I226LM 2.5 Gigabit Ethernet
LAN Spec.	2 x 10/100/1000/2.5G Base-T compatible
Mechanical & Environmental Specification	
Power Requirement	DC in +12V~24V
ACPI	Single power ATX Support S0, S3, S4, S5 ACPI 3.0 Compliant
Power Mode	AT / ATX mode Switchable Through Jumper
Operating Temp.	0~60°C (32~140°F) with 0.5m/s air flow
Storage Temp.	-40~ +75°C
Operating Humidity	40°C @ 95% Relative Humidity, Non-condensing
Size (L x W) (Please consult product engineers for the production feasibility if the size is larger than 410x360mm or smaller than 80x70mm)	6.7" x 6.7" (170mm x 170mm)
Weight	0.40kg

Note: Specifications are subject to change without notice.

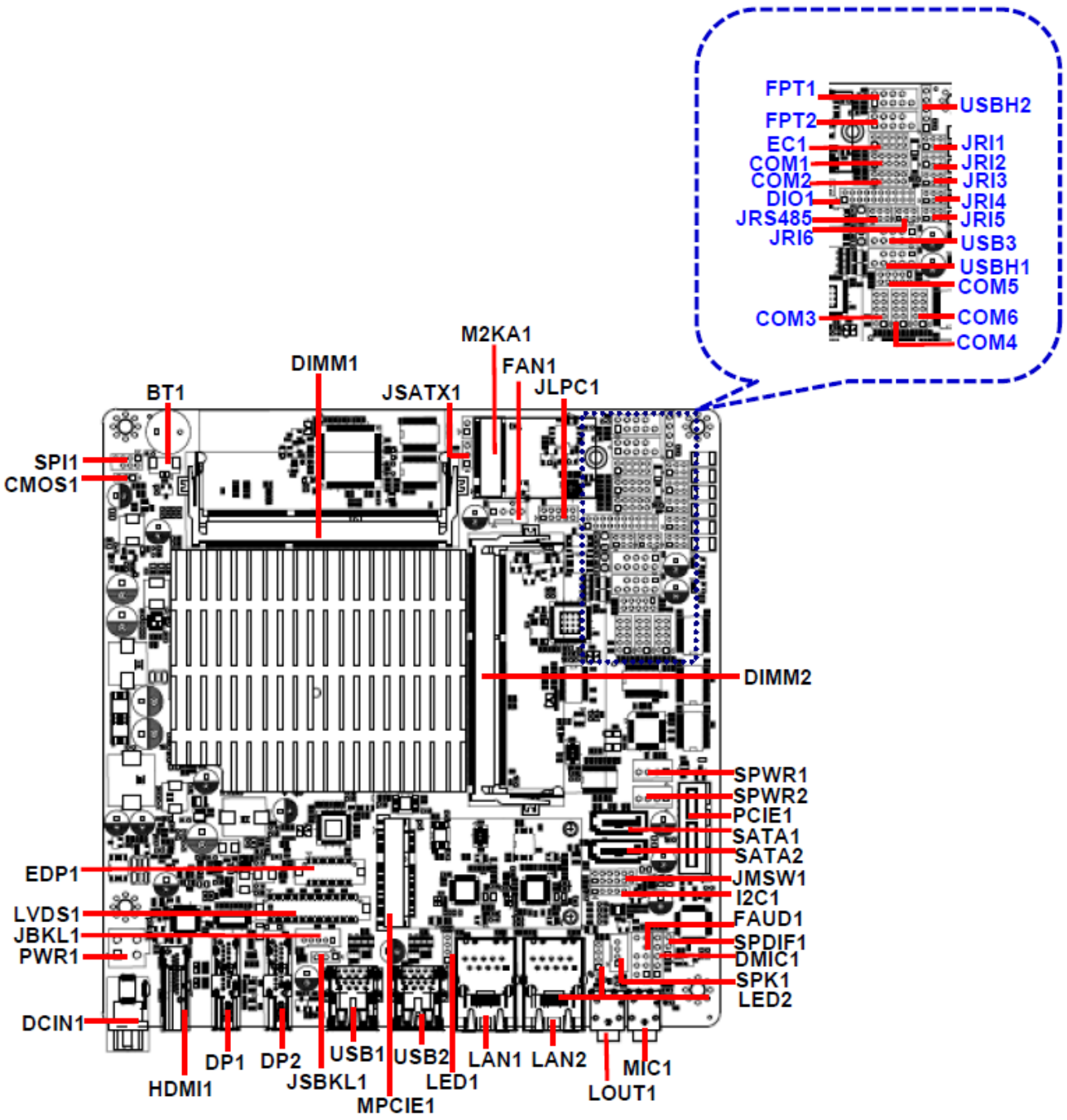
1.6 Architecture Overview—Block Diagram

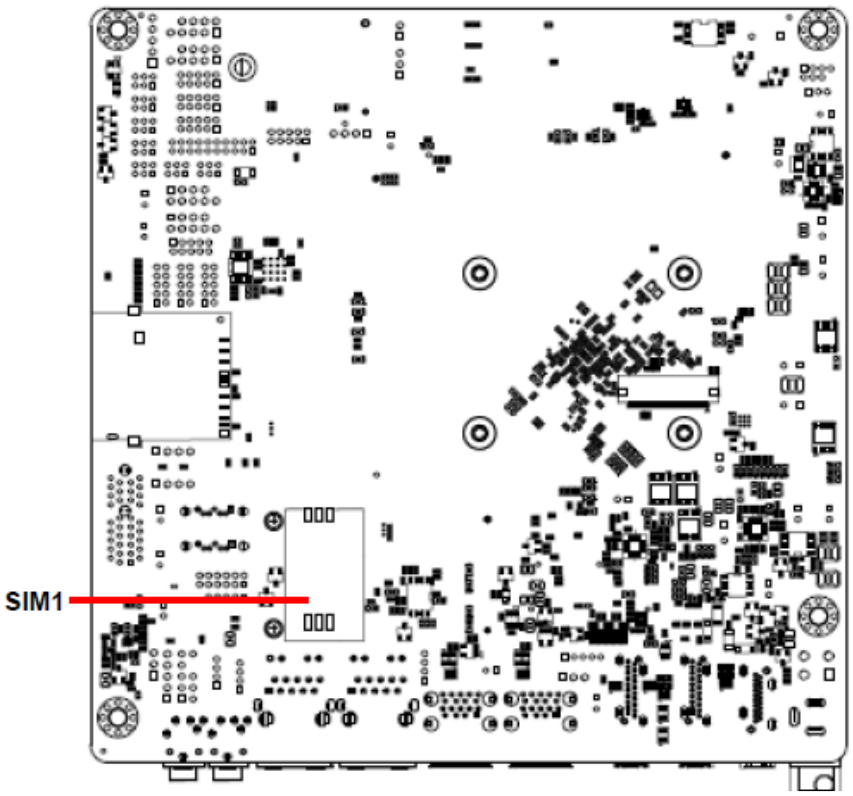
The following block diagram shows the architecture and main components of EMX-APLP-34.



2. Hardware Configuration

2.1 Product Overview

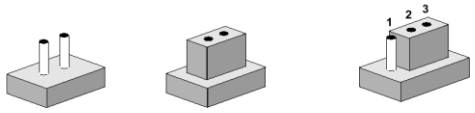



SIM1

2.2 Jumper and Connector List

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

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



Open Closed Closed 2-3

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

Open Closed Closed 2-3

A pair of needle-nose pliers may be helpful when working with jumpers.

Connectors on the board are linked to external devices such as hard disk drives, a keyboard, or floppy drives. In addition, the board has a number of jumpers that allow you to configure your system to suit your application.

If you have any doubts about the best hardware configuration for your application, contact your local distributor or sales representative before you make any changes.

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

Jumpers

Label	Function	Note
JRI1/2/3/4/5/6	Serial port 1/2/3/4/5/6 pin9 signal select	3 x 2 header, pitch 2.00mm
JMSW1	SATA2/MSATA1 mPCIe slot selector	6 x 2 header, pitch 2.00mm
JSBKL1	LVDS Back Light power selection	3 x 1 header, pitch 2.54mm
JSATX1	AT/ATX Power Mode Select	3 x 1 header, pitch 2.54mm
CMOS1	Clear CMOS	3 x 1 header, pitch 2.00mm

Connectors

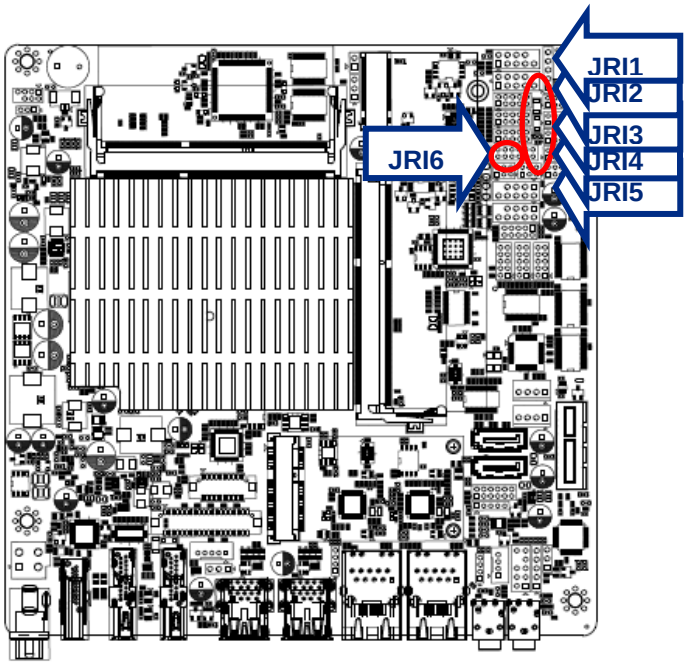
Label	Function	Note
FAN1	CPU fan connector	4 x 1 wafer, pitch 2.54mm
FPT1/2	Front Panel connector 1/2	5 x 2 header, pitch 2.54mm
DIMM1/2	204-pin DDR3L DIMM socket	

FAUD1	Front Audio connector	5 x 2 header, pitch 2.54mm
JBKL1	LCD Inverter connector	5 x 1 wafer, pitch 2.00mm Compatible with Connector: JST PHR-5
SPI1	SPI connector	4 x 2 header, pitch 2.00mm
COM1/2/3/4/5/6	Serial Port 1/2/3/4/5/6 connector	5 x 2 header, pitch 2.00mm
JRS485	Serial Port 1 RS485/422 Mode connector	3 x 2 header, pitch 2.00mm
DIO1	General purpose I/O connector	10 x 2 header, pitch 2.00mm
SPK1	Speaker connector	4 x 1 wafer, pitch 2.00mm
LVDS1	LVDS Connector	DIN 40-pin wafer, pitch 1.25mm Compatible with Connector: Hirose DF13-40DS-1.25C
USB1/2	USB connector 1/2	
USB3	USB 2.0 connector	5 x 2 header, pitch 2.54mm
USBH1	USB 2.0 connector	5 x 2 header, pitch 2.54mm
USBH2	USB 2.0 connector	5 x 1 header, pitch 2.54mm
SPDIF1	Sony/Philips Digital Interface	3 x 1 header, pitch 2.54mm
LAN1/2	RJ-45 Ethernet 1/2	
PCIE1	PCIe connector	
LED1/2	LED indicator connector 1/2	4 x 1 header, pitch 2.00mm
DP1/2	DP connector 1/2	
EDP1	eDP connector	10 x 2 wafer, pitch 1.25mm
BT1	Battery connector	2 x 1 wafer, pitch 1.25mm
M2KA1	M.2 Type A 2230 connector	
MPCIE1	Mini-PCIe connector 1	
JLPC1	LPC connector	5 x 2 header, pitch 2.00mm
PWR1	Power connector	2 x 2 wafer, pitch 4.20mm
SATA1/2	Serial ATA connector 1/2	
SPWR1/2	SATA Power connector 1/2	4 x 1 wafer, pitch 2.54mm
EC1	EC_Program	5 x 2 header, pitch 2.00mm
DCIN1	DC Power-in connector	
I2C1	I2C connector	5 x 1 header, pitch 2.00mm
HDMI1	HDMI connector	
LOUT1	Line-out audio jack	
MIC1	Mic-in audio jack	
DMIC1	Digital Microphone connector	5 x 1 header, pitch 2.54mm

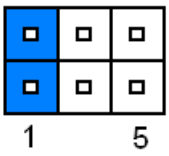
SIM1	SIM card slot

2.3 Setting Jumpers & Connectors

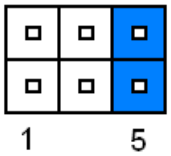
2.3.1 Serial port 1/2/3/4/5/6 pin9 signal select (JRI1/JRI2/JRI3/JRI4/JRI5/JRI6)



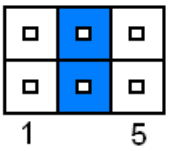
Ring*



+12V

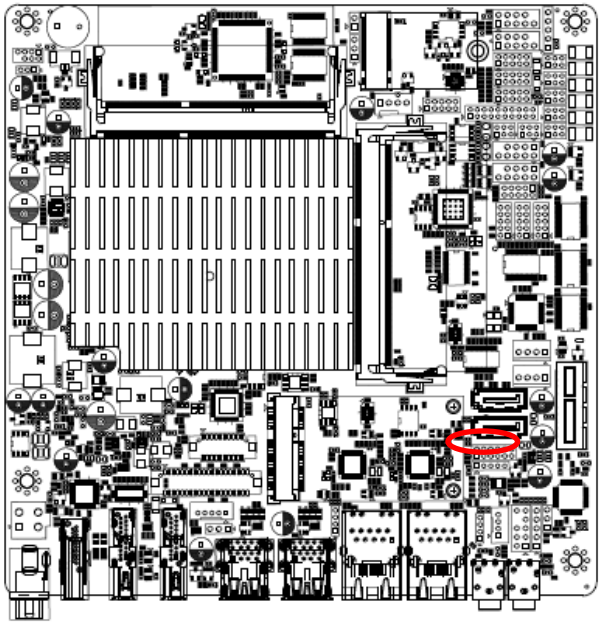


+5V



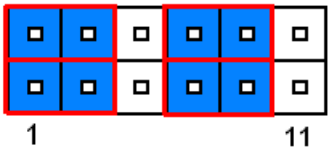
*** Default**

2.3.2 SATA2/MSATA1 mPCIe slot selector (JMSW1)



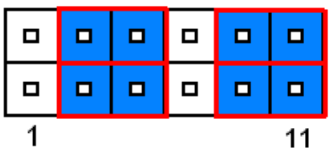
SATA2 Connector*

(SATA2 Connector enabled, MSATA1 slot Disabled)



MSATA1 mPCIe slot

(MSATA1 slot enabled, SATA2 Connector Disabled)

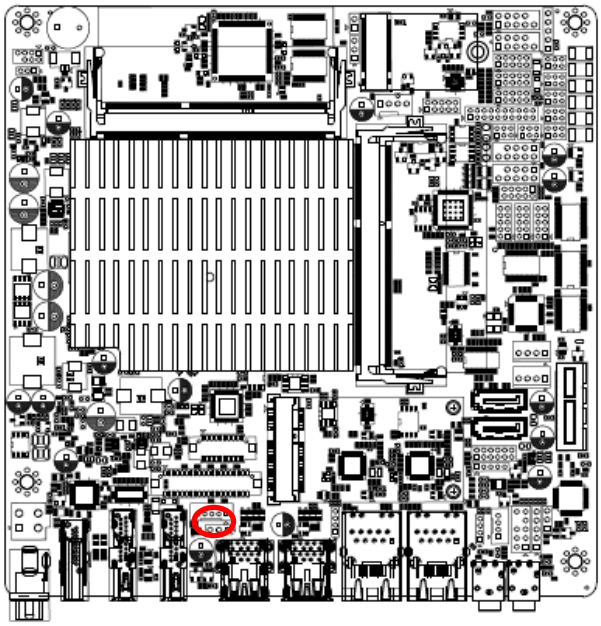


*** Default**

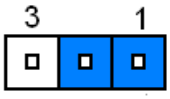
Note:

SATA2/MSATA1 shared SATA signal, can not be used simultaneously.

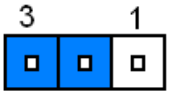
2.3.3 LVDS Back Light power selection (JSBKL1)



PWM Mode*(Max current: 2A)

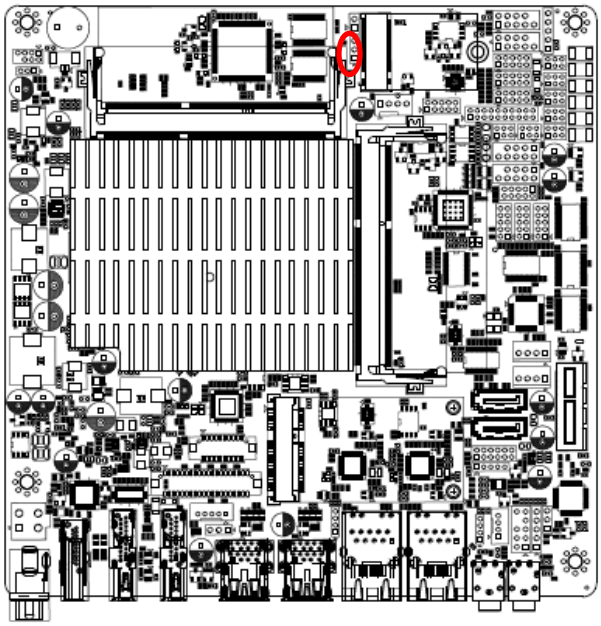


DC Mode(Max current: 2A)

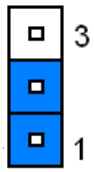


*** Default**

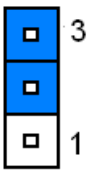
2.3.4 AT/ATX Power Mode Select (JSATX1)



ATX*

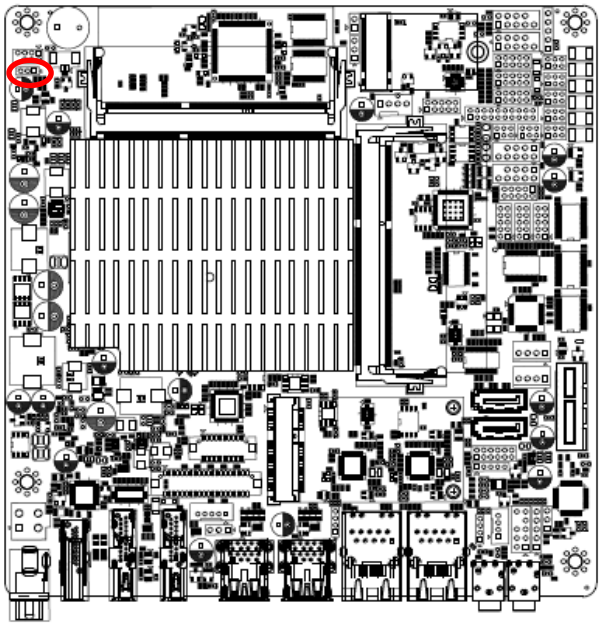


AT

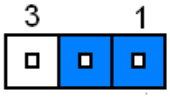


*** Default**

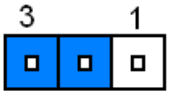
2.3.5 Clear CMOS (CMOS1)



Protect*

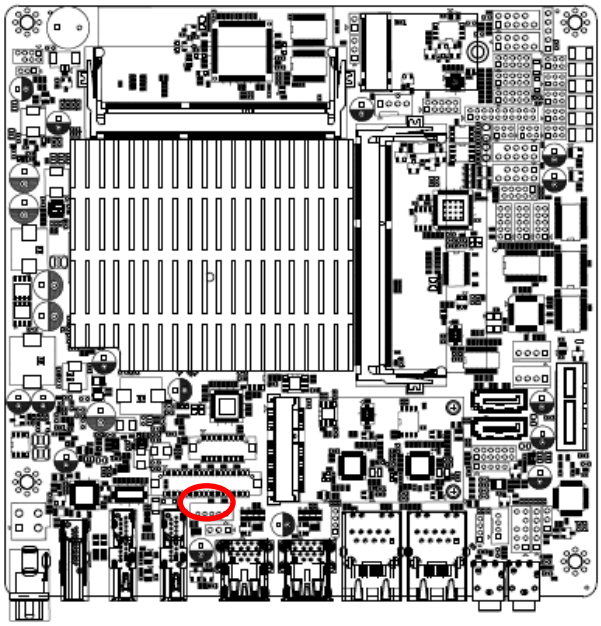


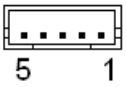
Clear CMOS



*** Default**

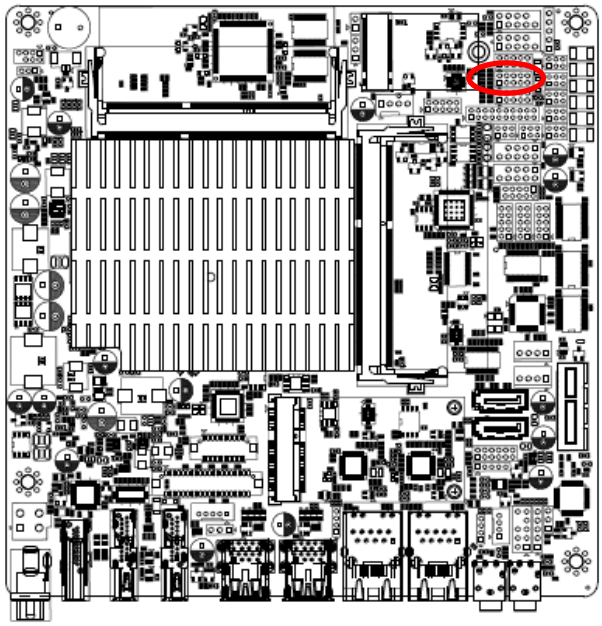
2.3.6 LCD Inverter connector (JBKL1)

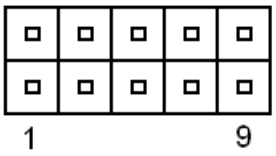




PIN	Signal
1	+12V
2	GND
3	LVDS_BKLTEN
4	LVDS_BKLADJ
5	+5V

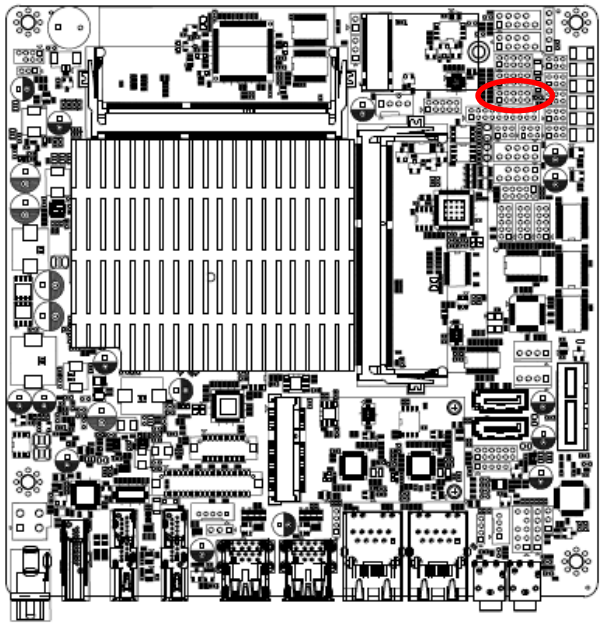
2.3.7 Serial port 1 connector (COM1)

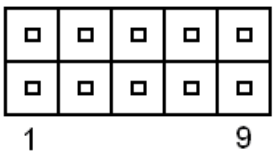




Signal	PIN	PIN	Signal
NDCDA#	1	2	NRXDA
NTXDA	3	4	NDTRA#
GND	5	6	NDSRA#
NRTSA#	7	8	NCTSA#
NRIA#	9	10	NC

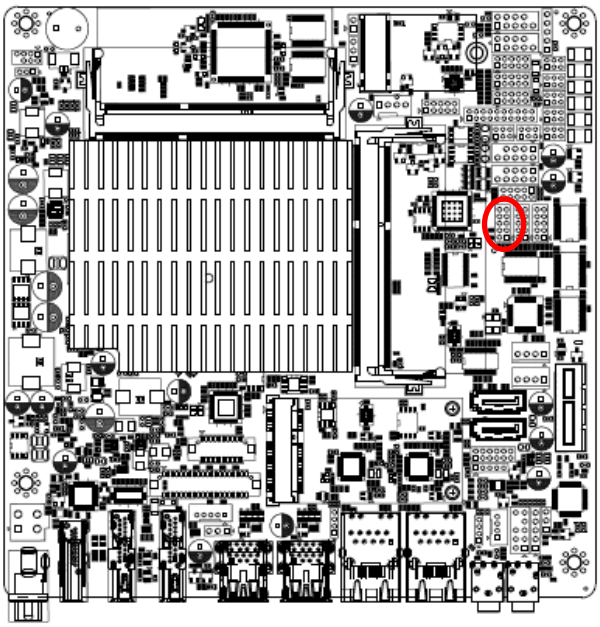
2.3.8 Serial port 2 connector (COM2)

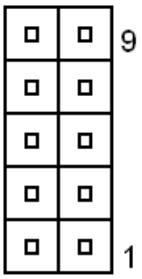




Signal	PIN	PIN	Signal
NDCDB#	1	2	NRXDB
NTXDB	3	4	NDTRB#
GND	5	6	NDSRB#
NRTSB#	7	8	NCTSB#
NRIB#	9	10	NC

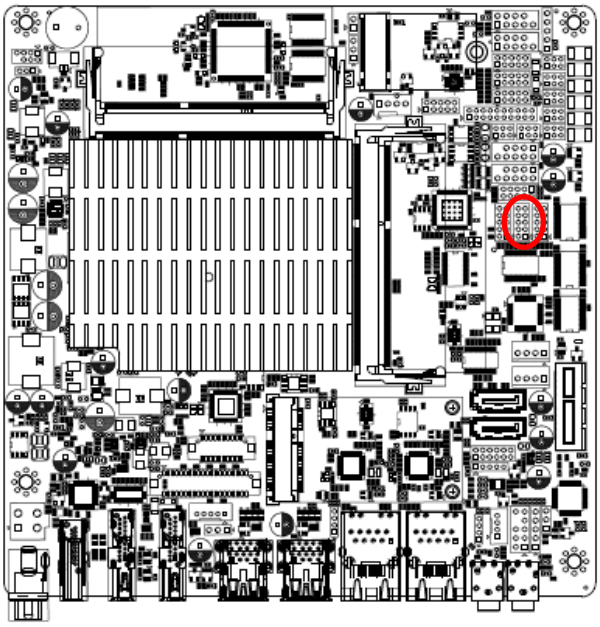
2.3.9 Serial port 3 connector (COM3)

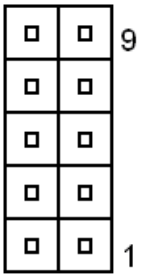




Signal	PIN	PIN	Signal
NDCDC#	1	2	NRXDC
NTXDC	3	4	NDTRC#
GND	5	6	NDSRC#
NRTSC#	7	8	NCTSC#
NRIC#	9	10	NC

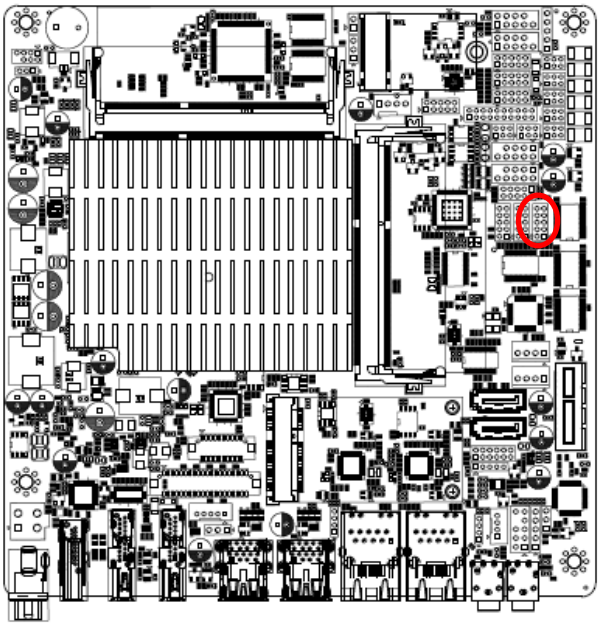
2.3.10 Serial port 4 connector (COM4)

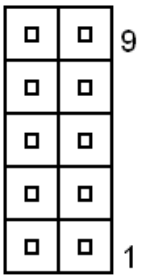




Signal	PIN	PIN	Signal
NDCDD#	1	2	NRXDD
NTXDCD	3	4	NDTRD#
GND	5	6	NDSRD#
NRTSD#	7	8	NCTSD#
NRID#	9	10	NC

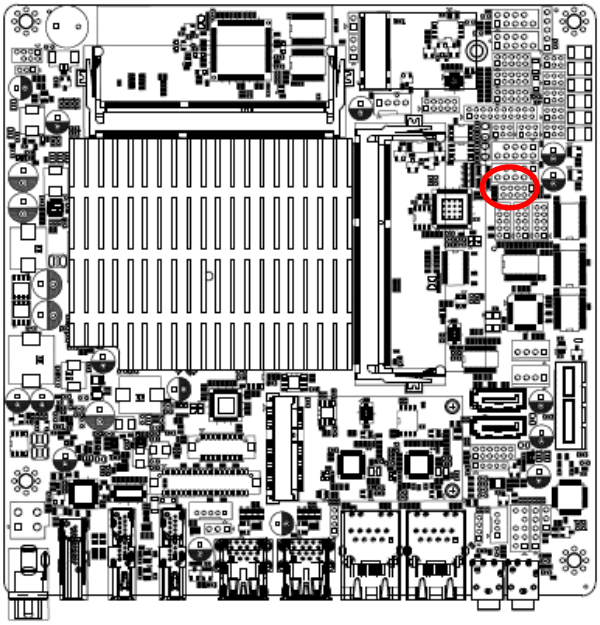
2.3.11 Serial port 6 connector (COM6)

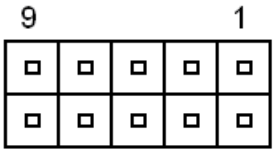




Signal	PIN	PIN	Signal
NDCDF#	1	2	NRXDF
NTXDCF	3	4	NDTRF#
GND	5	6	NDSRF#
NRTSF#	7	8	NCTSF#
NRIF#	9	10	NC

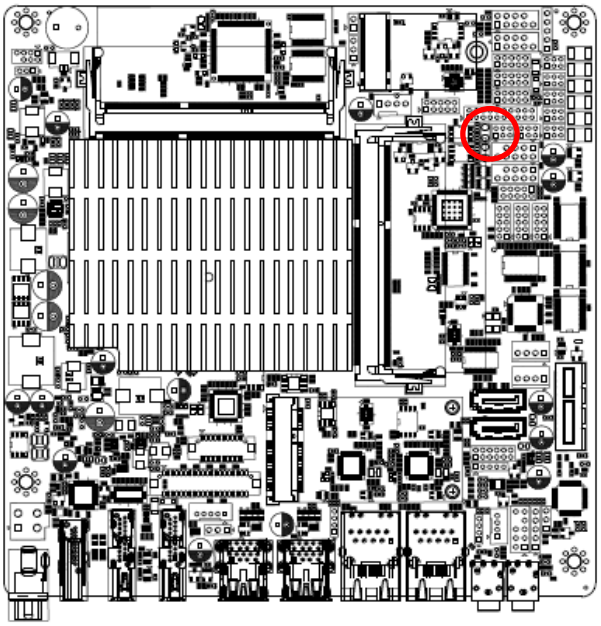
2.3.12 Serial port 5 connector (COM5)

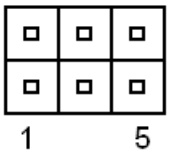




Signal	PIN	PIN	Signal
NDCDE#	1	2	NRXDE
NTXDCE	3	4	NDTRE#
GND	5	6	NDSRE#
NRTSE#	7	8	NCTSE#
NRIE#	9	10	NC

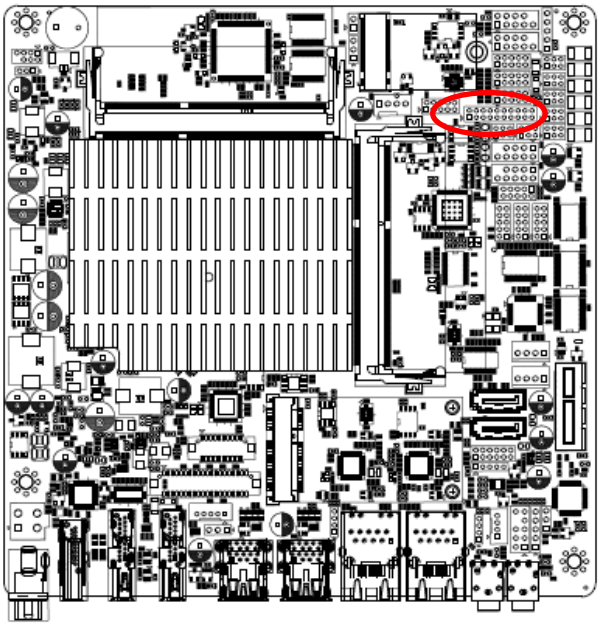
2.3.13 Serial Port 1 RS485/422 Mode connector (JRS485)

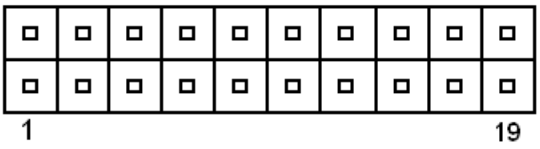




Signal	PIN	PIN	Signal
485TX-	1	2	422RX-
485TX+	3	4	422RX+
GND	5	6	GND

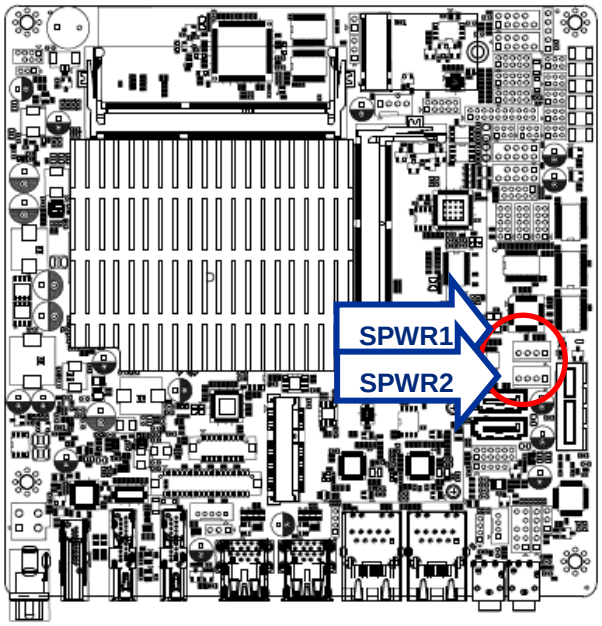
2.3.14 General purpose I/O connector (DIO1)

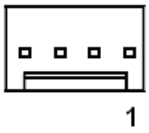




Signal	PIN	PIN	Signal
DI0	1	2	DO0
DI1	3	4	DO1
DI2	5	6	DO2
DI3	7	8	DO3
DI4	9	10	DO4
DI5	11	12	DO5
DI6	13	14	DO6
DI7	15	16	DO7
SMB_CLK	17	18	SMB_DATA
GND	19	20	+5V

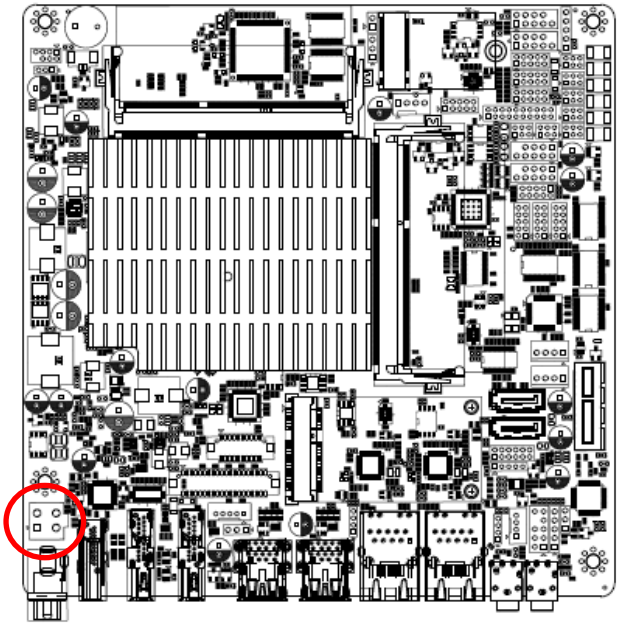
2.3.15 SATA Power connector 1/2 (SPWR1/2)

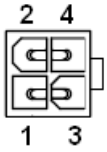




PIN	Signal
1	+5V
2	GND
3	GND
4	+12 V

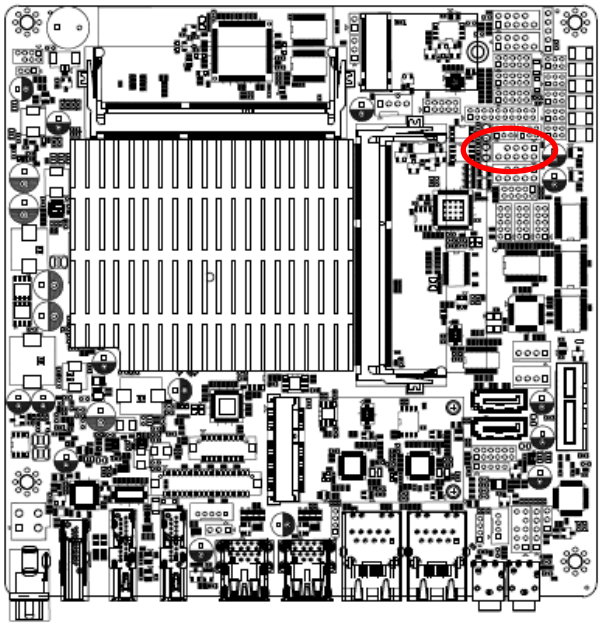
2.3.16 Power connector (PWR1)

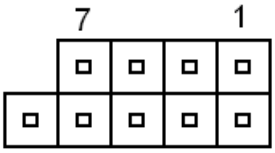




Signal	PIN	PIN	Signal
GND	2	4	+V12-24_DCIN
GND	1	3	+V12-24_DCIN

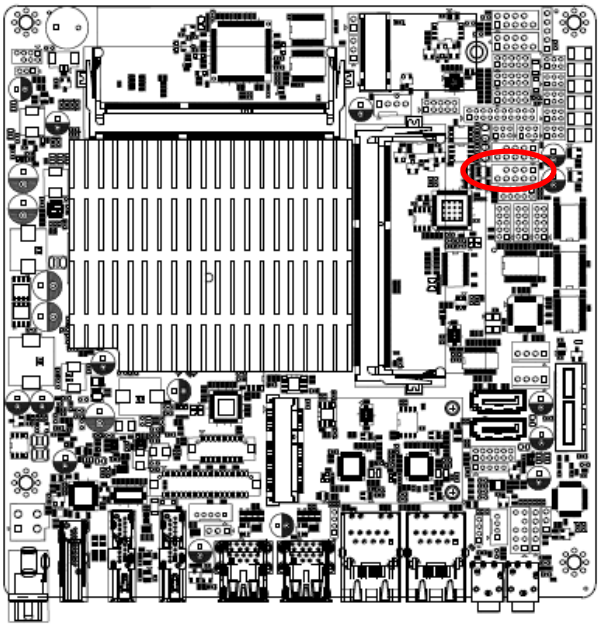
2.3.17 USB2.0 connector (USB3)

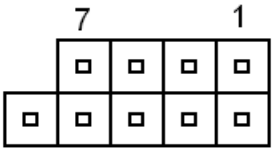




Signal	PIN	PIN	Signal
+V5A_USB45	1	2	+V5A_USB45
USBDN4	3	4	USBDN5
USBDP4	5	6	USBDP5
GND	7	8	GND
		10	NC

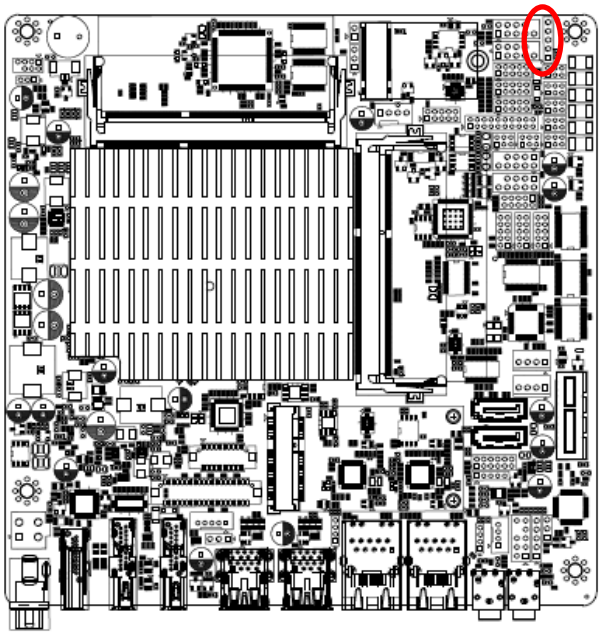
2.3.18 USB2.0 connector (USBH1)

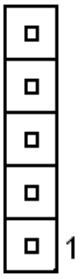




Signal	PIN	PIN	Signal
+V5A_USB_H12	1	2	+V5A_USB_H12
USB_HDN1	3	4	USB_HDN2
USB_ HDP1	5	6	USB_ HDP2
GND	7	8	GND
		10	NC

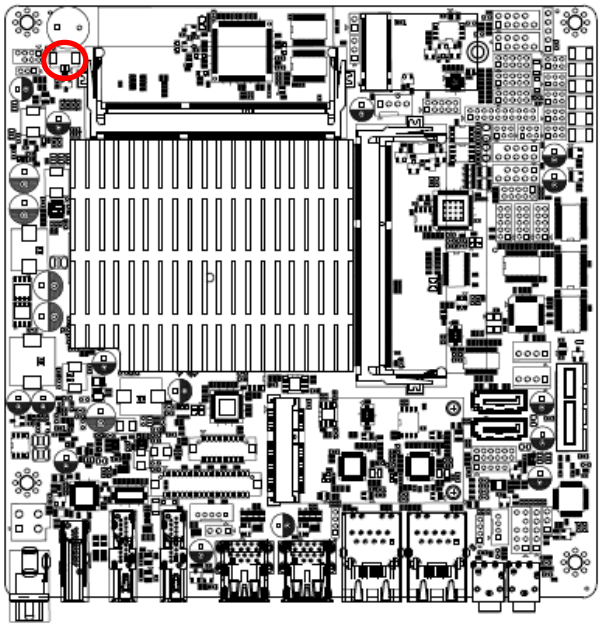
2.3.19 USB2.0 connector (USBH2)

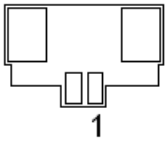




PIN	Signal
5	NC
4	GND
3	USB_ HDP4
2	USB_HDN4
1	+V5A_USB_H12

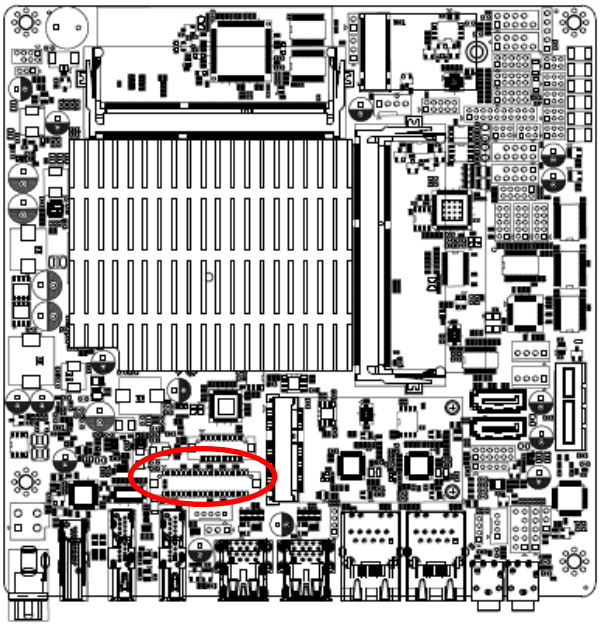
2.3.20 Battery connector (BT1)

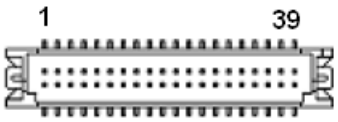




PIN	Signal
1	+ V3.3A
2	GND

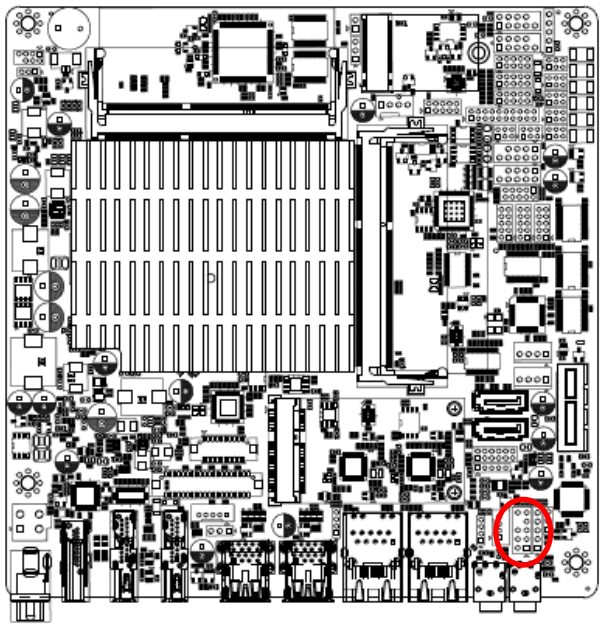
2.3.21 LVDS connector (LVDS1)

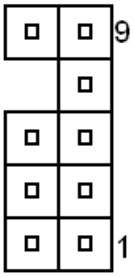




Signal	PIN	PIN	Signal
LVDS_VDD33V	1	2	LVDS_VDD5V
GND	3	4	GND
NC	5	6	NC
GND	7	8	GND
LVDS_DATAP1	9	10	LVDS_DATAP0
LVDS_DATAN1	11	12	LVDS_DATAN0
GND	13	14	GND
LVDS_DATAP3	15	16	LVDS_DATAP2
LVDS_DATAN3	17	18	LVDS_DATAN2
GND	19	20	GND
LVDS_DATAP5	21	22	LVDS_DATAP4
LVDS_DATAN5	23	24	LVDS_DATAN4
GND	25	26	GND
LVDS_DATAP7	27	28	LVDS_DATAP6
LVDS_DATAN7	29	30	LVDS_DATAN6
GND	31	32	GND
LVDS_CLK2P	33	34	LVDS_CLK1P
LVDS_ CLK2N	35	36	LVDS_ CLK1N
GND	37	38	GND
LVDS_VDD12V	39	40	LVDS_VDD12V

2.3.22 Front Audio connector (FAUD1)



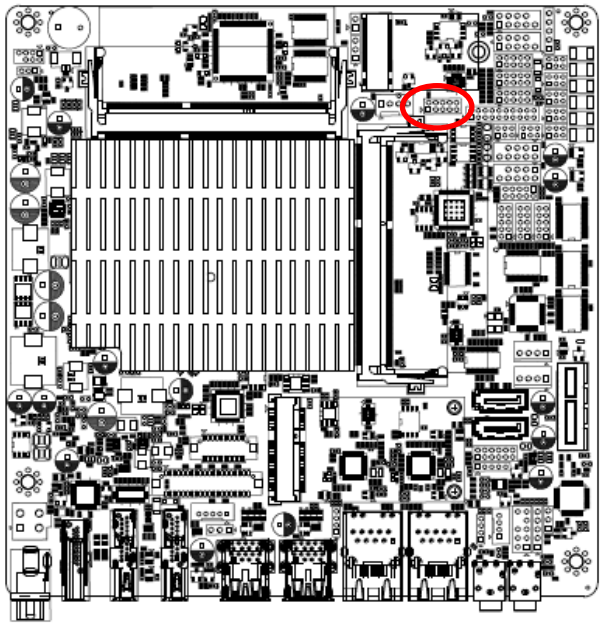


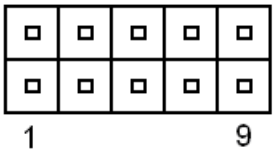
Signal	PIN	PIN	Signal
LINE2_JD	10	9	LINE2_L
		7	SENSE_B_JD3
MIC2_JD	6	5	LINE2_R
AUD_FRONT_DET	4	3	MIC2_R
GND	2	1	MIC2_L

3.3.22.1 Signal Description –Front Audio connector (FAUD1)

Signal	Signal Description
LINE2_JD	AUDIO IN (LINE_RIN/LIN)sense pin
MIC2_JD	MIC IN (MIC_RIN/LIN) sense pin

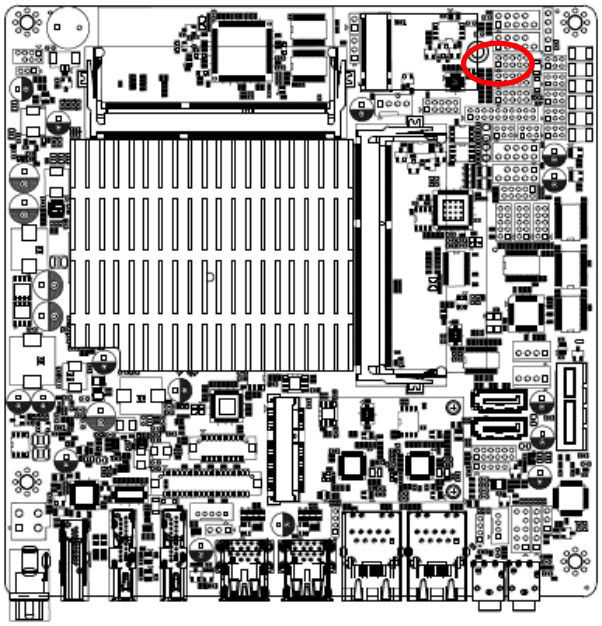
2.3.23 LPC connector (JLPC1)

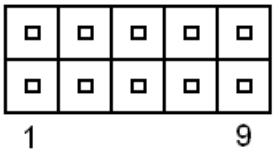




Signal	PIN	PIN	Signal
LPC_AD0	1	2	+3.3V
LPC_AD1	3	4	PLT_RST#
LPC_AD2	5	6	LPC_FRAME#
LPC_AD3	7	8	LPC_CLK_DEB
LPC_SERIRQ	9	10	GND

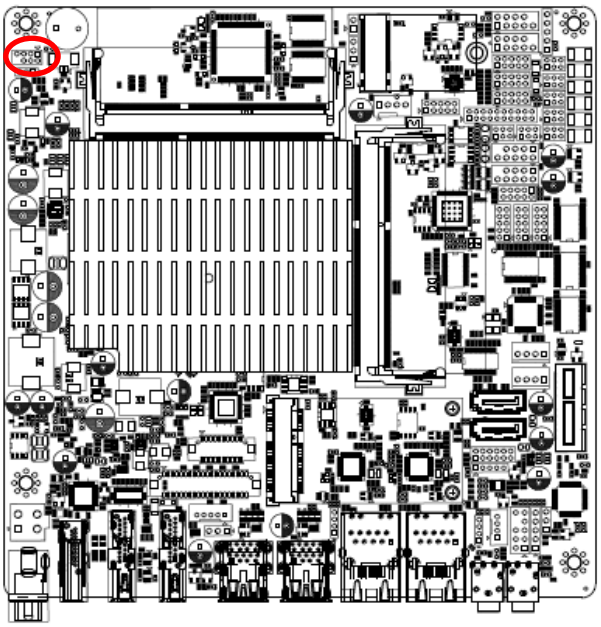
2.3.24 EC_Program (EC1)

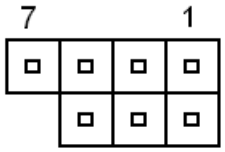




Signal	PIN	PIN	Signal
+3.3A_ECSPI	1	2	GND
EC_FSCE#	3	4	EC_FSCK
EC_FSMIOSO	5	6	EC_FSMOSI
EC_HOLD#	7	8	NC
EC_SMBCLK	9	10	EC_SMBDATA

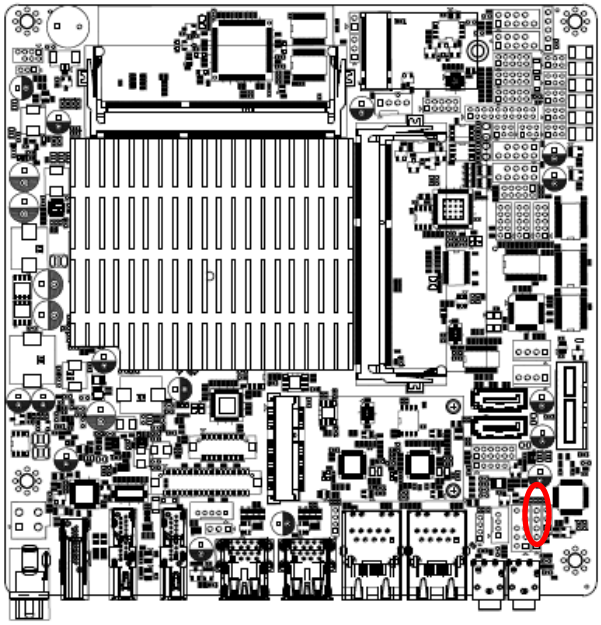
2.3.25 SPI connector (SPI1)

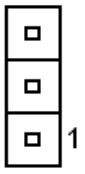




Signal	PIN	PIN	Signal
+V1.8A_SPI	1	2	GND
SPI_CS0#	3	4	SPI_CLK
SPI_MISO	5	6	SPI_MOSI
SPI_HOLD#	7		

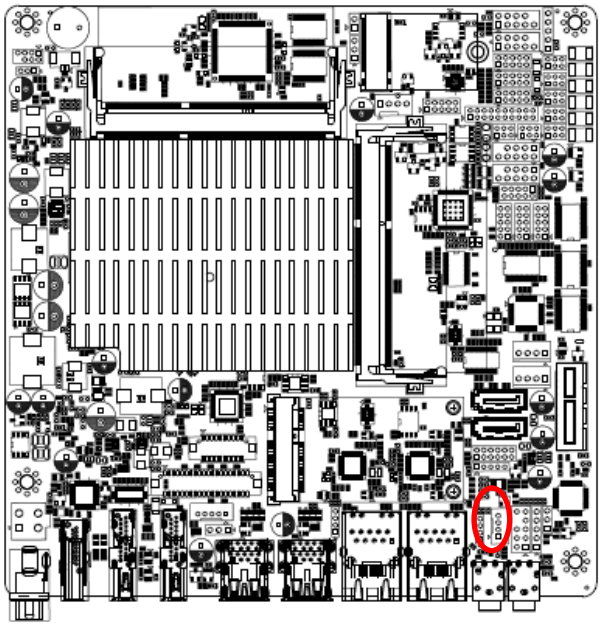
2.3.26 Sony/Philips Digital Interface (SPDIF1)





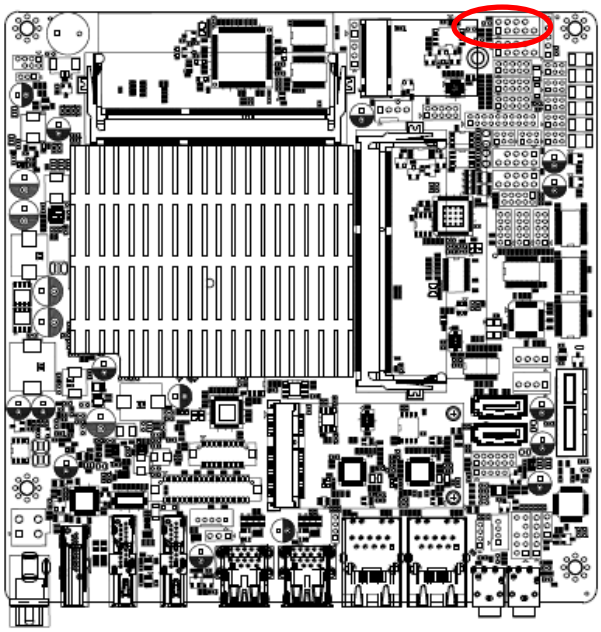
PIN	Signal
3	GND
2	SPDIF_OUT
1	+5V

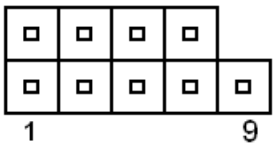
2.3.27 Speaker connector (SPK1)



PIN	Signal
4	RSPK-
3	RSPK+
2	LSPK-
1	LSPK+

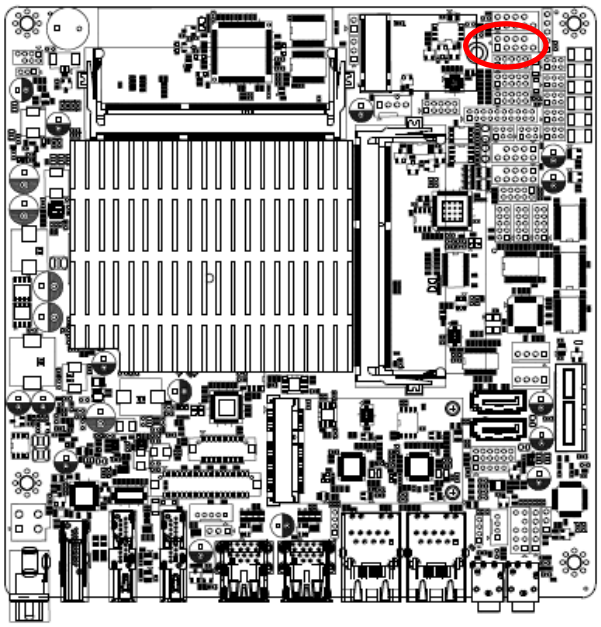
2.3.28 Front Panel connector 1 (FPT1)

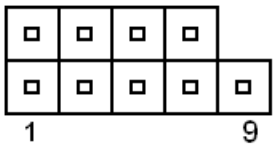




Signal	PIN	PIN	Signal
+HD_LED	1	2	+PWR_LED
-HD_LED	3	4	-PWE_LED
+Reset	5	6	+PWR_BNT
-Reset	7	8	-PWR_BNT
NC	9		

2.3.29 Front Panel connector 2 (FPT2)



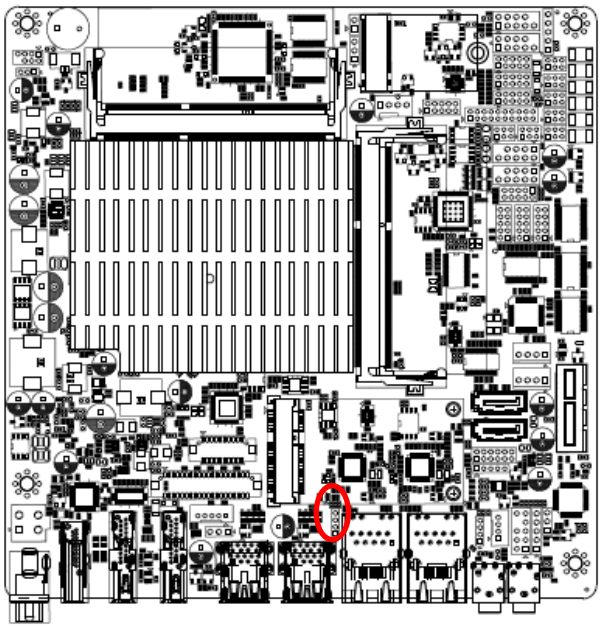


Signal	PIN	PIN	Signal
Speaker+	1	2	BLK_VR(10K)
NC	3	4	BLK_UP
NC	5	6	BLK_DN
Speaker-	7	8	GND
NC	9	10	

Note:

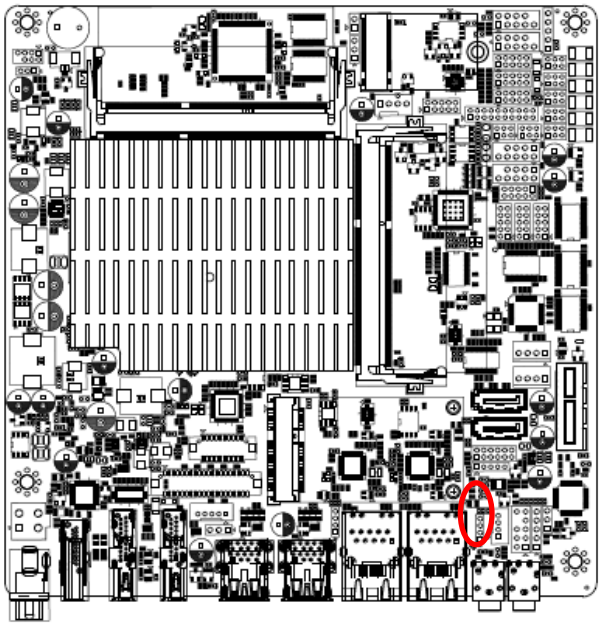
1. Pin2 with GND: Control LVDS Backlight by use Variable Resistor.
2. BLK_UP with GND/BLK_DN with GND: Step control LVDS Backlight by use button and BIOS must to be set "BR Button". (Please refer to page.61)

2.3.30 LED indicator connector 1 (LED1)



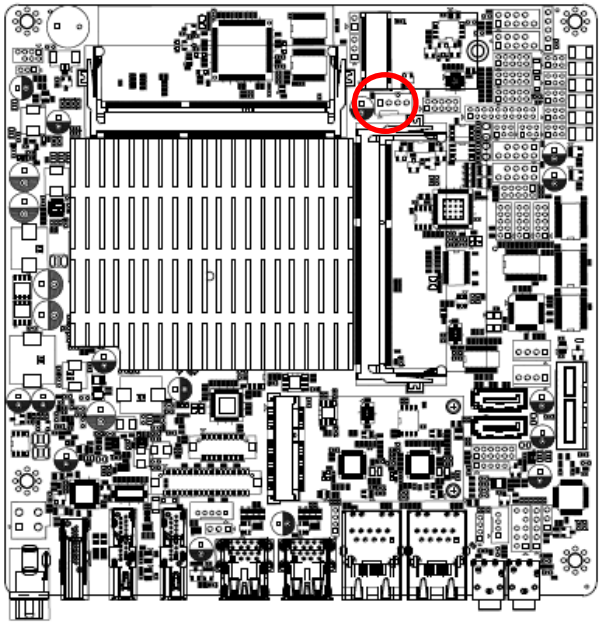
PIN	Signal
4	LED_LAN1_LINK_2500#
3	LED_LAN1_LINK1000#
2	LED_LAN1_ACT_N
1	LED_LAN1_ACT_P

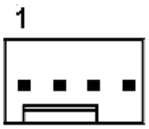
2.3.31 LED indicator connector 2 (LED2)



PIN	Signal
4	LED_LAN2_LINK_2500#
3	LED_LAN2_LINK1000#
2	LED_LAN2_ACT_N
1	LED_LAN2_ACT_P

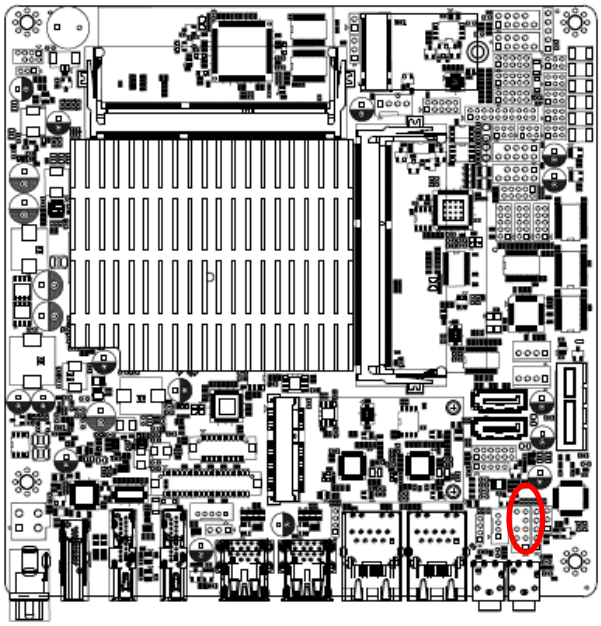
2.3.32 CPU fan connector (FAN1)

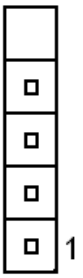




PIN	Signal
1	GND
2	+12V
3	CPU_FANIN
4	CPU_FANOUT

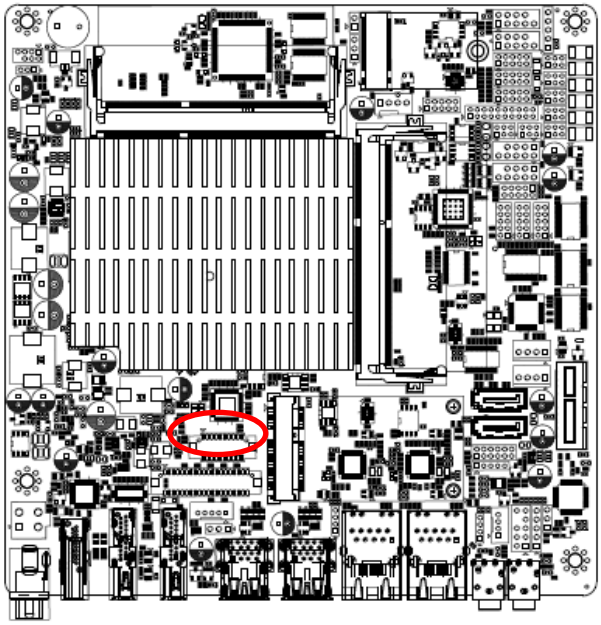
2.3.33 Digital Microphone connector (DMIC1)

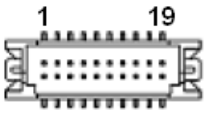




PIN	Signal
5	
4	DMIC_CLK
3	GND
2	DMIC_DAT
1	+V3.3A

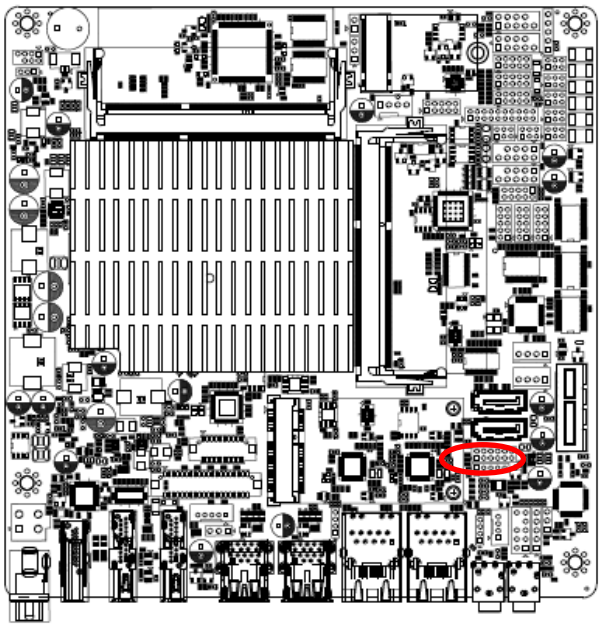
2.3.34 eDP connector (EDP1)

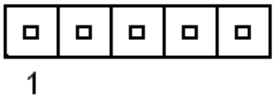




Signal	PIN	PIN	Signal
GND	1	2	GND
EDP_TXN0	3	4	EDP_TXN3
EDP_TXP0	5	6	EDP_TXP3
GND	7	8	NC
EDP_TXN1	9	10	GND
EDP_TXP1	11	12	EDP_AUXN
GND	13	14	EDP_AUXP
EDP_TXN2	15	16	GND
EDP_TXP2	17	18	EDP_C_HPD
EDP_VCC_PAL	19	20	EDP_VCC_PAL

2.3.35 I2C connector (I2C1)





PIN	Signal
1	+3.3V
2	I2C5_INT#
3	I2C5_LS_CLK
4	I2C5_LS_DATA
5	GND

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

Press <Del> 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 to previous item
↓	Move to next item
←	Move to the item in the left hand
→	Move to the item in the right hand
Esc key	Main Menu -- Quit and not save changes into NVRAM Status Page Setup Menu and Option Page Setup Menu -- Exit current page and return to Main Menu
+ key	Increase the numeric value or make changes
- key	Decrease the numeric value or make changes
F1 key	General help, only for Status Page Setup Menu and Option Page Setup Menu
F2 key	Previous Values.
F3 key	Optimized defaults
F4 key	Save & Exit Setup

- **Navigating Through The Menu Bar**

  Use the left and right arrow keys to choose the menu you want to be in.

Note: Some of the navigation keys differ from one screen to another.

- **To Display a Sub Menu**

  Use the arrow keys to move the cursor to the sub menu you want. Then press <Enter>. A "➢" pointer marks all sub menus.

3.4 Getting Help

Press F1 to pop up a small help window that describes the appropriate keys to use and the possible selections for the highlighted item. To exit the Help Window press <Esc> or the F1 key again.

3.5 In Case of Problems

If, after making and saving system changes with Setup, you discover that your computer no longer is able to boot, the AMI BIOS supports an override to the NVRAM settings which resets your system to its defaults.

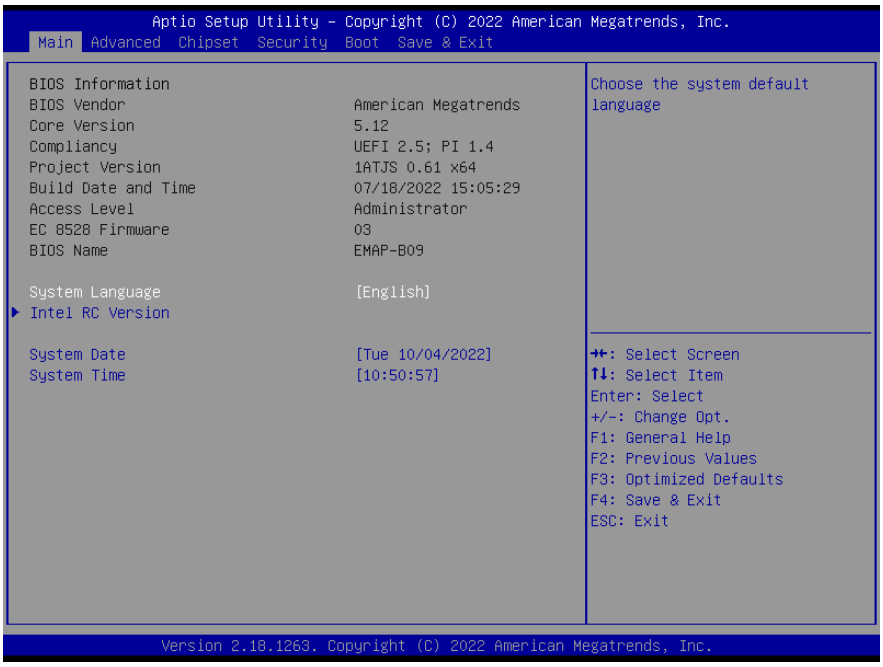
The best advice is to only alter settings which you thoroughly understand. To this end, we strongly recommend that you avoid making any changes to the chipset defaults. These defaults have been carefully chosen by both BIOS Vendor and your systems manufacturer to provide the absolute maximum performance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

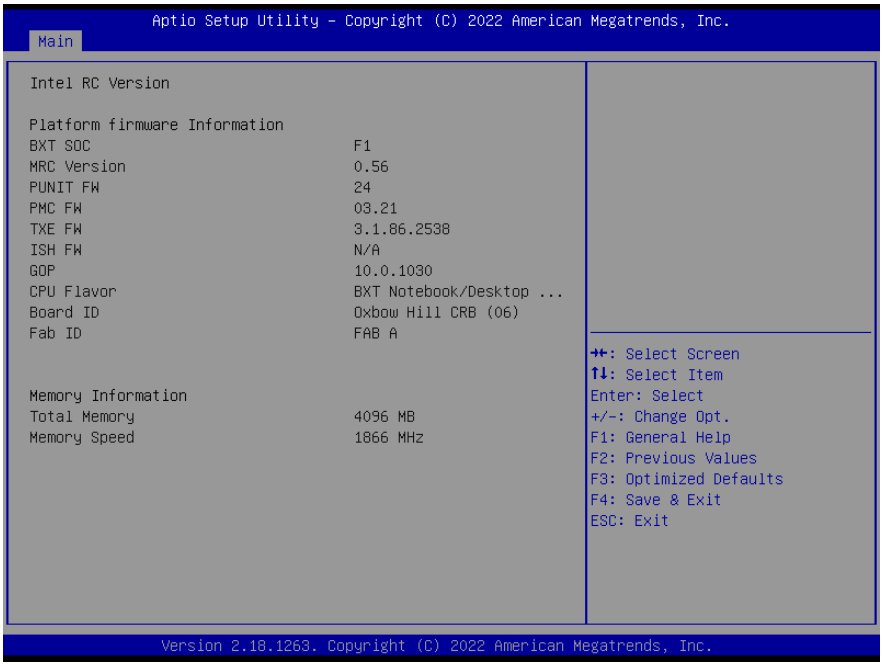
3.6 BIOS setup

Once you enter the Aptio Setup Utility, the Main Menu will appear on the screen. The Main Menu allows you to select from several setup functions and exit choices. Use the arrow keys to select among the items and press <Enter> to accept and enter the sub-menu.

3.6.1 Main Menu

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





3.6.1.1 System Language

This option allows choosing the system default language.

3.6.1.2 System Date

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

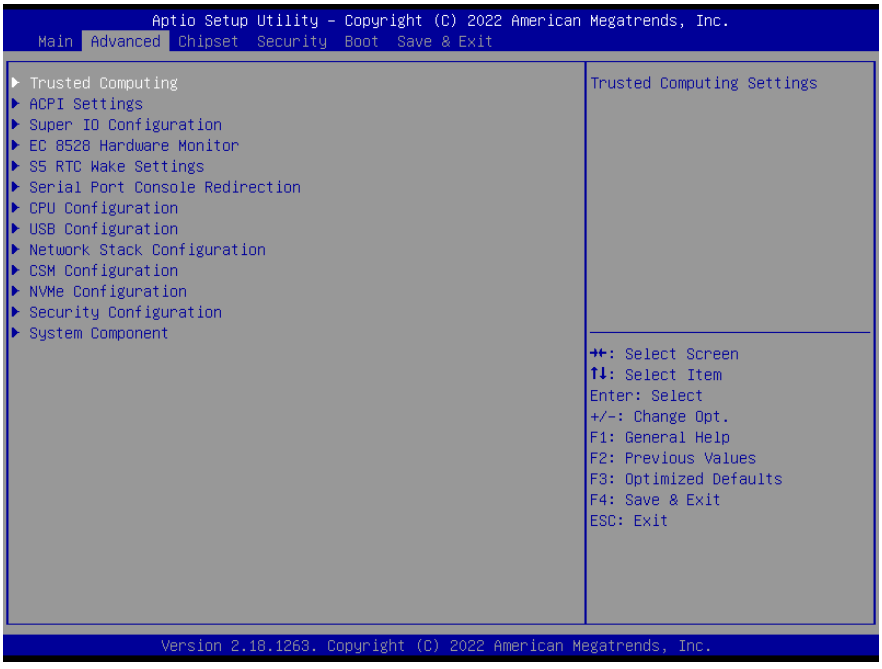
3.6.1.3 System Time

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

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

3.6.2 Advanced Menu

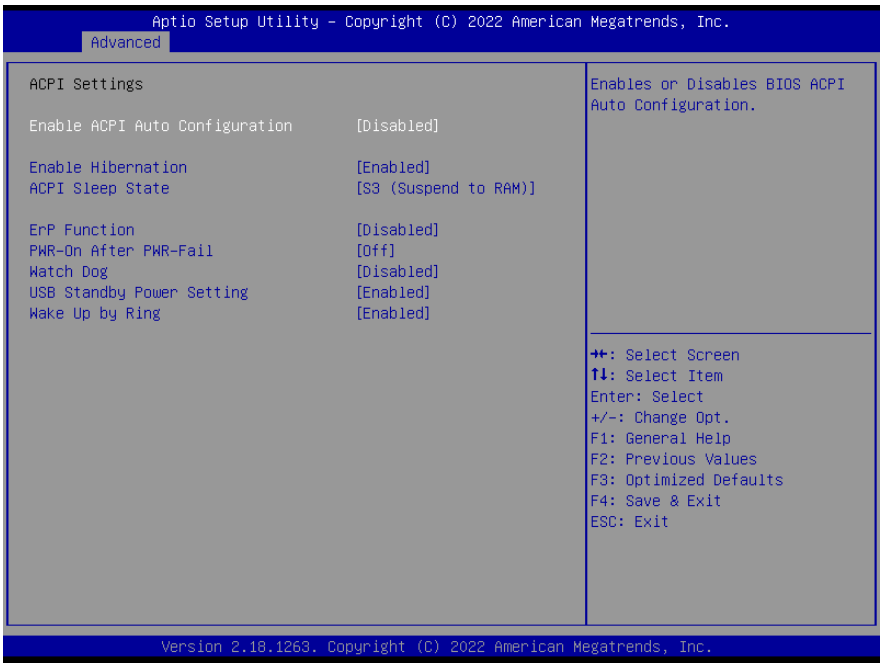
This section allows you to configure your CPU and other system devices for basic operation through the following sub-menus.



3.6.2.1 Trusted Computing

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

3.6.2.2 ACPI Settings

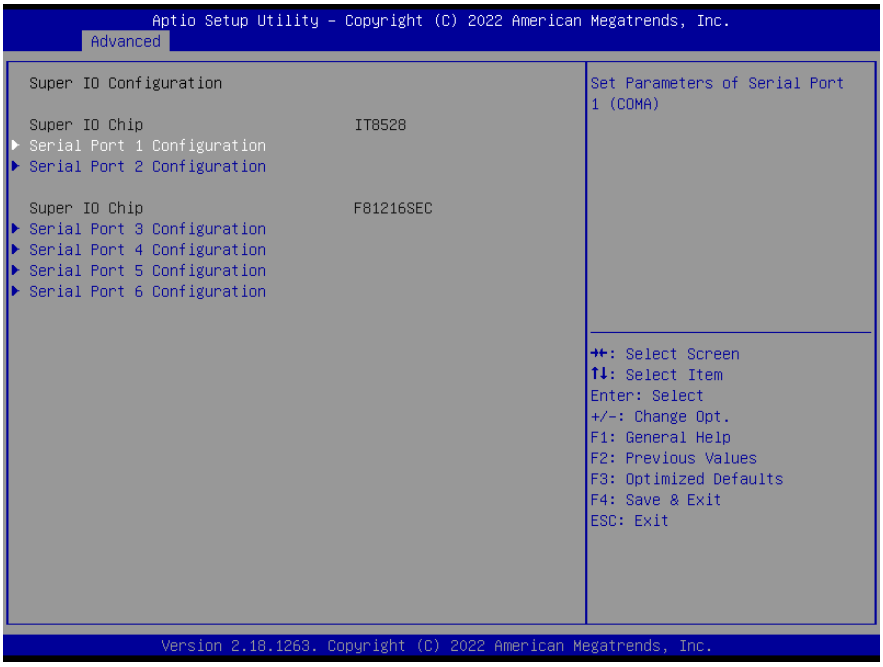


Item	Options	Description
Enable ACPI Auto Configuration	Disabled**[Default]**, Enabled	Enables or Disables BIOS ACPI Auto Configuration.

Enable Hibernation	Disabled Enabled**[Default]**,	Enables or Disables System ability to Hibernate (OS/S4 Sleep State). This option may 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 SUSPEND button is pressed.
ErP Function	Disabled**[Default]**, Enabled	ErP Function (Deep S5).
PWR-On After PWR-Fail	Off**[Default]** On Last state	AC loss resume.
Watch Dog	Disabled**[Default]**, 30 sec 40 sec 50 sec 1 min 2 min 10 min 30 min	Select WatchDog.
USB Standby Power Setting	Disabled Enabled**[Default]**,	Enabled/Disabled USB Standby Power during S3/S4/S5
Wake Up by Ring	Disabled Enabled**[Default]**,	Wake Up by Ring from S3/S4/S5.

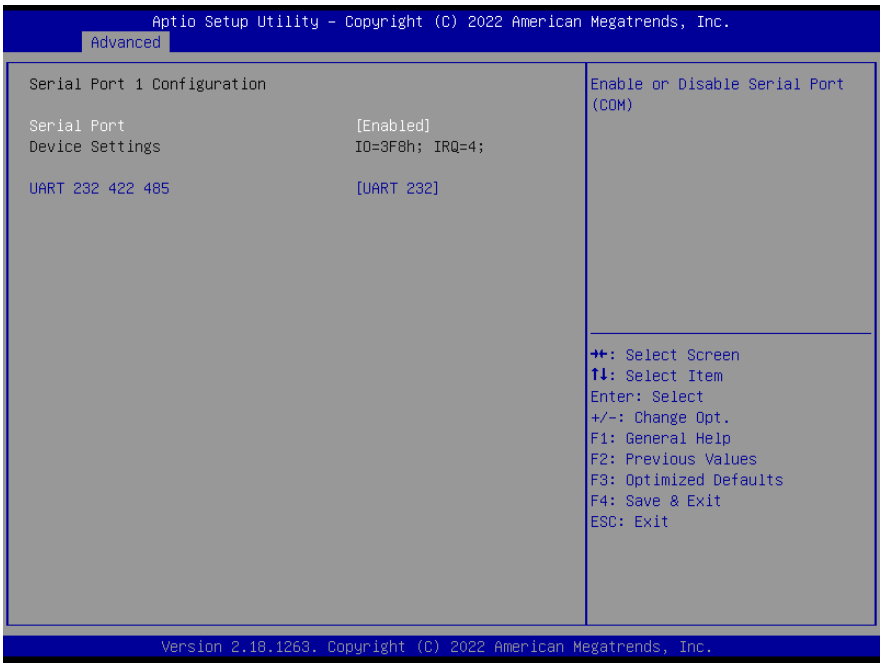
3.6.2.3 IT8528 Super IO Configuration

You can use this item to set up or change the IT8528 Super IO configuration for serial ports. Please refer to 3.6.2.3.1~ 3.6.2.3.6 for more information.



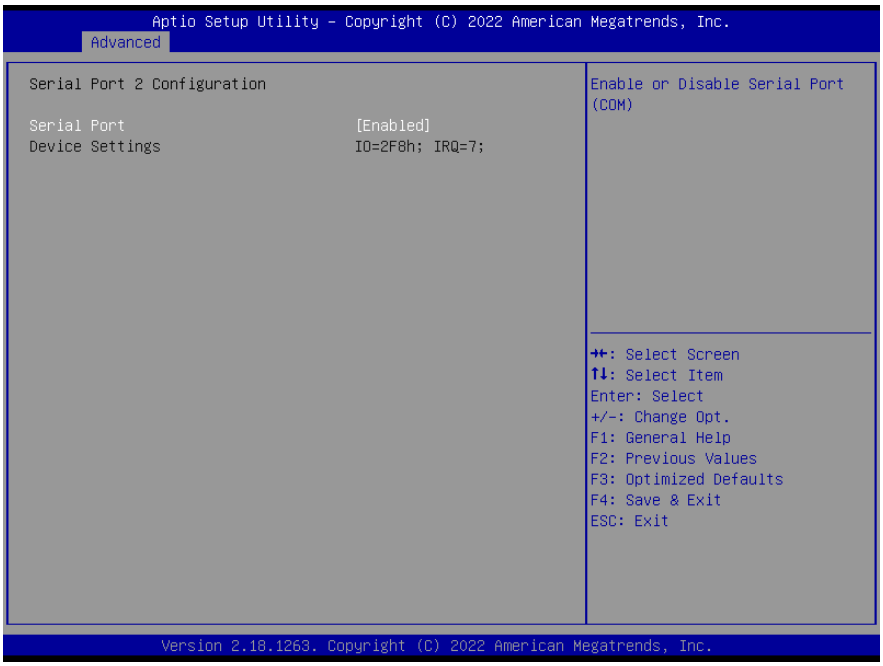
Item	Description
Serial Port 1 Configuration	Set Parameters of Serial Port 1 (COMA).
Serial Port 2 Configuration	Set Parameters of Serial Port 2 (COMB).
Serial Port 3 Configuration	Set Parameters of Serial Port 3 (COMC).
Serial Port 4 Configuration	Set Parameters of Serial Port 4 (COMD).
Serial Port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

3.6.2.3.1 Serial Port 1 Configuration



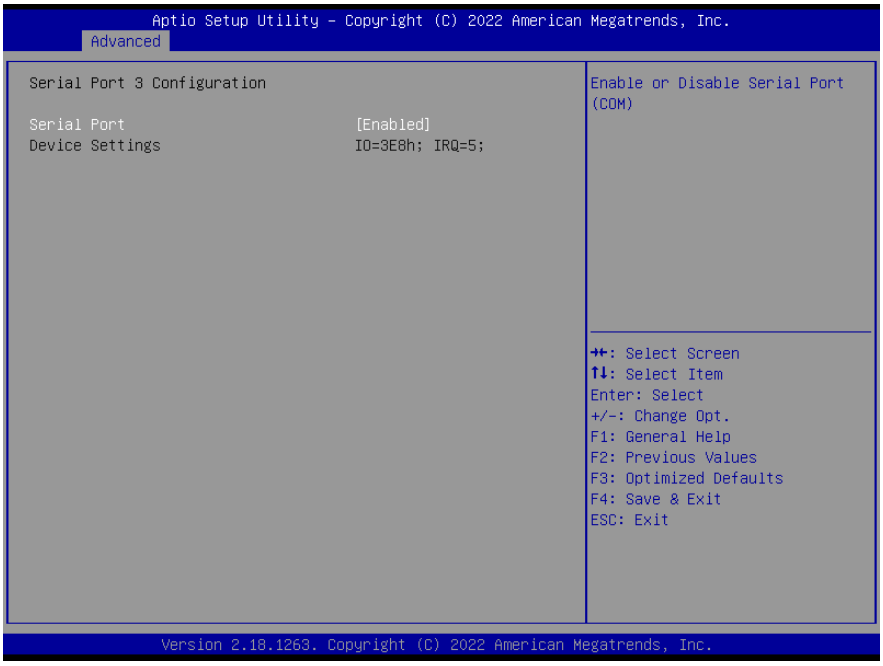
Item	Option	Description
Serial Port	Disabled Enabled**[Default]**,	Enable or Disable Serial Port (COM)
UART 232 422 485	UART 232**[Default]**, UART 422 UART 485	Change the Serial Port as RS232/422/485

3.6.2.3.2 Serial Port 2 Configuration



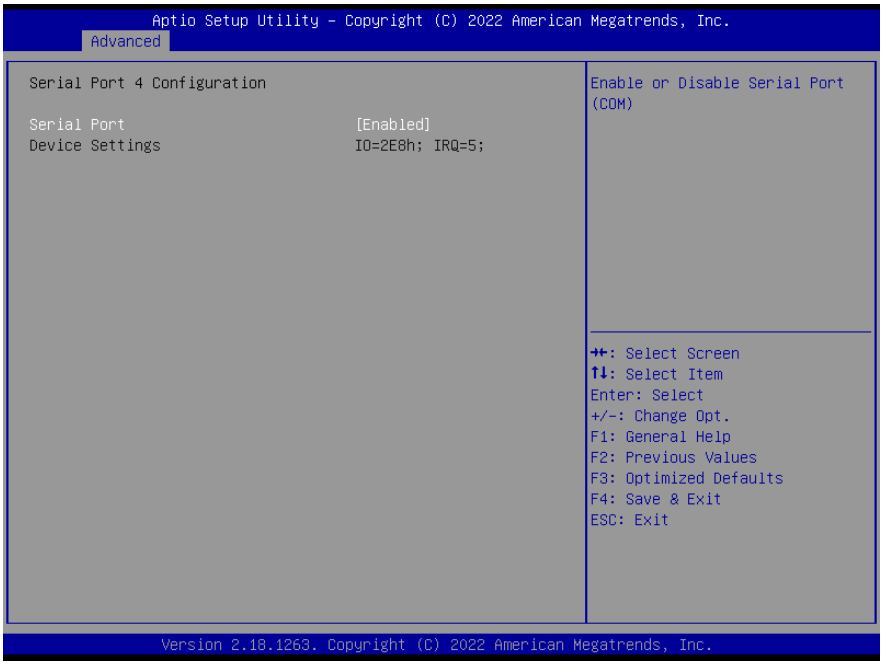
Item	Option	Description
Serial Port	Enabled**[Default]**, Disabled	Enable or Disable Serial Port (COM)

3.6.2.3.3 Serial Port 3 Configuration



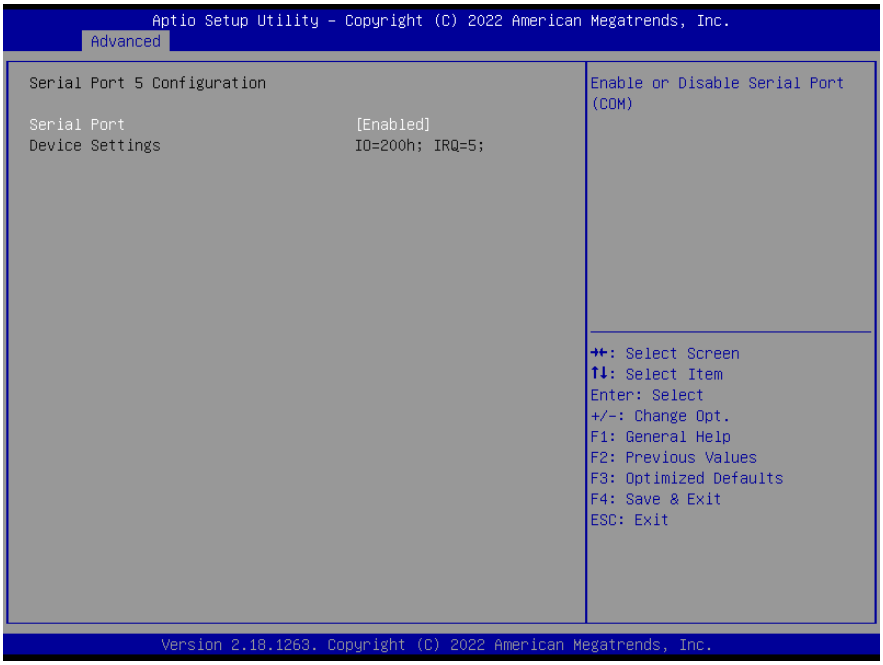
Item	Option	Description
Serial Port	Disabled Enabled**[Default]**,	Enable or Disable Serial Port (COM)

3.6.2.3.4 Serial Port 4 Configuration



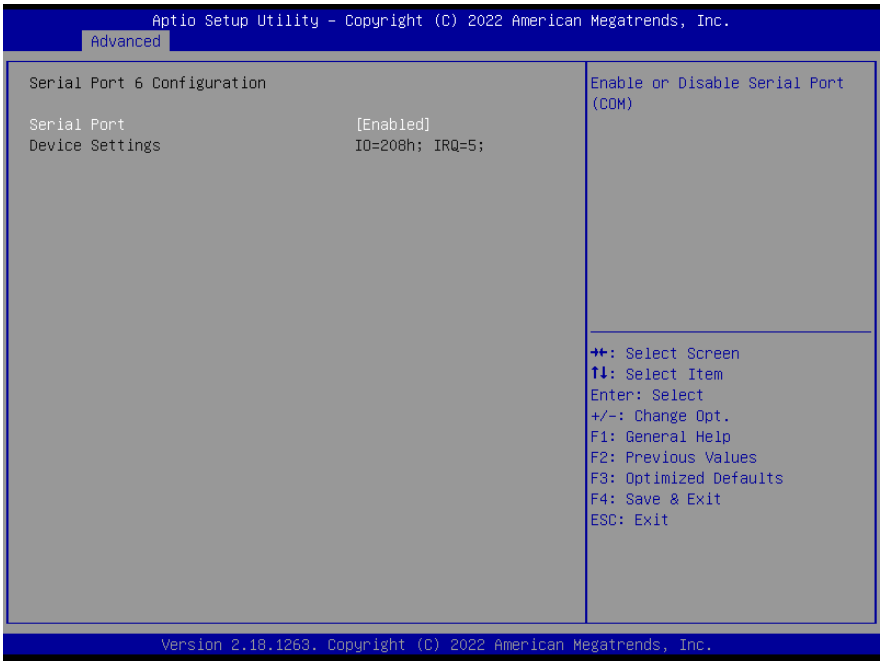
Item	Option	Description
Serial Port	Disabled Enabled**[Default]**,	Enable or Disable Serial Port (COM)

3.6.2.3.5 Serial Port 5 Configuration



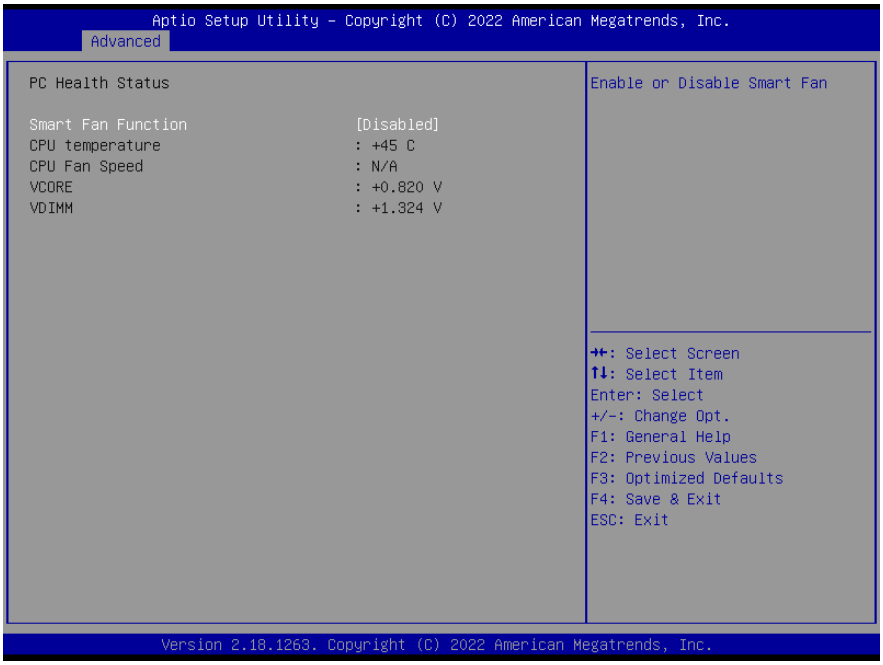
Item	Option	Description
Serial Port	Disabled Enabled**[Default]**,	Enable or Disable Serial Port (COM)

3.6.2.3.6 Serial Port 6 Configuration



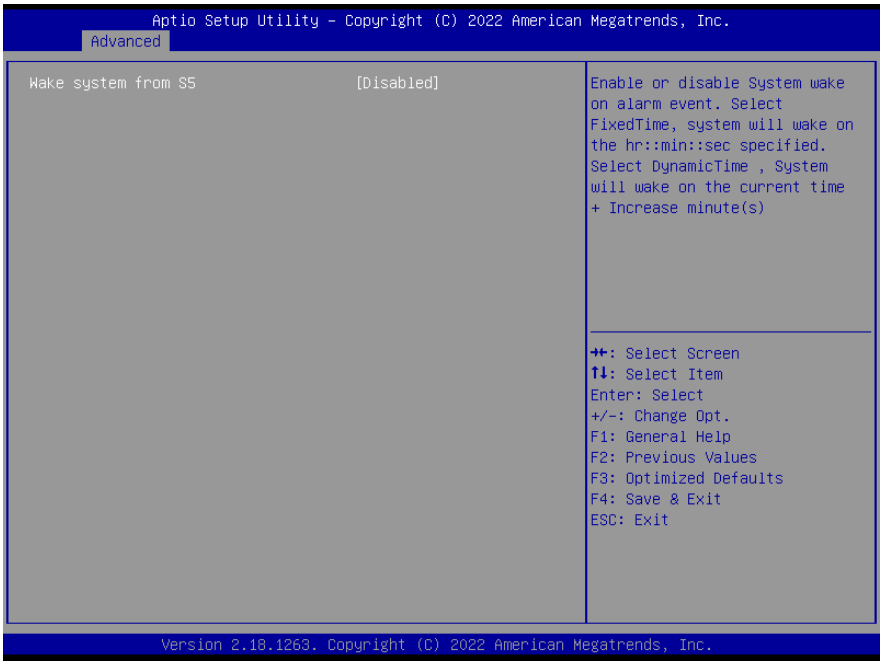
Item	Option	Description
Serial Port	Disabled Enabled**[Default]**,	Enable or Disable Serial Port (COM)

3.6.2.4 H/W Monitor



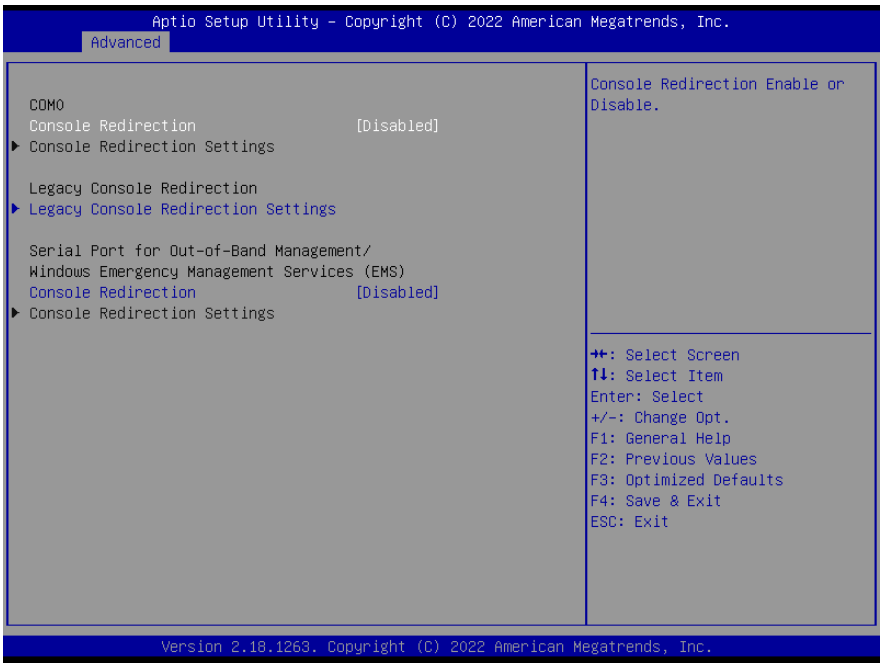
Item	Options	Description
Smart Fan Function	Disabled**[Default]**, Enabled	Enable or Disable Smart Fan

3.6.2.5 S5 RTC Wake Settings



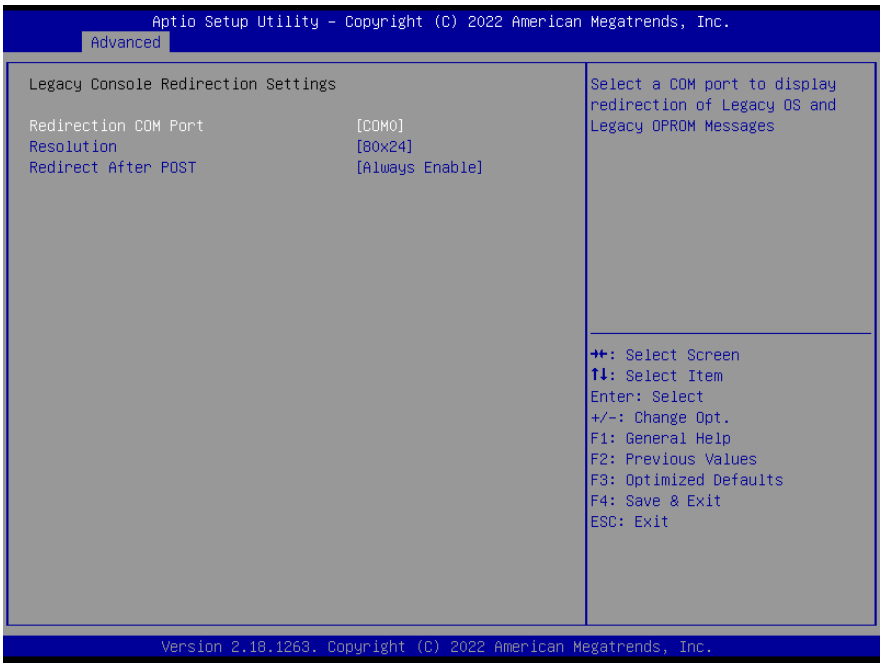
Item	Options	Description
Wake system from S5	Disabled**[Default]**, Fixed Time Dynamic Time	Enable or disable System wake on alarm event. Select FixedTime, system will wake on the hr::min::sec specified. Select Dynamic Time, System will wake on the current time + Increase minute(s)

3.6.2.6 Serial Port Console Redirection



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

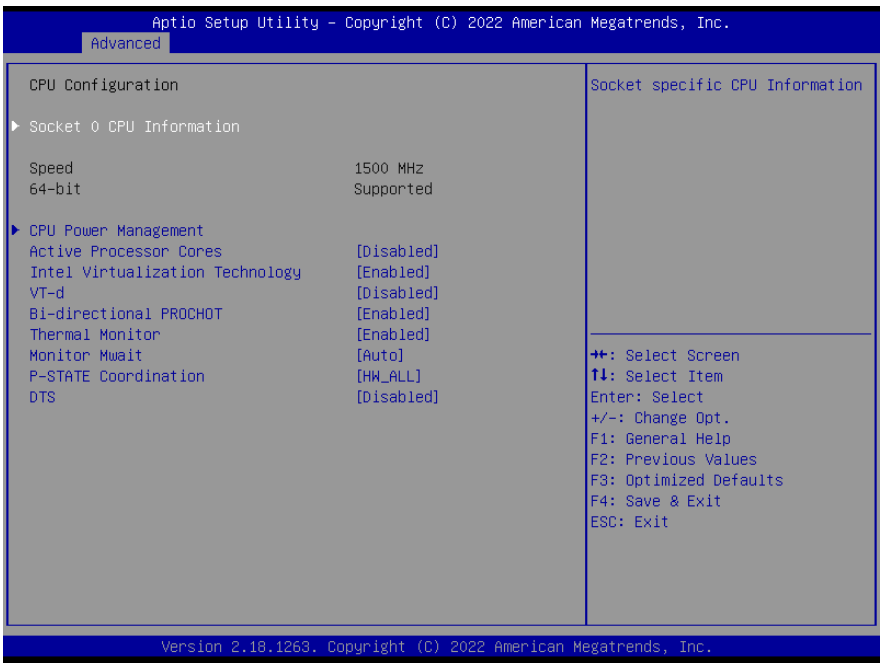
3.6.2.6.1 Legacy Console Redirection Settings



Item	Options	Description
Redirection COM Port	COM0	Select a COM port to display redirection of Legacy OS and Legacy OPROM Messages
Resolution	80X24**[Default]**, 80X25	On Legacy OS, the Number of Rows and Columns supported redirection
Redirect After POST	Always Enable**[Default]**, BootLoader	When Bootloader is selected, then Legacy Console Redirection is disabled before booting to legacy OS. When Always Enable is selected, then Legacy Console Redirection is enabled for legacy OS. Default setting for this option is set to Always Enable.

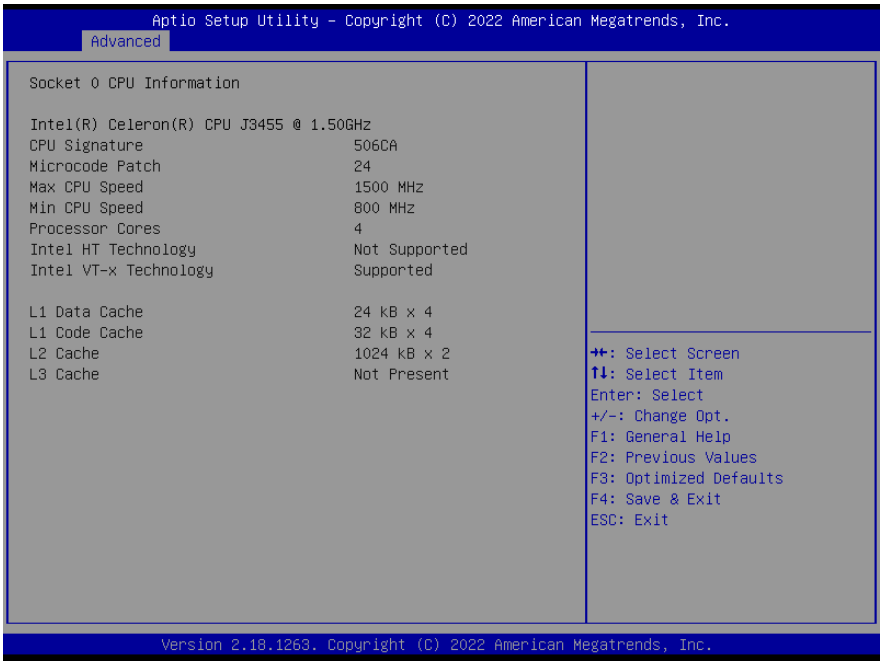
3.6.2.7 CPU Configuration

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

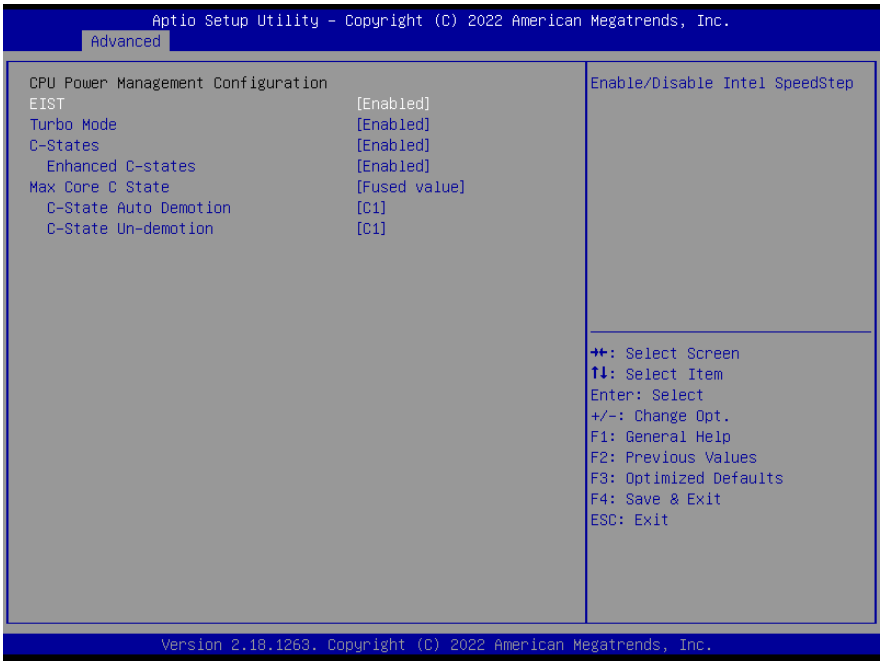


Item	Options	Description
Active Processor Cores	Disabled**[Default]**, Enabled	Number of cores to enable in each processor package.
Intel Virtualization Technology	Disabled, Enabled**[Default]**	When enabled, a VMM can utilize the additional hardware capabilities provided by Virtualization Technology
VT-d	Disabled**[Default]**, Enabled	Enable/Disable CPU VT-d
Bi-directional PROCHOT	Disabled, Enabled**[Default]**	When a processor thermal sensor trips (either core), the PROCHOT# will be driven. If bi-direction is enabled, external agents can drive PROCHOT# to throttle the processor.
Thermal Monitor	Disabled, Enabled**[Default]**	Enable/Disable Thermal Monitor
Monitor Mwait	Disabled, Enabled Auto**[Default]**	Enable/Disable Monitor Mwait.
P-STATE Coordination	HW_ALL**[Default]** SW_ALL SW_ANY	Change P-STATE Coordination type
DTS	Disabled**[Default]**, Enabled	Enable/Disable Digital Thermal Sensor.

3.6.2.7.1 Socket 0 CPU Information



3.6.2.7.2 CPU Power Management Configuration

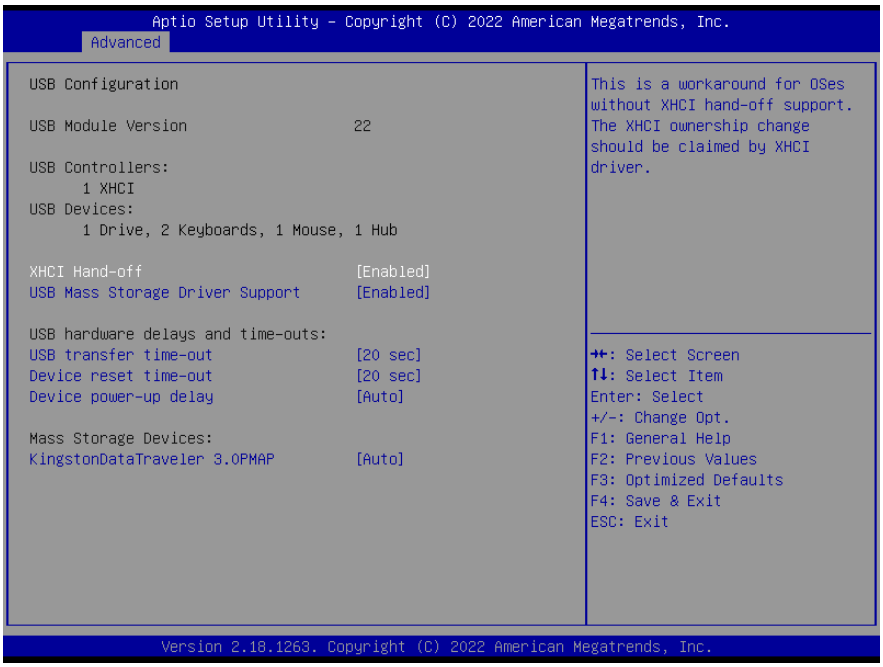


Item	Options	Description
EIST	Disabled, Enabled**[Default]**	Enable/Disable Intel SpeedStep
Turbo Mode	Disabled, Enabled**[Default]**	Turbo Mode.
C-States	Disabled, Enabled**[Default]**	Enable/Disable C State

Enhanced C-states	Disabled, Enabled**[Default]**	Enable/Disable C1E. When enabled, CPU will switch to minimum speed when all cores enter C-State.
Max Core C State	Fused value**[Default]** Core C10 Core C9 Core C8 Core C7 Core C6 Core C1 Unlimited	This option controls the Max Core C State that cores will support.
C-State Auto Demotion	Disabled C1**[Default]**	Configure C-State Auto Demotion
C-State Un-demotion	Disabled C1**[Default]**	Configure C-State Un-demotion

3.6.2.8 USB Configuration

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



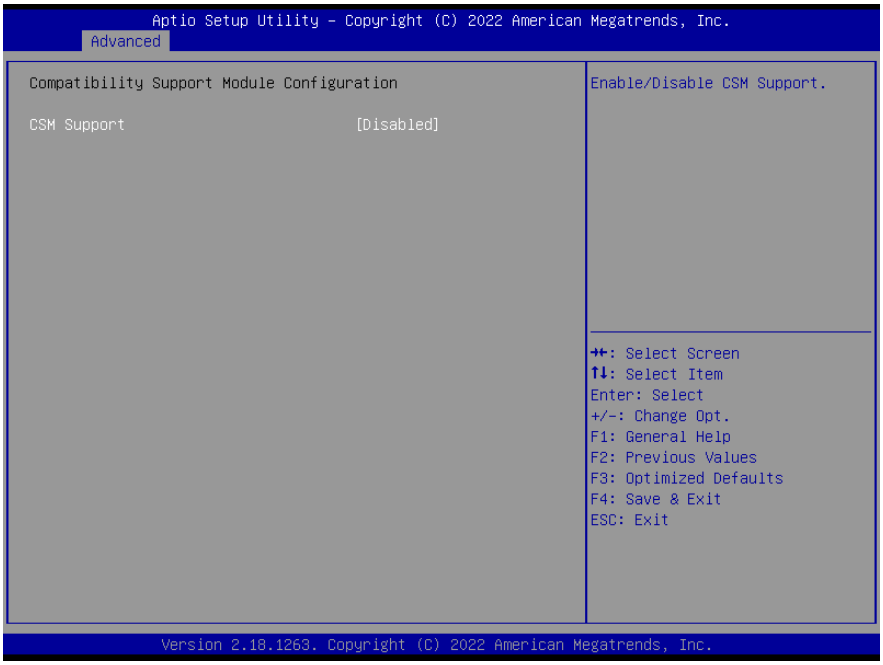
Item	Options	Description
XHCI Hand-off	Enabled**[Default]** Disabled	This is a workaround for OSes without XHCI hand-off support. The XHCI ownership change should be claimed by XHCI driver.
USB Mass Storage Driver Support	Disabled Enabled**[Default]**	Enable/Disable USB Mass Storage Driver Support.
USB transfer time-out	1 sec 5 sec 10 sec	The time-out value for Control, Bulk, and Interrupt transfers.

	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.
KingstonDataTraveler 3.0PMAP	Auto**[Default]** Floppy Forced FDD Hard Disk CD-ROM	Mass storage device emulation type. 'AUTO' enumerates devices according to their media format. Optical drives are emulated as 'CDROM', drives with no media will be emulated according to a drive type.

3.6.2.9 Network Stack Configuration

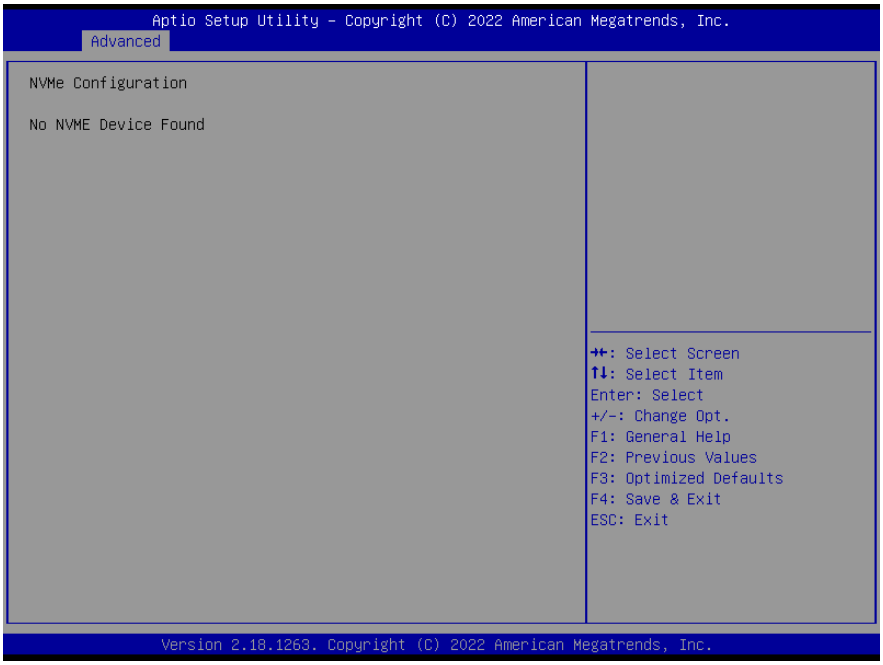
Item	Options	Description
Network Stack	Disabled**[Default]** Enabled	Enable/Disable UEFI Network Stack

3.6.2.10 CSM Configuration

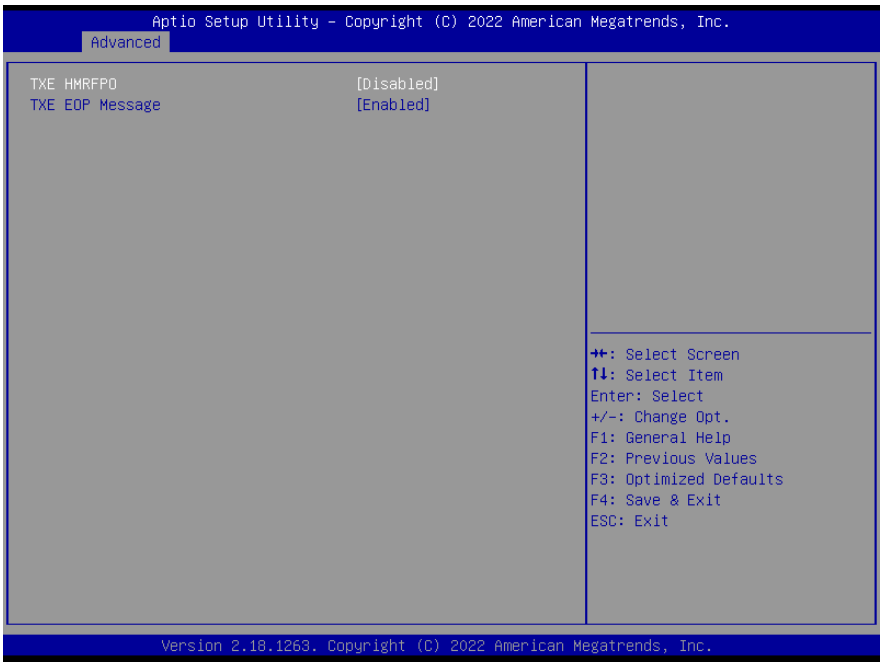


Item	Options	Description
CSM Support	Disabled**[Default]**, Enabled	Enable/Disable CSM Support.

3.6.2.11 NVMe Configuration



3.6.2.12 Security Configuration

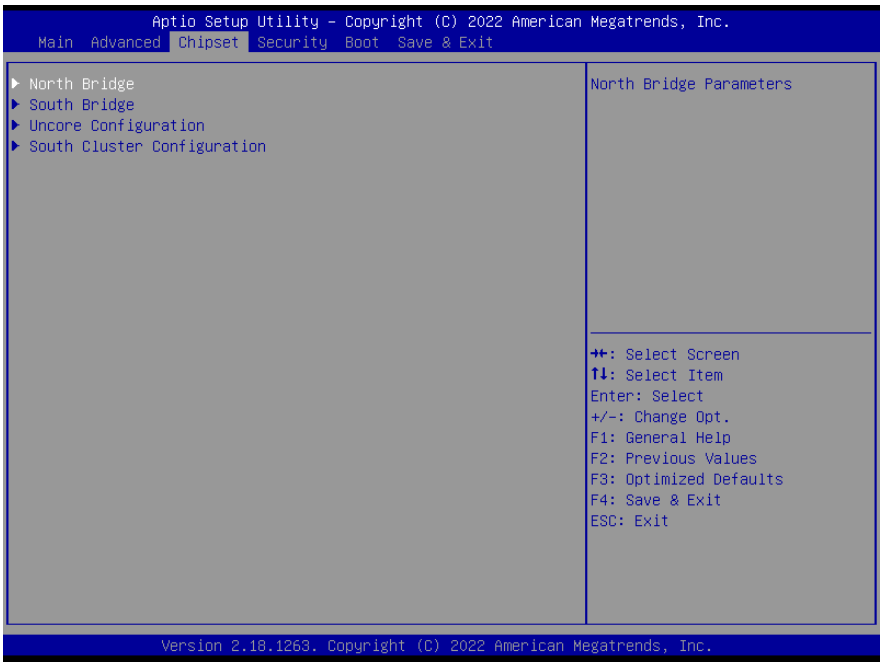


Item	Options	Description
TXE HMRFPO	Enabled, Disabled**[Default]**	TXE HMRFPO
TXE EOP Message	Enabled**[Default]**, Disabled	Send EOP Message Before Enter OS

3.6.2.13 System Component

Item	Options	Description
OS Reset Select	Warm Reset**[Default]**, Cold Reset	Select the reset type in FACP table

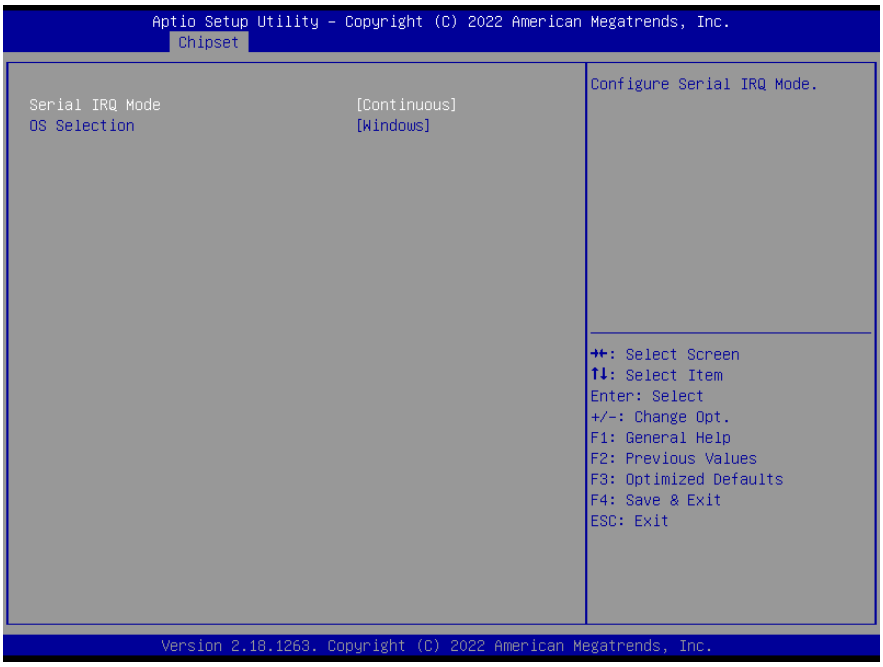
3.6.3 Chipset



3.6.3.1 North Bridge

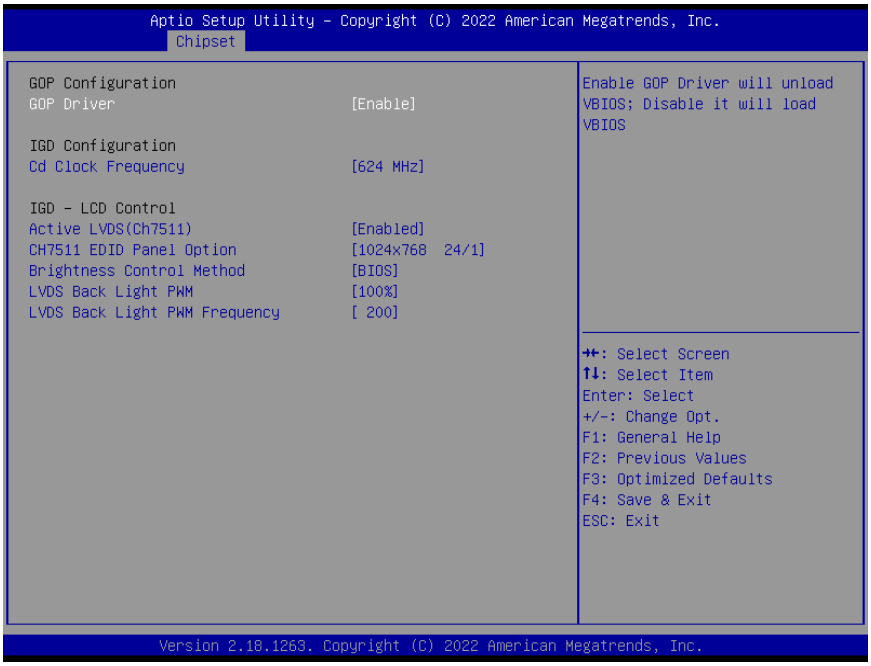
Item	Option	Description
Max TOLUD	2 GB**[Default]** 2.25 GB 2.5 GB 2.75 GB	Maximum Value of TOLUD.
Above 4GB MMIO BIOS assignment	Enabled, Disabled**[Default]**	Enable/Disable above 4GB MemoryMappedIO BIOS assignment This is disabled automatically when Aperture Size is set to 2048MB.

3.6.3.2 South Bridge



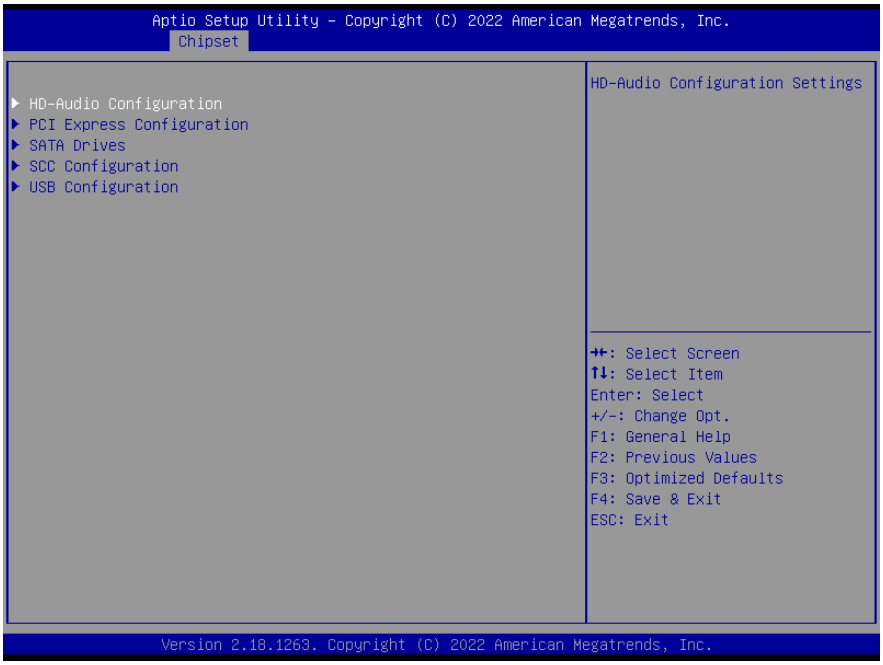
Item	Option	Description
Serial IRQ Mode	Quiet Continuous**[Default]**	Configure Serial IRQ Mode.
OS Selection	Windows**[Default]** Android Intel Linux	Select the target OS.

3.6.3.3 Uncore Configuration

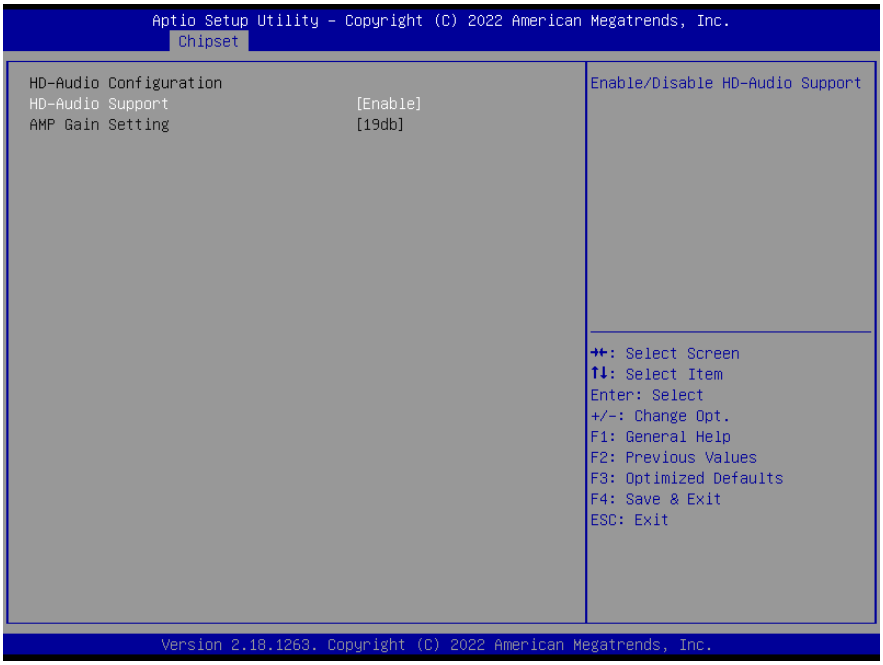


Item	Option	Description
GOP Driver	Enable**[Default]** Disable	Enable GOP Driver will unload VBIOS; Disable it will load VBIOS
Cd Clock Frequency	144 MHz 288 MHz 384 MHz 576 MHz 624 MHz**[Default]**	Select the highest Cd Clock frequency supported by the platform
Active LVDS (Ch7511)	Disabled Enabled**[Default]**	Active Internal LVDS(eDP->Ch7511-to-LVDS)
CH7511 EDID Panel Option	1024x768 24/1**[Default]** 800x600 18/1 1024x768 18/1 1366x768 18/1 1024x600 18/1 1280x800 18/1 1920x1200 24/2 1920x1080 18/2 1280x1024 24/2 1440x900 18/2 1600x1200 24/2 1366x768 24/1 1920x1080 24/2 1680x1050 24/2	Port1-EDP to LVDS(Chrotel 7511) Panel EDID Option
Brightness Control Method	BIOS**[Default]** BR Button VR OS Driver	LVDS Brightness Control Method. 1.BIOS 2.OS Driver
LVDS Back Light PWM	00% 25% 50% 75% 100%**[Default]**	Select LVDS back light PWM duty.
LVDS Back Light PWM Frequency	200**[Default]** 300 400 500 700 1k 2k 3k 5k 10k 20k	Select LVDS back light PWM Frequency.

3.6.3.4 South Cluster Configuration

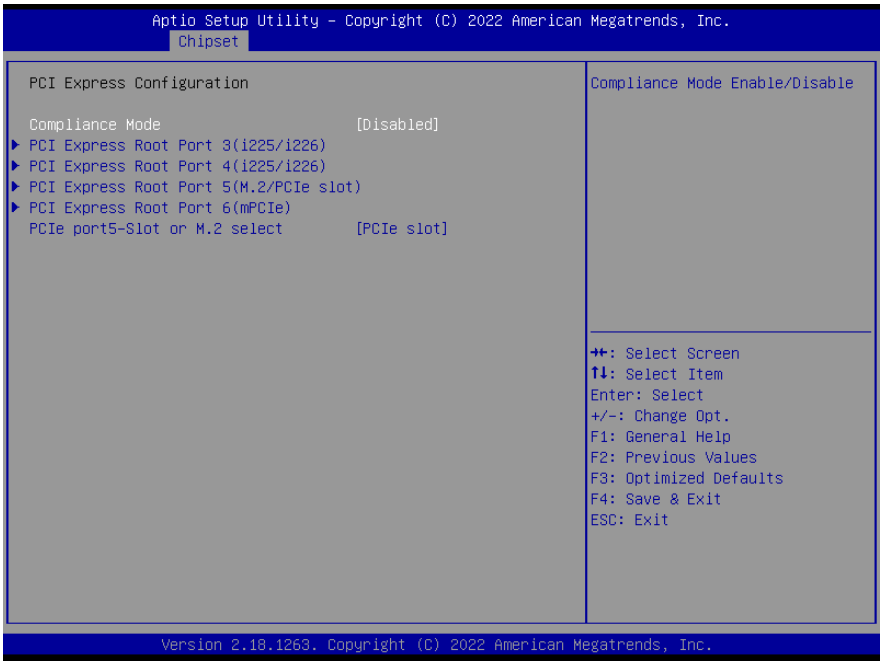


3.6.3.4.1 HD-Audio Configuration



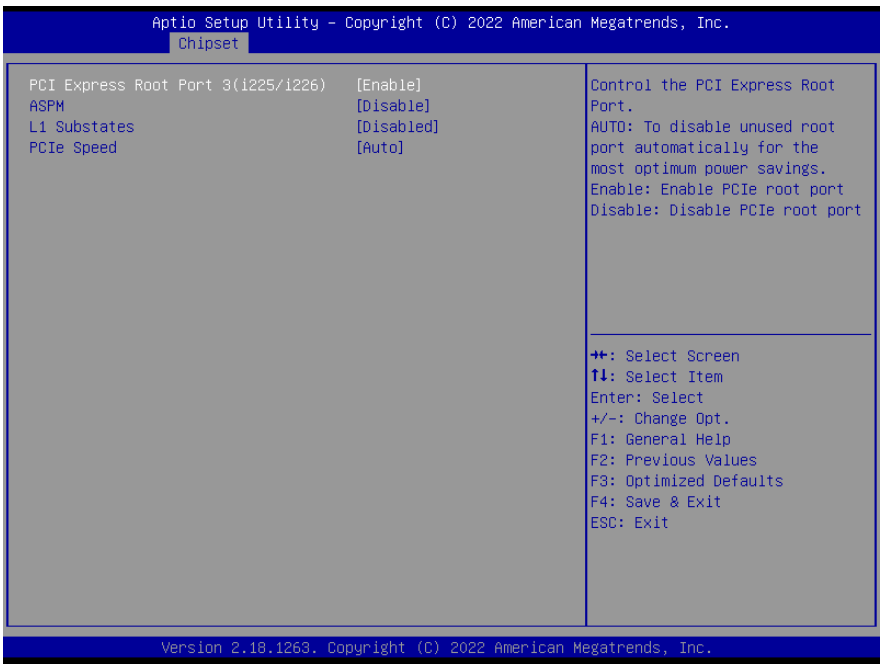
Item	Option	Description
HD-Audio Support	Disable**[Default]**, Enable	Enable/Disable HD-Audio Support

3.6.3.4.2 PCI Express Configuration



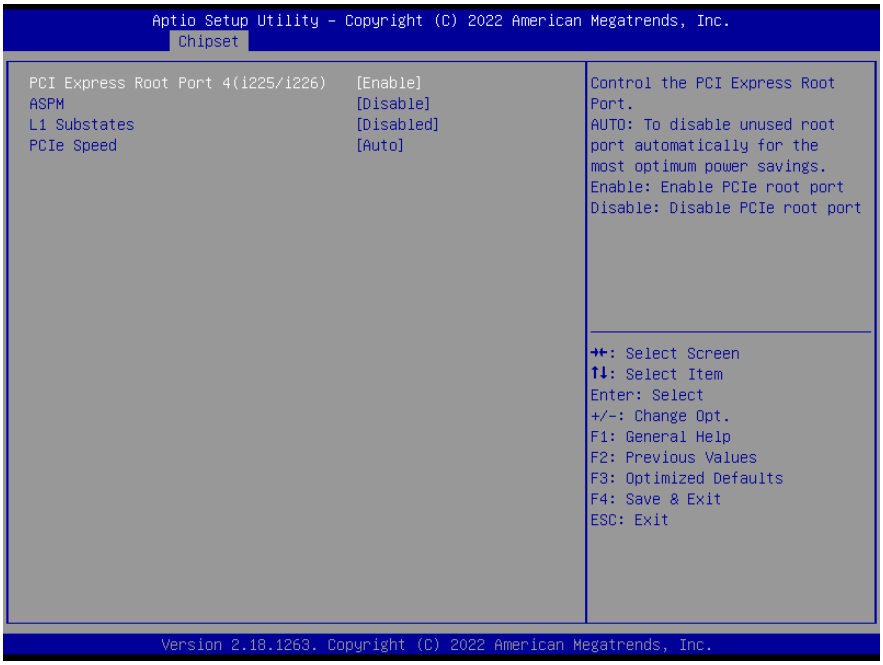
Item	Option	Description
Compliance Mode	Disabled**[Default]**, Enabled	Compliance Mode Enable/Disable
PCIe port5-Slot or M.2 select	PCIe slot**[Default]**, M.2	PCIe port5 mapping to PCIe slot or M.2

3.6.3.4.2.1 PCI Express Root Port 3(i225/i226)



Item	Option	Description
PCI Express Root Port 3 (i225/i226)	Disable Enable**[Default]**,	Control the PCI Express Root Port. Auto: To disable unused root port automatically for the most optimum power savings. Enable: Enable PCIe root port Disable: Disable PCIe root port
ASPM	Disable**[Default]** L0s L1 L0sL1 Auto	PCI Express Active State Power Management settings
L1 Substates	Disabled**[Default]** L1.1 L1.2 L1.1 & L1.2	PCI Express L1 Substates settings.
PCIe Speed	Auto**[Default]** Gen 1 Gen 2	Configure PCIe Speed

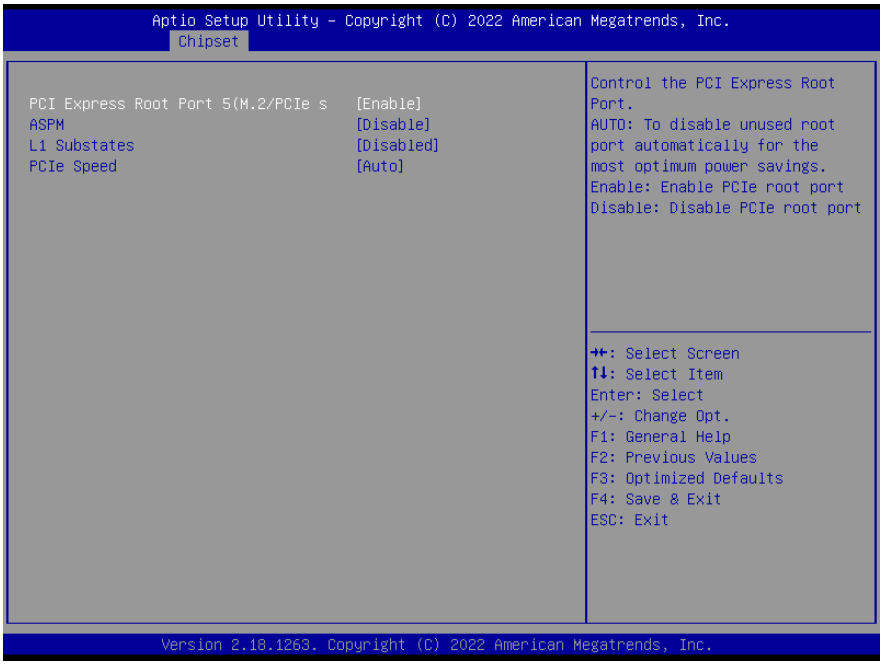
3.6.3.4.2.2 PCI Express Root Port 4(i225/i226)



Item	Option	Description
PCI Express Root Port 4 (i225/i226)	Disable Enable**[Default]**,	Control the PCI Express Root Port. Auto: To disable unused root port automatically for the most optimum power savings. Enable: Enable PCIe root port Disable: Disable PCIe root port

ASPM	Disable**[Default]** L0s L1 L0sL1 Auto	PCI Express Active State Power Management settings
L1 Substates	Disabled**[Default]** L1.1 L1.2 L1.1 & L1.2	PCI Express L1 Substates settings.
PCIe Speed	Auto**[Default]** Gen 1 Gen 2	Configure PCIe Speed

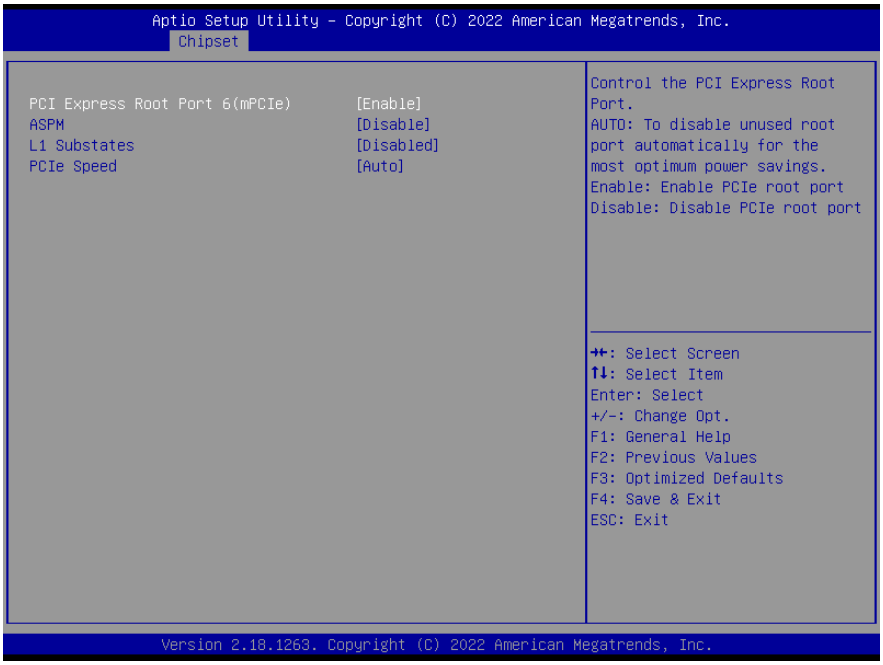
3.6.3.4.2.3 PCI Express Root Port 5(M.2/PCIe slot)



Item	Option	Description
PCI Express Root Port 5 (M.2/PCIe slot)	Disable Enable**[Default]**,	Control the PCI Express Root Port. Auto: To disable unused root port automatically for the most optimum power savings. Enable: Enable PCIe root port Disable: Disable PCIe root port
ASPM	Disable**[Default]** L0s L1 L0sL1 Auto	PCI Express Active State Power Management settings
L1 Substates	Disabled**[Default]** L1.1 L1.2 L1.1 & L1.2	PCI Express L1 Substates settings.

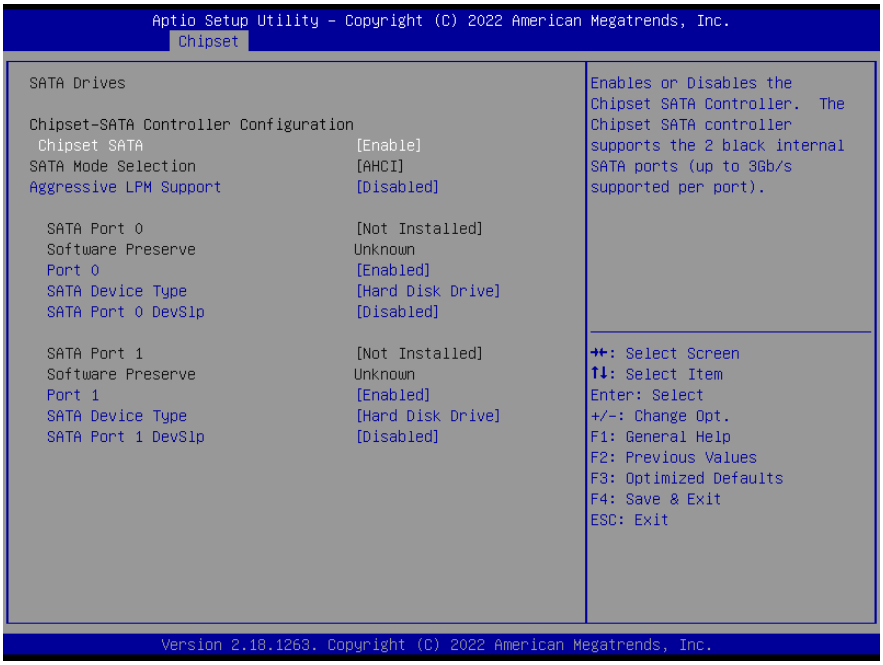
PCIe Speed	Auto**[Default]** Gen 1 Gen 2	Configure PCIe Speed

3.6.3.4.2.4 PCI Express Root Port 6(mPCIe)



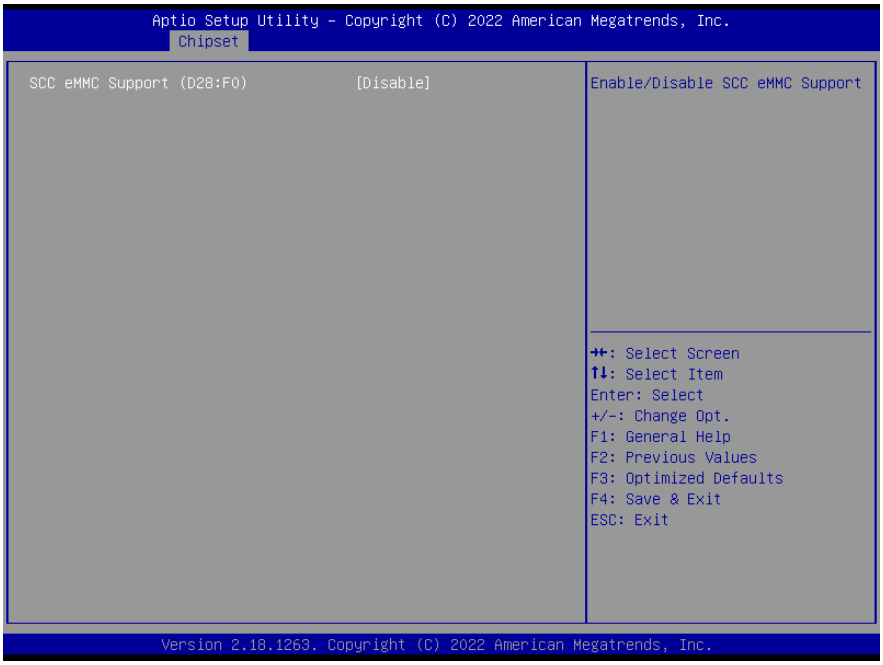
Item	Option	Description
PCI Express Root Port 6 (mPCIe)	Disable Enable**[Default]**,	Control the PCI Express Root Port. Auto: To disable unused root port automatically for the most optimum power savings. Enable: Enable PCIe root port Disable: Disable PCIe root port
ASPM	Disable**[Default]** L0s L1 L0sL1 Auto	PCI Express Active State Power Management settings
L1 Substates	Disabled**[Default]** L1.1 L1.2 L1.1 & L1.2	PCI Express L1 Substates settings.
PCIe Speed	Auto**[Default]** Gen 1 Gen 2	Configure PCIe Speed

3.6.3.4.3 SATA Drives



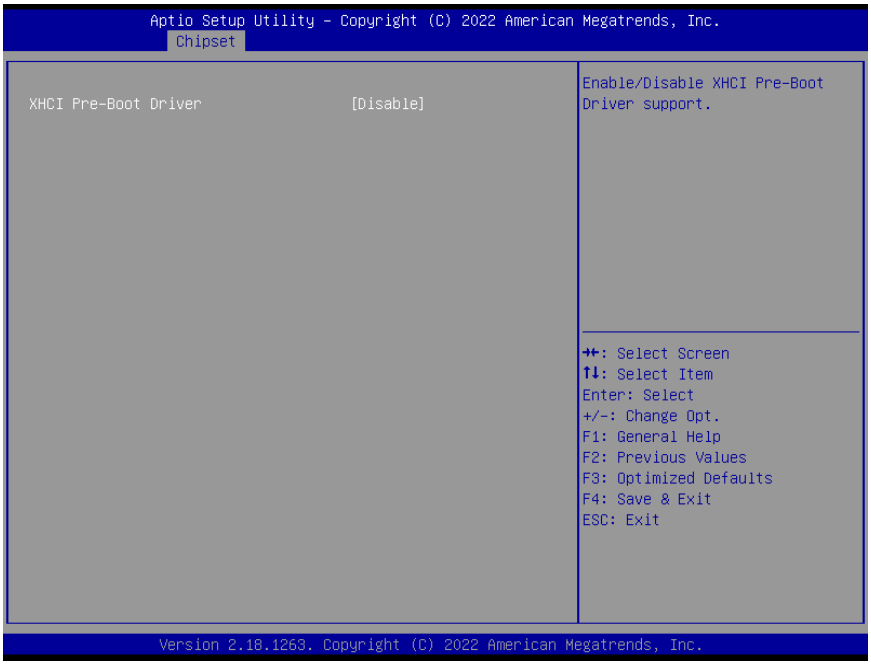
Item	Option	Description
Chipset SATA	Enable**[Default]**, Disable	Enables or Disables the Chipset SATA Controller. The Chipset SATA controller supports the 2 black internal SATA ports (up to 3Gb/s supported per port).
Aggressive LPM Support	Disabled**[Default]** Enabled	Enable PCH to aggressively enter link power state.
Port 0/1	Disabled Enabled**[Default]**	Enable or Disable SATA Port
SATA Device Type	Hard Disk Drive**[Default]** Solid State Drive	Identify the SATA port is connected to Solid State Driver or Hard Disk Drive
SATA Port 0/1 DevSlp	Disabled**[Default]** Enabled	Enable/Disable SATA Port 0/1 DevSlp. Board rework for LP needed before enable.

3.6.3.4.4 SCC Configuration



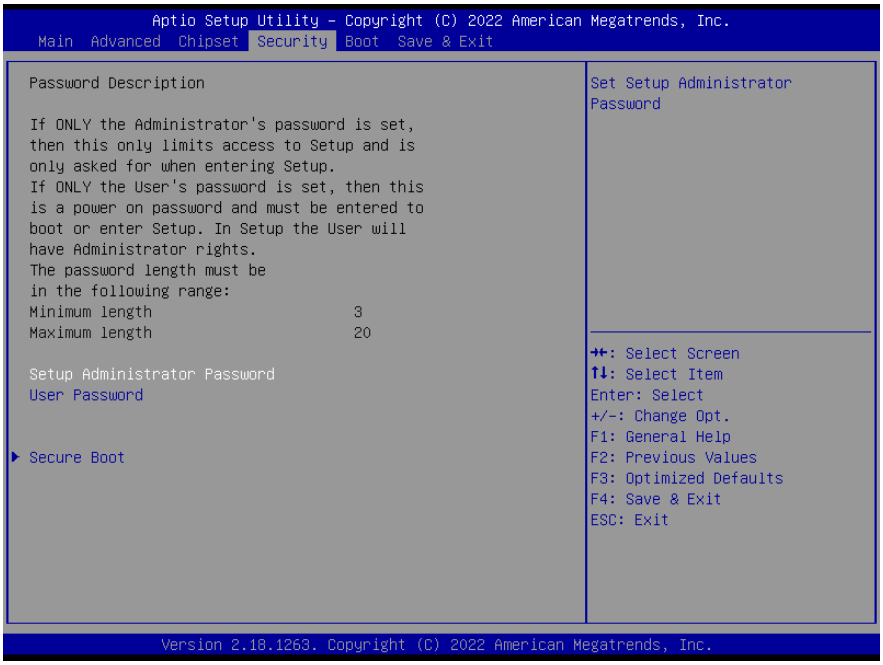
Item	Option	Description
SCC eMMC Support (D28:F0)	Disable**[Default]**, Enable	Enable/Disable SCC eMMC Support.

3.6.3.4.5 USB Configuration



Item	Option	Description
XHCI Pre-Boot Driver	Enable, Disable**[Default]**	Enable/Disable XHCI Pre-Boot Driver support.

3.6.4 Security



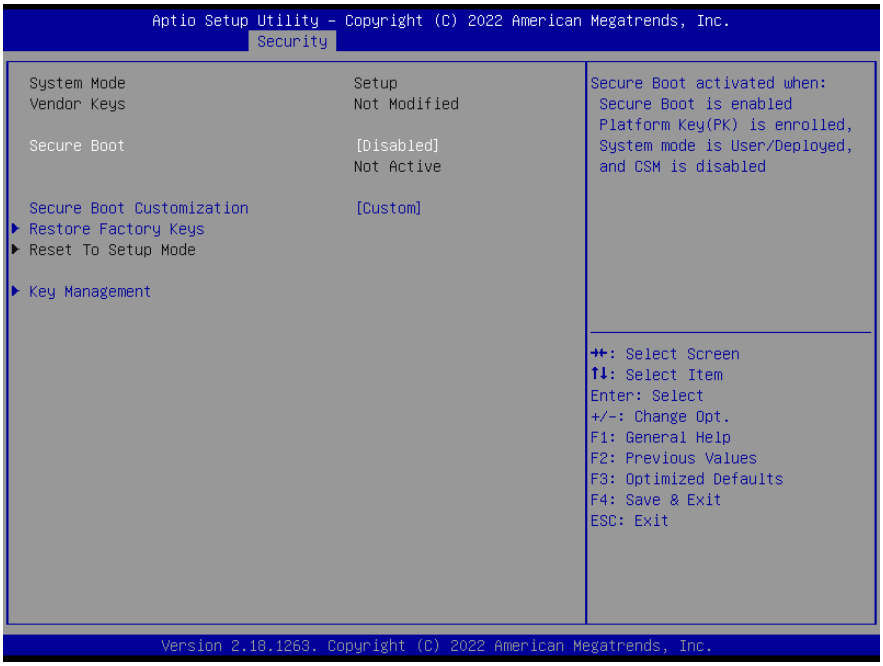
- **Setup Administrator Password**

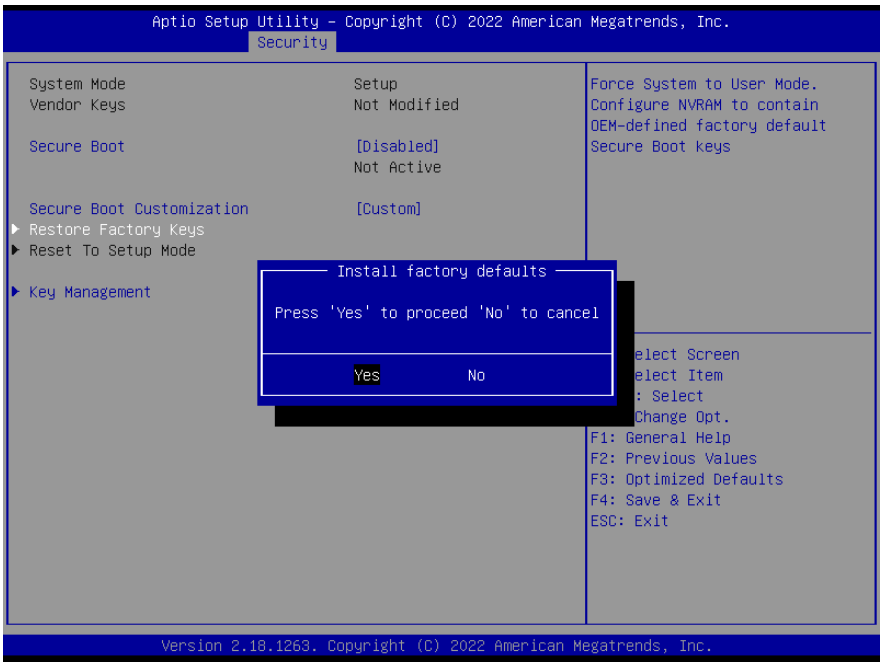
Set setup Administrator Password

- **User Password**

Set User Password

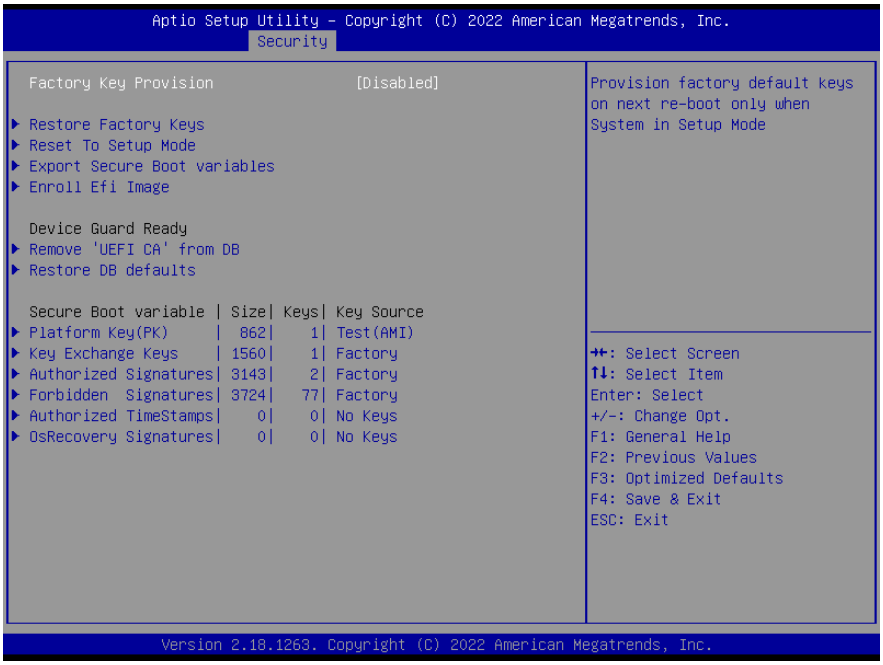
3.6.4.1 Secure Boot





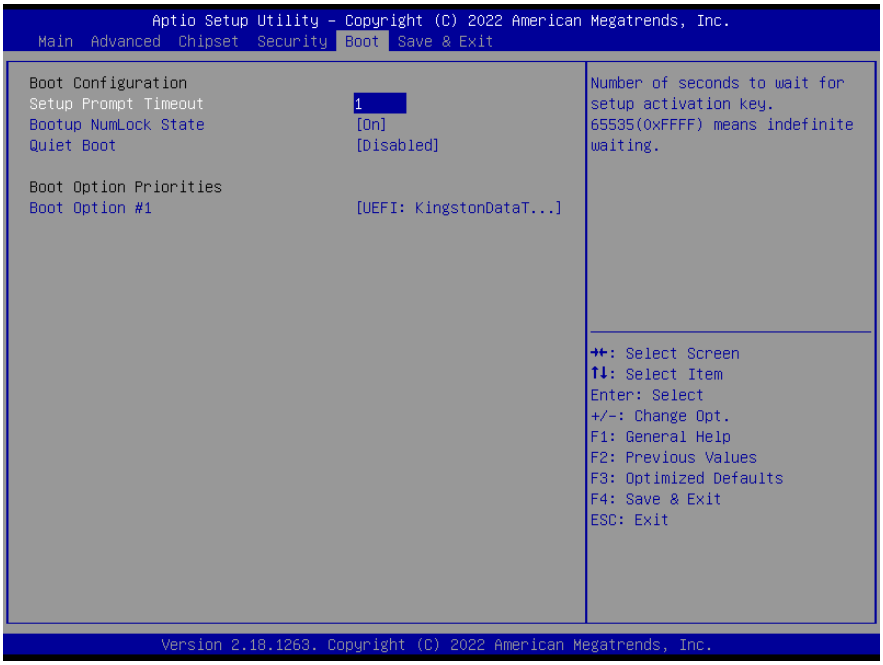
Item	Option	Description
Attempt Secure Boot	Disabled**[Default]** Enabled	Secure Boot activated when Platform Key(PK) is enrolled, and CSM function is disabled.
Secure Boot Mode	Standard**[Default]** Customized	Secure Boot Mode –Custom_Standard, Set UEFI Secure Boot Mode to STANDARD mode or CUSTOM mode, this change is effect after save. And after reset, the mode will return to STANDARD mode.

3.6.4.1.1 Secure Boot



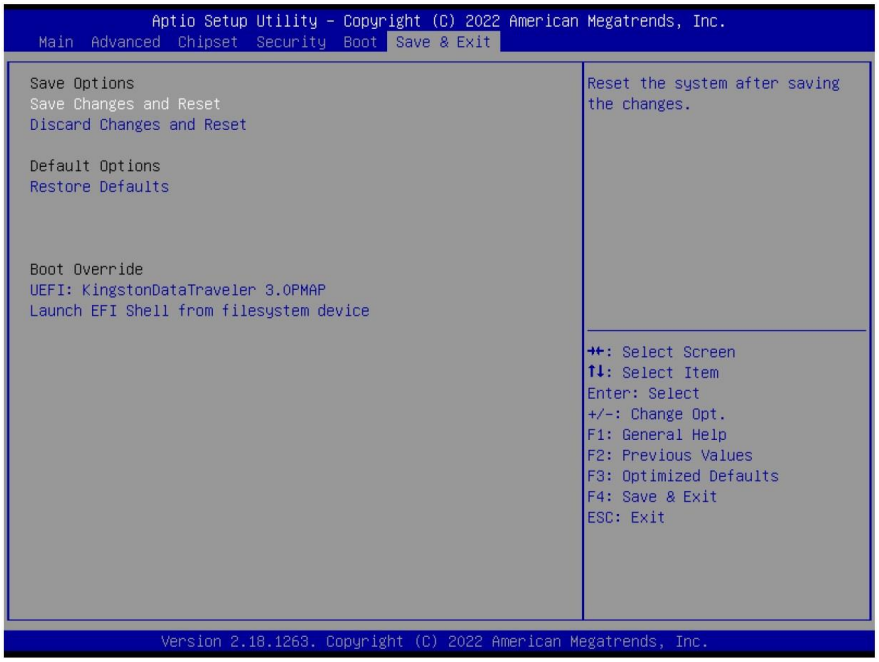
Item	Option	Description
Factory Key Provision	Disabled**[Default]** Enabled	Provision factory default key on next re-boot only when System in Setup Mode

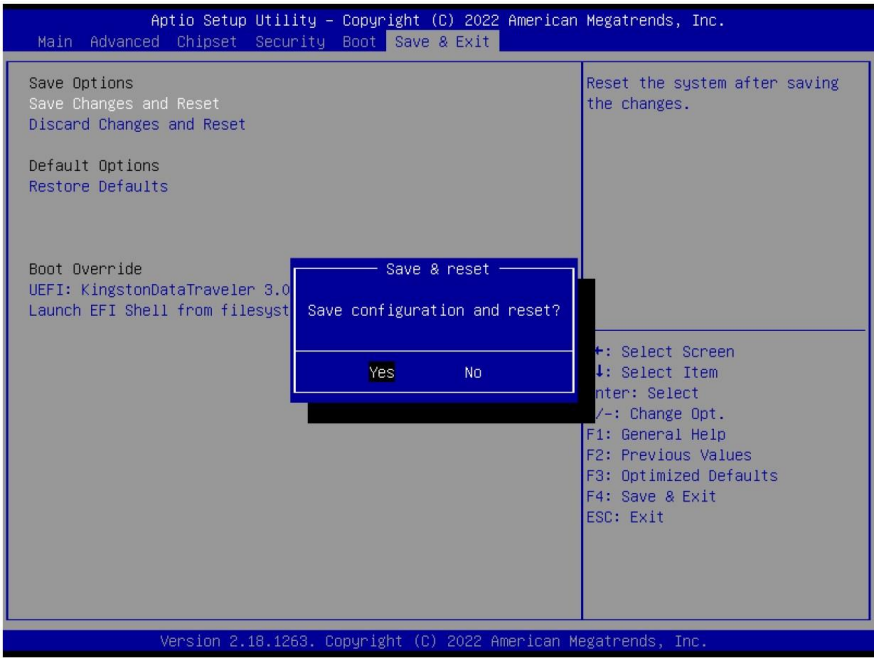
3.6.5 Boot



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	

3.6.6 Save and exit





3.6.6.1 Save Changes and Reset

Reset the system after saving the changes.

3.6.6.2 Discard Changes and Reset

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

3.6.6.3 Restore Defaults

This option restores all BIOS settings to the factory default. This option is useful if the controller exhibits unpredictable behavior due to an incorrect or inappropriate BIOS setting.

3.6.6.4 Launch EFI Shell from filesystem device

Attempts to Launch EFI Shell application (Shellx64.efi) from one of the available filesystem devices.

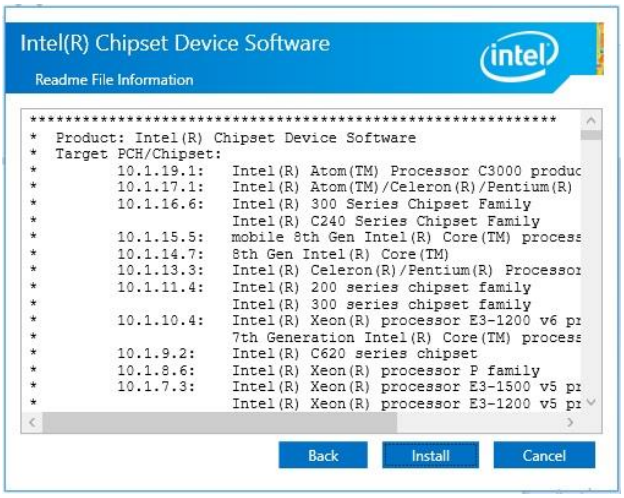
4. Drivers Installation

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**.

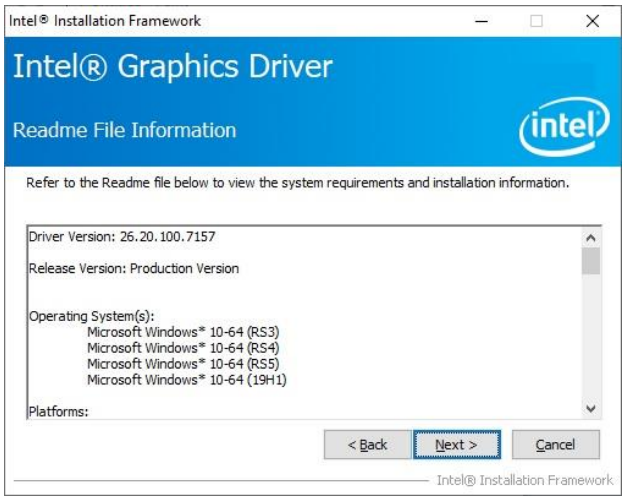
Step 4. Click **Finish** to complete setup.

Step 2. Click **Accept**.

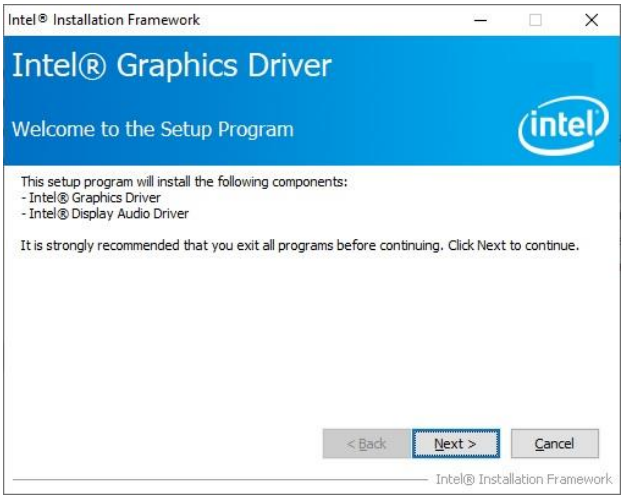
4.2 Install VGA Driver

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

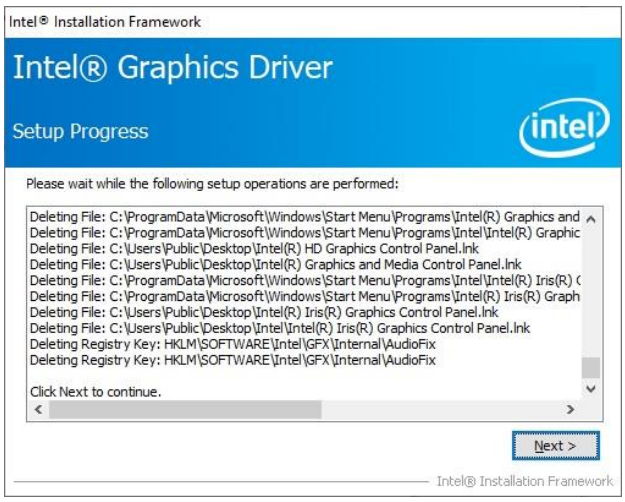
Note: The installation procedures and screen shots in this section are based on Windows 10 operation system. If the warning message appears while the installation process, click Continue to go on.



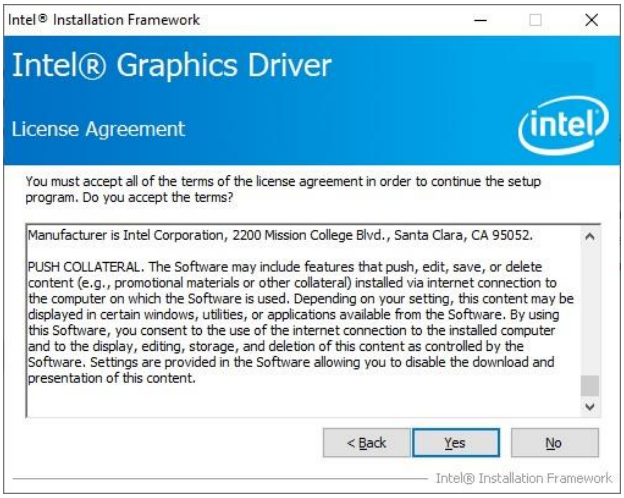
Step 3. Click **Next.**



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

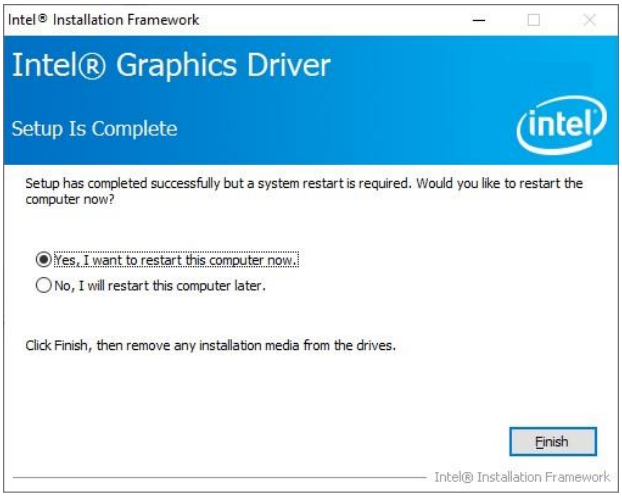


Step 4. Click **Next**.



Step 2.

Click **Yes** to accept license agreement.

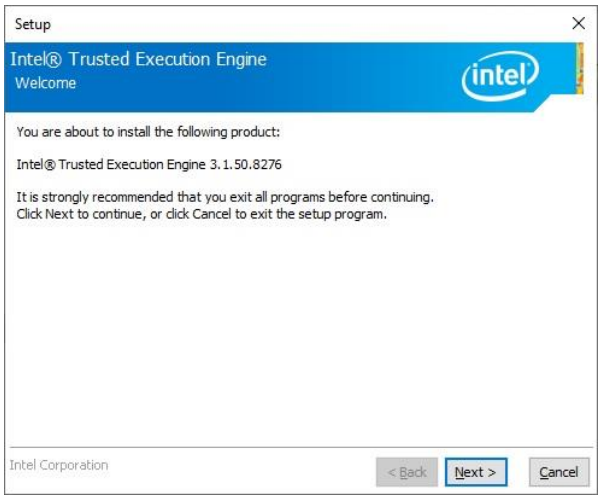


Step 5. Click **Finish** to complete setup.

4.3 Install TXE Driver

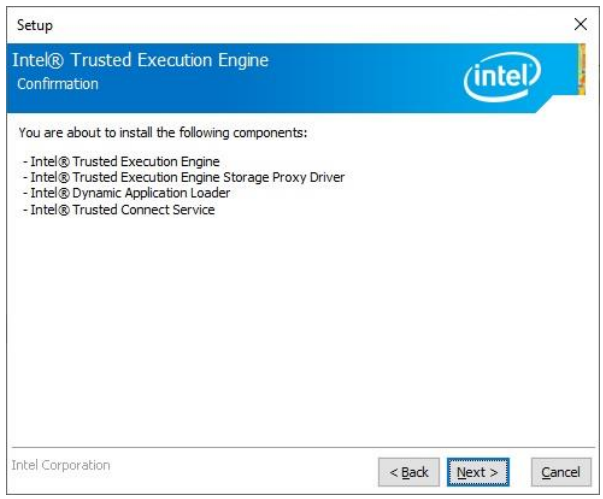
All drivers can be found on the Avalue Official Website:
http://www.avalue.com.tw.

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.

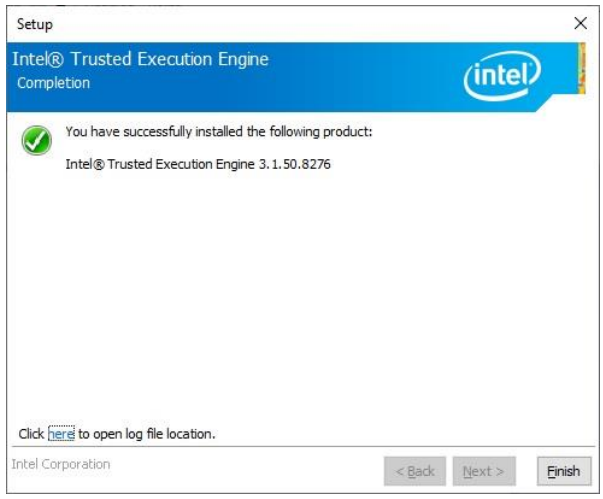


Step 1. Click **Next** to continue setup.

Step 2. Click **Next**.



Step 3. Click **Next**.

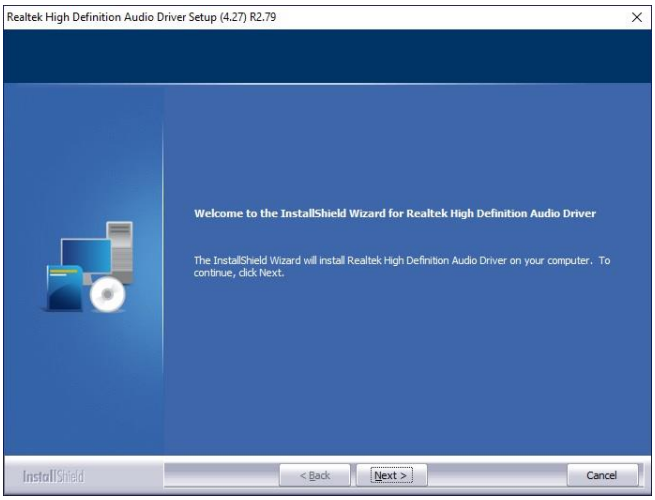


Step 4. Click **Finish** to complete the setup.

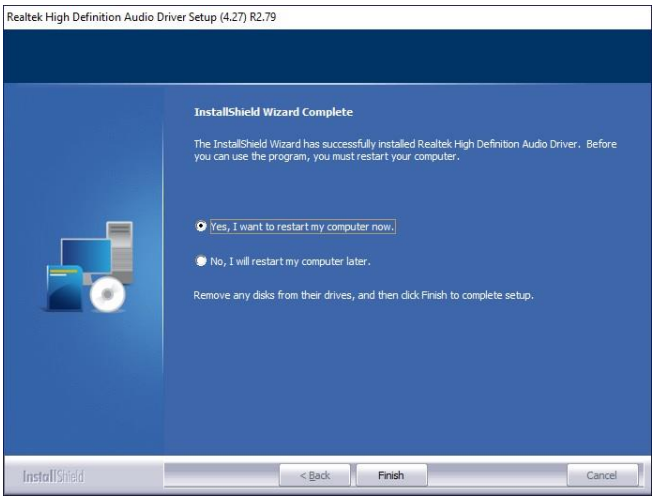
4.4 Install Audio Driver (For Realtek ALC888S HD Audio)

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

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



Step1. Click **Next** to Install.

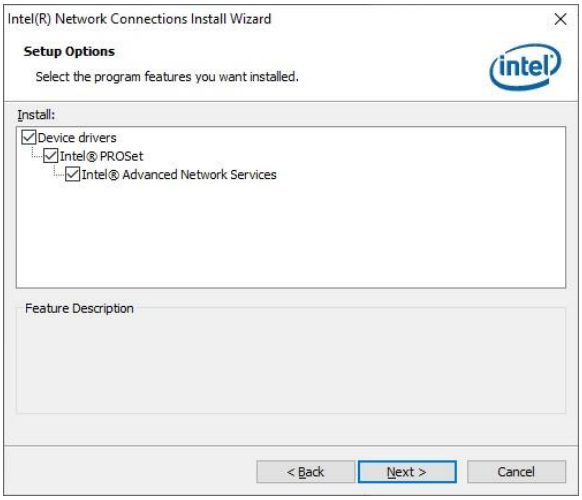


Step 2. Select **Finish** to complete Installation.

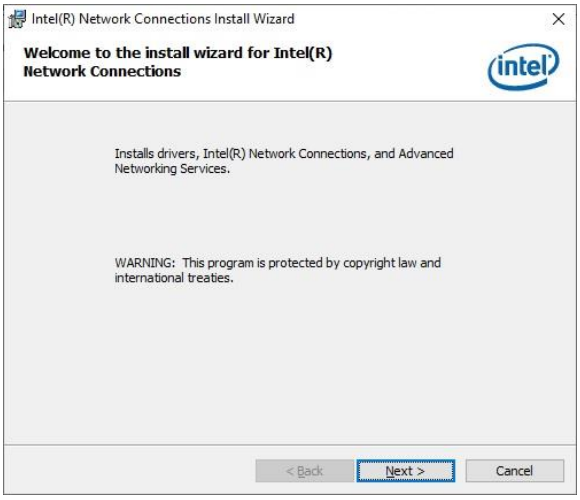
4.5 Install LAN Driver (For Intel I226LM)

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

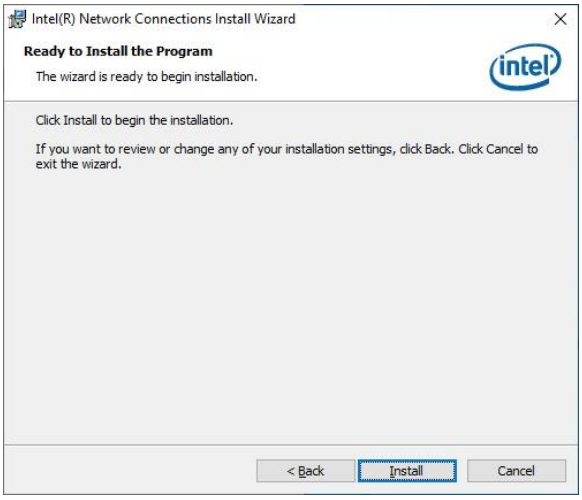
Note: The installation procedures and screen shots in this section are based on Windows 10 operation system. If the warning message appears while the installation process, click Continue to go on.



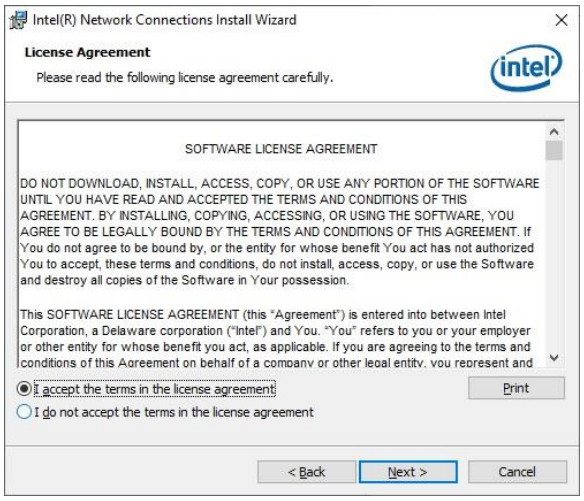
Step 3. Click **Next**.



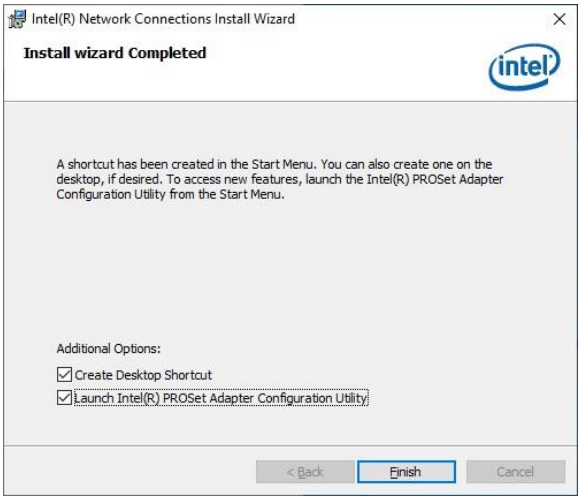
Step 1. Click **Install Drivers and Software**.



Step 4. Click **Install**.

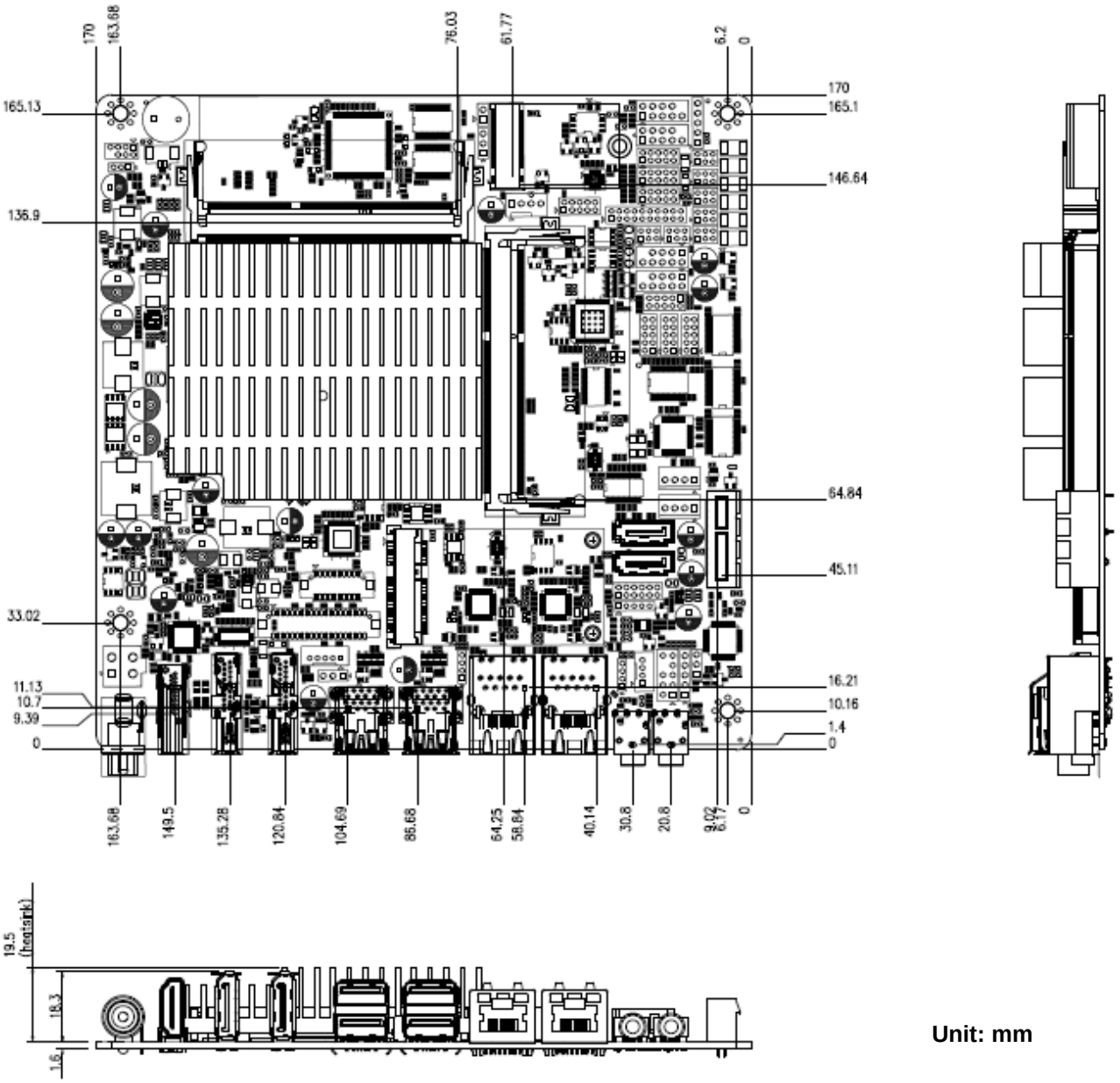


Step 2. Click **Next.**

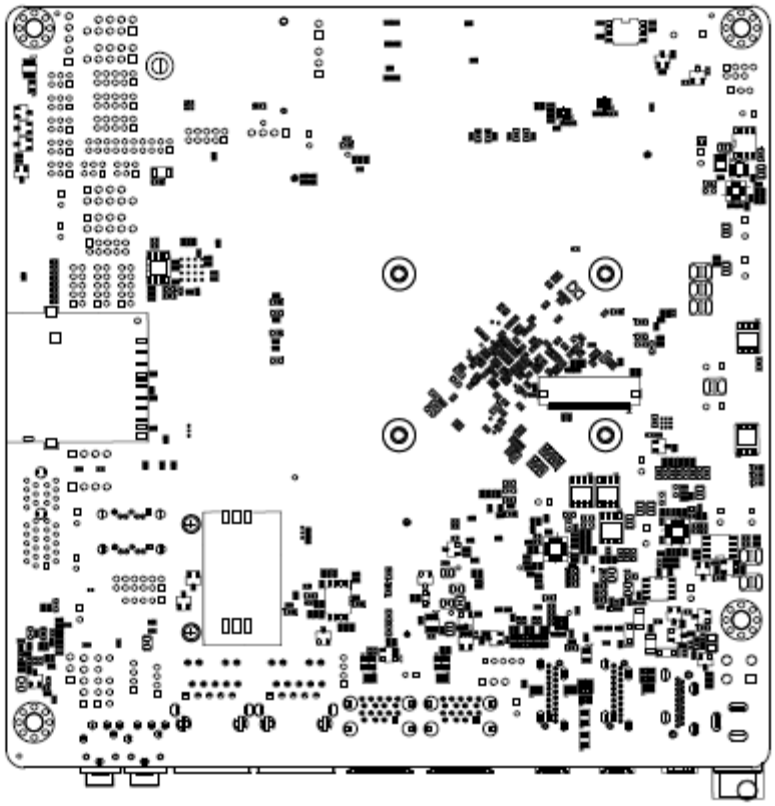


Step 5. Click **Finish** to complete the setup.

5. Mechanical Drawing


170
163.68
76.03
61.77
6.2
0
165.13
170
165.1
146.64
136.9
64.84
45.11
33.02
16.21
11.13
10.7
9.39
10.16
1.4
0
0
163.68
149.5
135.28
120.84
104.69
85.68
64.25
58.84
40.14
30.8
20.8
9.02
6.17
0
19.5
(heatsink)
18.3
1.6

Unit: mm



Unit: mm