

EMX-SKLGP

Intel 6/7th Generation ULT Processor Thin Mini ITX
Motherboard

User's Manual



4th Ed – 02 March 2021

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

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Notice

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

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

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1. Getting Started

1.1 Safety Precautions

Warning!



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

Caution!



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

1.2 Packing List

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

- 1 x EMX-SKLGP motherboard (heatsink assembled)
- 1 x SATA cable set
- 1 x I/O shield (half-height)
- 1 x SATA power cable



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

1.3 Document Amendment History

Revision	Date	By	Comment
1 st	May 2018	Avalue	Initial Release
2 nd	July 2018	Avalue	Update Setting Jumpers & Connectors
3 rd	March 2020	Avalue	Update Packing List
4 th	March 2021	Avalue	Update System Specifications

1.4 Manual Objectives

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

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

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

1.5 System Specifications

System	
CPU	Onboard 6th Gen Intel® Core™ SoC i7/i5/i3 & Celeron®BGA Processor
BIOS	AMI uEFI BIOS, 128Mbit SPI Flash ROM
I/O Chip	EC IT8528E
System Memory	Two 260-pin DDR4 2133 MHz SO-DIMM socket, supports up to 32GB Max (non ECC only)
Watchdog Timer	H/W Reset, 1sec. – 65535sec./min.1sec. or 1min. step
EEPROM	AMI uEFI BIOS, 128Mbit SPI Flash ROM
H/W Status Monitor	CPU temperature monitoring Voltages monitoring CPU fan speed control
Expansion	1 x M.2 Key A 2230 support WiFi module (1 x PCI-e x 1 & USB 2.0 Signal) 1 x Full size Mini PCI-e (support mSATA/PCIe x1/USB 2.0 Signal/SIM)
S3/S4	Yes (S0/S3/S4/S5)
I/O	
USB	4 x USB 3.0, 4 x USB 2.0
GPIO	16-bits GPIO
Display	
Chipset	Intel® Processor Graphics
Resolution	1 x HDMI 1.4b: 3840 x 2160 @ 30 Hz, 2560 x 1600@ 30 Hz 1 x VGA: 2048 x 1536 @ 60Hz
Multiple Display	Triple Display
HDMI	1 x HDMI
VGA	1 x VGA (ITE IT6516 DP to VGA)
LCD Interface	1 x Dual channel 18/24-bits LVDS1 (Chrontel CH7511B eDP to LVDS1) 1 x Dual channel 18/24-bits LVDS2 (Chrontel CH7511B DP to LVDS2)
Audio	
AC97 Codec	Realtek ALC888S HD Audio Decoding Controller
Audio Amp	2 x TI TPA3113D2PWP Stereo Class-D 6W
Ethernet	
LAN Chip	1 x Intel® I219LM Gigabit Ethernet PHY 1 x Intel® I211AT PCI-e Gigabit Ethernet
Ethernet Interface	Gigabit Ethernet
Internal I/O Connectors	
Fan	1 x 1 x 4 pin, pitch 2.54mm CPU fan connector with smart fan function supported

System 1 I2C	1 x 1 x 5 pin, pitch 2.00mm, +3.3S Level
Buzzer	Onboard
CMOS Battery	1 x horizontal type battery connector (Battery cable 170mm length)
Power ON	1 x 2 x 5 pin, pitch 2.54mm connector for front panel 1 1 x 2 x 5 pin, pitch 2.54mm connector for front panel 2
Audio	1 x 2 x 5 pin, pitch 2.54mm connector for front Audio
External I/O Connector	<p>Storage:</p> <p>1 x Full size Mini PCI-e (support mSATA/PCIe x1/USB 2.0 Signal/SIM)</p> <p>1 x SATA III (SATA1 is not functioning in EMX-SKLGP-3855 SKU)</p> <p>1 x SATA power connectors</p> <p>COM:</p> <p>COM 1 & COM2:</p> <p>COM 1 & COM2 support RS232/422/485 connector, with / +5V & +12V Supported and RS422/485 by BIOS setting</p> <p>2 x 2 x 5 pin, pitch 2.00mm connector support RS-232 connector, Pin 9 with +5V & +12V Supported</p> <p>2 x 2 x 3 pin, pitch 2.00mm connector support RS422/485 connector, Pin 5 with / +5V Supported</p> <p>COM 3 to COM 6:</p> <p>1 x 2 x 20 pin, pitch 2.00mm connector for COM3~6: support RS-232 connector</p> <p>2 x 2 x 5 pin, pitch 2.54mm connector for 4 USB 2.0</p> <p>1 x 2 x 10 pin, pitch 2.00mm connector for GPIO: 16 bits & +3.3S Level SMBus</p> <p>1 x 2 x 4 pin, pitch 2.00mm connector for PS2 KB/MS</p> <p>1 x 2 x 4 pin, pitch 2.00mm connector for BIOS SPI</p> <p>1 x 2 x 5 pin, pitch 2.00mm connector for EC SPI</p> <p>1 x 2 x 5 pin, pitch 2.0mm connector for LPC debug</p> <p>1 x horizontal type battery connector (Battery cable 170mm length)</p> <p>1 x 2 x 5 pin, pitch 2.54mm connector for front panel 1</p> <p>1 x 2 x 5 pin, pitch 2.54mm connector for front panel 2</p> <p>2 x 2 x 20 pin, pitch 1.25mm connector for LVDS (must be using WF40H6-7GAA178 connector)</p> <p>2 x 1 x 5 pin, pitch 2.00mm Wafer connector for LCD inverter backlight connector (5V/12V)</p> <p>2 x 1 x 3 pin, pitch 2.54mm connector LCD backlight brightness adjustment (PWM/DC)</p> <p>1 x 2 x 5 pin, pitch 2.54mm connector for front Audio</p> <p>1 x 4 pin, pitch wafer 2.00mm connector for 6W x 2 Speaker</p> <p>1 x 3 pin, pitch 2.00mm connector for CMOS clear</p> <p>1 x 1 x 4 pin, pitch 2.54mm CPU fan connector with smart fan function supported</p> <p>2 x 1 x 4 pin, pitch 2.00mm connector for LAN Activity Indicator LED (TBC)</p>

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	1 x 1 x 5 pin, pitch 2.54mm for Digital MIC in (TBC) 1 x 2 x 2 pin, pitch 4.20mm connector for power input connector 1 x 1 x 3 pin, pitch 2.54mm connector for AT/ATX mode Fanless Operating
Rear I/O Connectors	
USB	4 x USB3.0
LAN	1 x Intel® I219LM Gigabit Ethernet PHY3 1 x Intel® I211AT PCI-e Gigabit Ethernet
HDMI	1 x HDMI
VGA	1 x VGA
LED	2 x 1 x 4 pin, pitch 2.00mm connector for LAN Activity Indicator LED (TBC)
Rear Side External I/O Connector	2 x RJ-45 4 x USB 3.0 1 x HDMI 1 x VGA 1 x Mic-In and 1 x Line-out 1 x DC Jack lockable connector type
Mechanical & Environmental	
Power Requirement	DC in +12V~24V
ACPI	Single power ATX Support S0, S3, S4, S5 ACPI 5.0 Compliant
Power Type	AT / ATX mode Switchable Through Jumper
Operating Temp.	0~60°C (32~140°F)
Storage Temp.	-40~ +75°C
Operating Humidity	0%~90% relative humidity, non-condensing
Size (L x W)	6.7" x 6.7" (170mm x 170mm)
Weight	0.40 kg
OS Support	Win7 64bit, Win10 64bit, Linux Fedora
Reliability Tests	
Vibration Test	Package Vibration Test Reference IEC60068-2-64 Testing procedures Test Fh : Vibration broadband random Test 1. PSD: 0.026G ² /Hz , 2.16 Grms 2. Non-operation mode 3. Test Frequency : 5-500Hz 4. Test Axis : X,Y and Z axis 5. 30 min. per each axis Random Vibration Operation

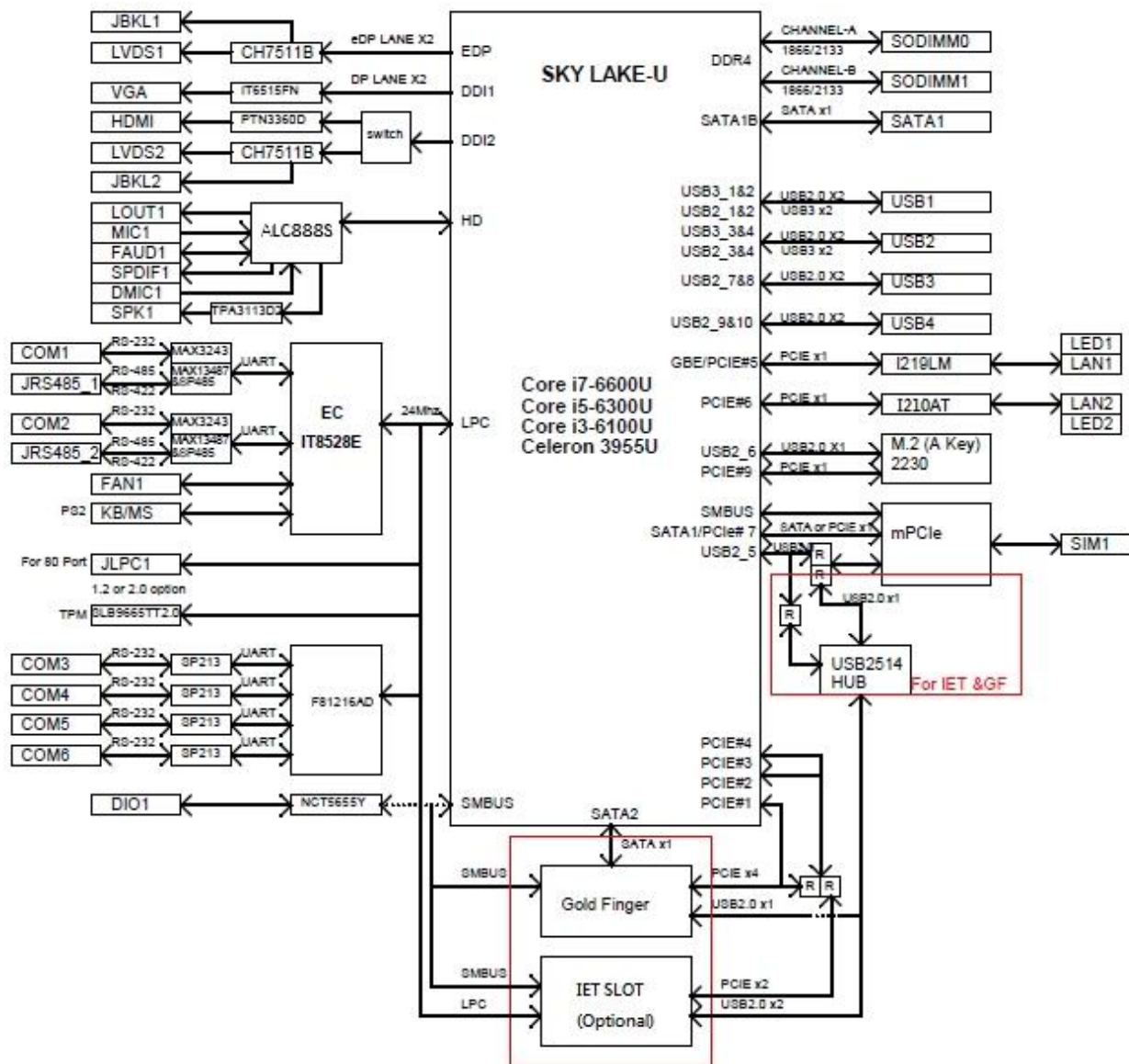
	<p>Reference IEC60068-2-64 Testing procedures</p> <p>Test Fh : Vibration boardband random Test</p> <ol style="list-style-type: none"> 1. PSD: 0.00454G²/Hz, 1.5 Grms 2. Operation mode 3. Test Frequency : 5-500Hz 4. Test Axis : X,Y and Z axis 5. 30 minutes per each axis 6. IEC 60068-2-64 Test:Fh <p>Random Vibration Non Operation</p> <p>Reference IEC60068-2-64 Testing procedures</p> <p>Test Fh : Vibration boardband random Test</p> <ol style="list-style-type: none"> 1. PSD: 0.01818G²/Hz, 3.0 Grms 2. Non Operation mode 3. Test Frequency : 5-500Hz 4. Test Axis : X,Y and Z axis 5. 30 minutes per each axis 6. IEC 60068-2-64 Test:Fh
Drop Test	<p>Packing Drop</p> <p>Reference ISTA 2A, Method : IEC-60068-2-32 Test:Ed Test Ea : Drop Test</p> <ol style="list-style-type: none"> 1 One corner , three edges, six faces 2 ISTA 2A, IEC-60068-2-32 Test:Ed

**Note:**

Specifications are subject to change without notice.

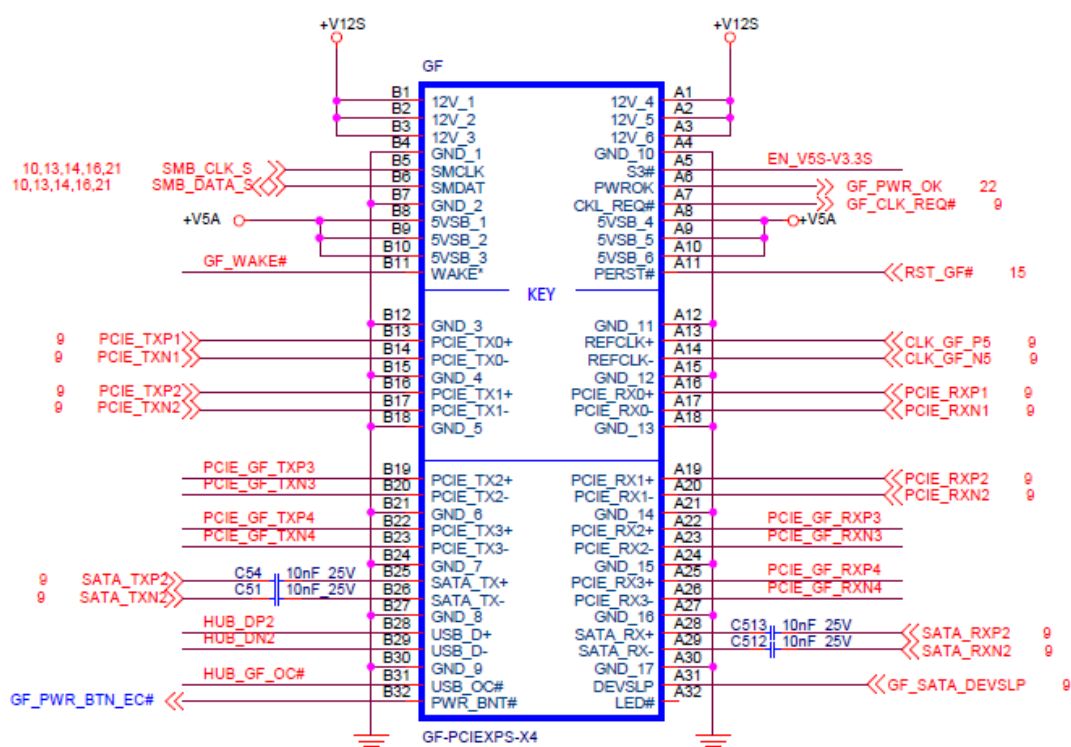
1.6 Architecture Overview—Block Diagram

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

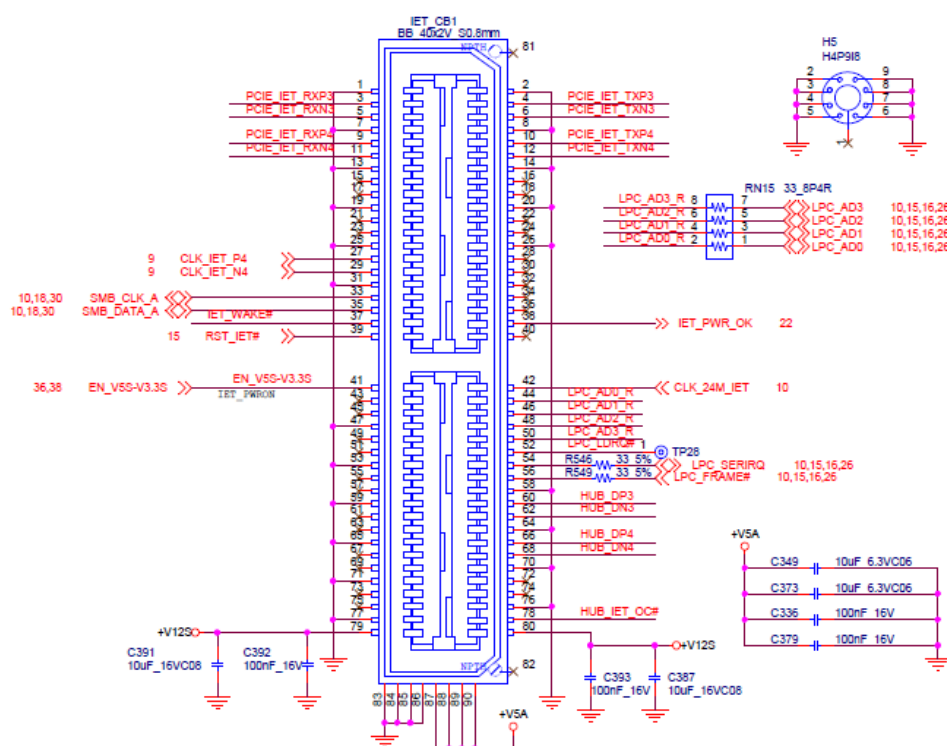


1.7 Expansion design

Expansion Design – Gold Finger

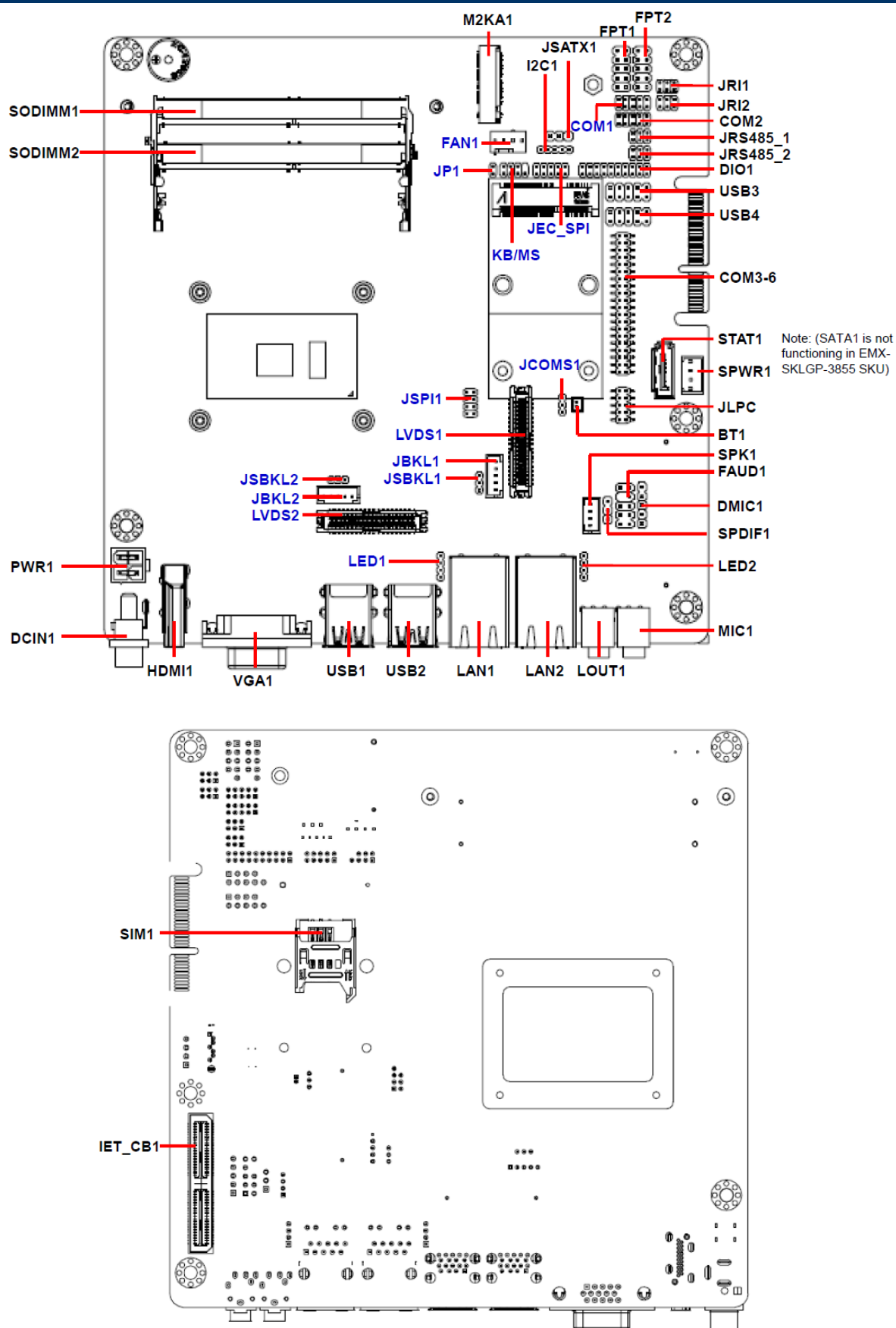


Expansion Design – IET Connector



2. Hardware Configuration

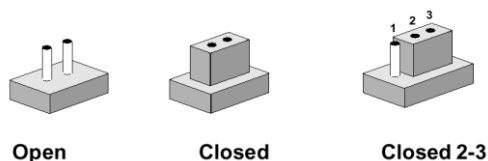
2.1 Product Overview



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 1	3 x 1 header, pitch 2.00mm
JSBKL2	LVDS Back Light power selection 2	3 x 1 header, pitch 2.00mm
JSATX1	AT/ATX Power Mode Select	3 x 1 header, pitch 2.54mm
JCOMS1	Clear CMOS	3 x 1 header, pitch 2.00mm
JP1	SATA/PCIE slot selector	2 x 1 header, pitch 2.00mm

Connectors

Label	Function	Note
FPT1	Miscellaneous setting connector 1	5 x 2 header, pitch 2.54mm
FPT2	Miscellaneous setting connector 2	5 x 2 header, pitch 2.54mm

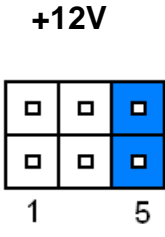
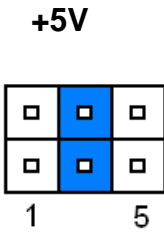
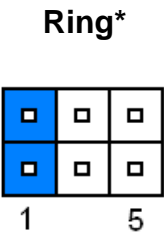
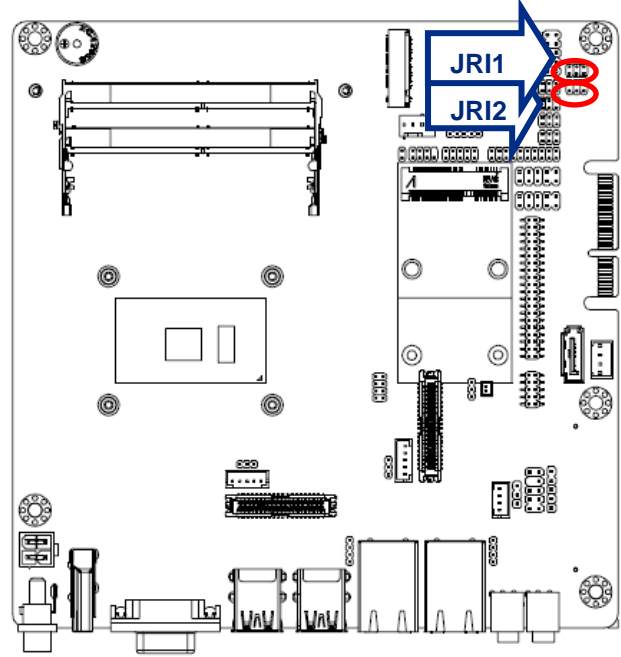
SODIMM1/2	206-pin DDR4 SO-DIMM socket	
FAUD1	Front Audio connector	5 x 2 header, pitch 2.54mm
JBKL1	LCD Inverter connector	5 x 1 wafer, pitch 2.00mm
JBKL2	LCD Inverter connector	5 x 1 wafer, pitch 2.00mm
JSPI1	SPI connector	4 x 2 header, pitch 2.00mm
JEC_SPI	EC Debug	5 x 2 header, pitch 2.00mm
COM1	Serial Port 1 connector	5 x 2 header, pitch 2.00mm
COM2	Serial Port 2 connector	5 x 2 header, pitch 2.00mm
COM3-6	Serial Port 3-6 connector	5 x 2 header, pitch 2.00mm
DIO1	General purpose I/O connector	10 x 2 header, pitch 2.00mm
SPK1	Speaker connector	4 x 1 wafer, pitch 2.00mm
LVDS1	LVDS Connector 1	20 x 2 wafer, pitch 1.25mm
LVDS2	LVDS Connector 2	20 x 2 wafer, pitch 1.25mm
USB1	USB connector 1	
USB2	USB connector 2	
USB3	USB connector 3	5 x 2 header, pitch 2.54mm
USB4	USB connector 4	5 x 2 header, pitch 2.54mm
SPDIF1	Sony/Philips Digital Interface	3 x 1 header, pitch 2.54mm
LAN1/2	RJ-45 Ethernet 1/2	
LED1	LED indicator connector 1	4 x 1 header, pitch 2.00mm
LED2	LED indicator connector 2	4 x 1 header, pitch 2.00mm
M2KA1	M.2 2230 Key A slot	
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	Serial ATA connector	SATA1 is not functioning in EMX-SKLGP-3855 SKU
SPWR1	SATA Power connector	4 x 1 wafer, pitch 2.54mm
I2C1	I2C connector	5 x 1 header, pitch 2.00mm
HDMI1	HDMI connector	
LOUT1	Line-out audio jack	
MIC1	Mic-in audio jack	
DMIC1	Mic-in connector	5 x 1 header, pitch 2.54mm
FAN1	CPU Fan connector	1 x 4 wafer, pitch 2.54 mm

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VGA1	VGA connector	
SIM1	SIM card slot	
KB/MS	PS/2 keyboard & mouse header	4 x 2 header, pitch 2.00mm
BT1	Battery connector	2 x 1 wafer, pitch 1.25mm
GF	Gold Finger	
IET_CB1	IET Connector	40 x 2 wafer, pitch 0.8mm

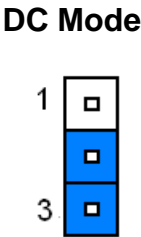
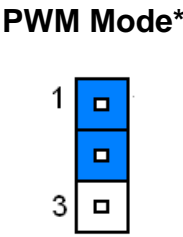
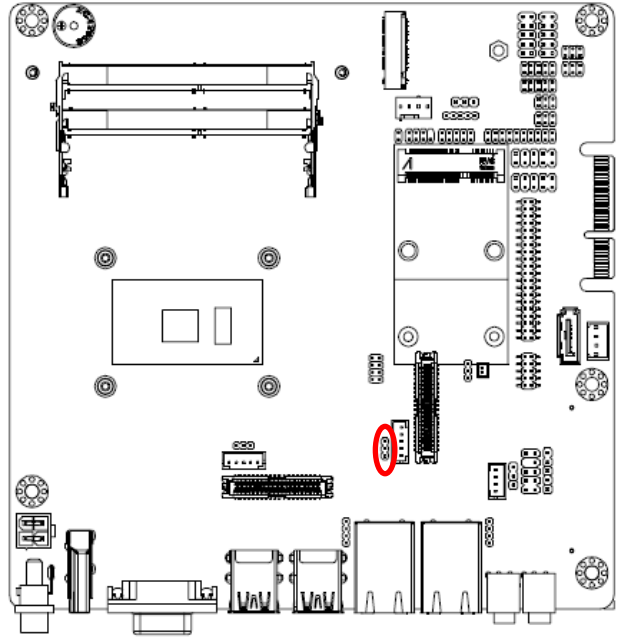
2.3 Setting Jumpers & Connectors

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



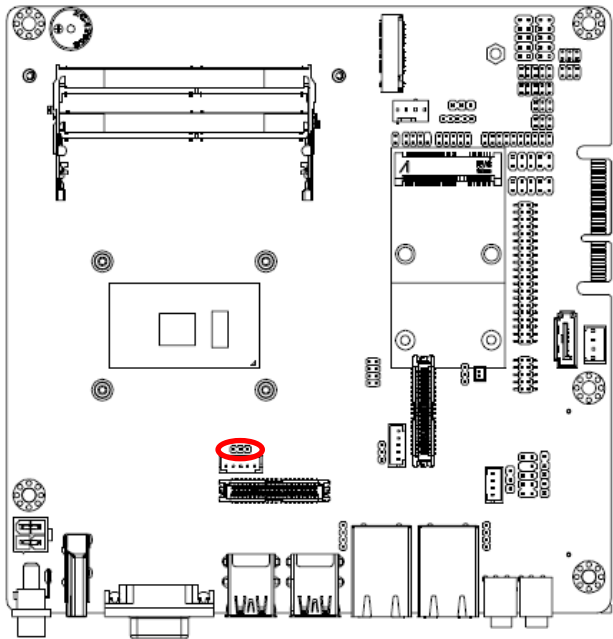
* Default

2.3.2 LVDS Back Light power selection (JSBKL1)



* Default

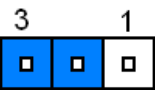
2.3.3 LVDS Back Light power selection (JSBKL2)



PWM Mode*

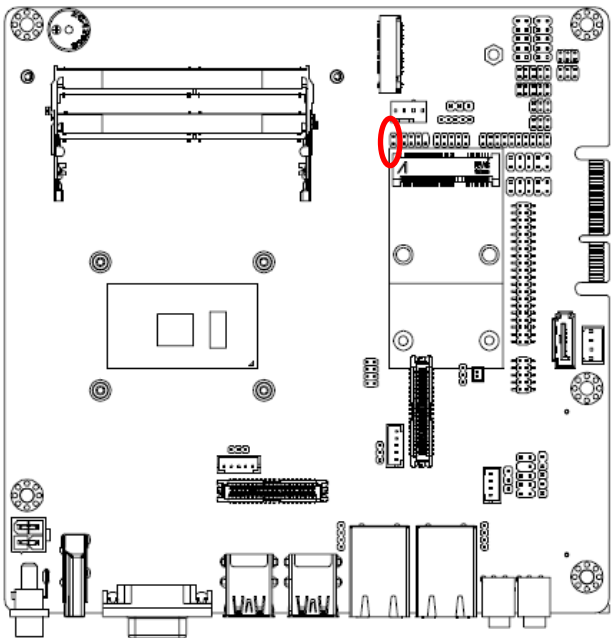


DC Mode



* Default

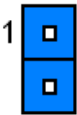
2.3.4 SATA/PCIE slot selector (JP1)



PCIE*



SATA

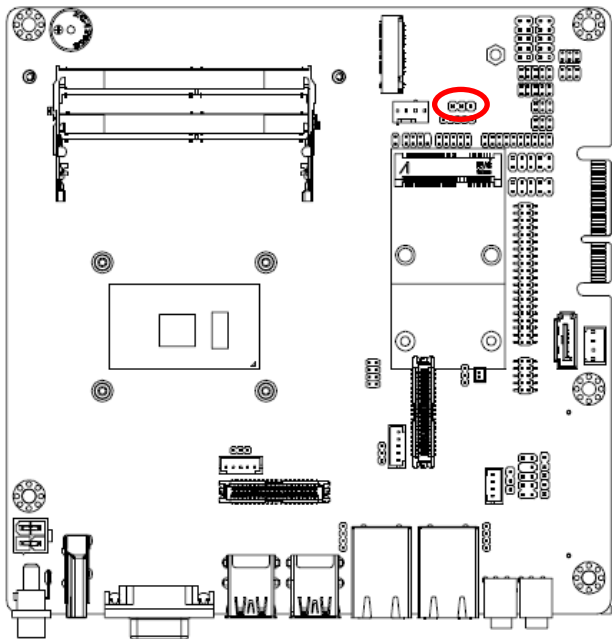


* Default

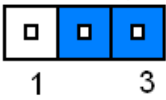
Note:

When using Mini-PCIE, if the 51 pin of Mini-PCie module is assigned for other purpose, please remove the jumper from JP1 directly.

2.3.5 AT/ATX Power Mode Select (JSATX1)



AT

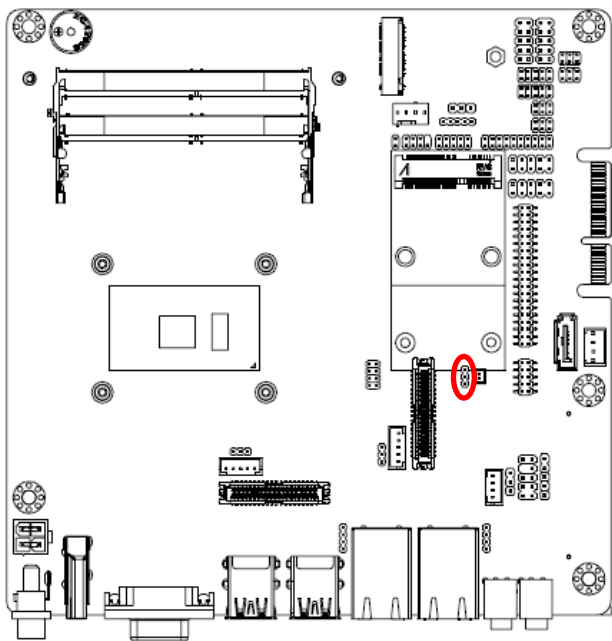


ATX*

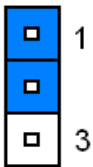


* Default

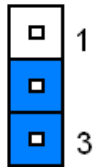
2.3.6 Clear CMOS (JCOMS1)



Protect*

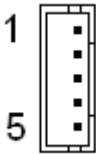
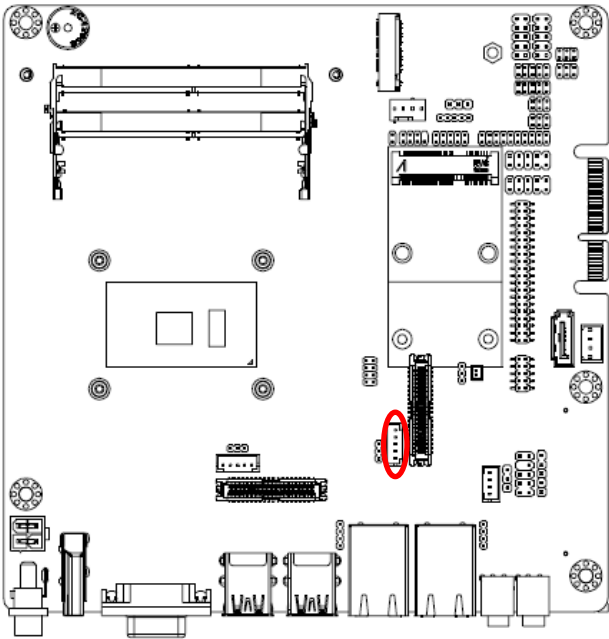


Clear CMOS



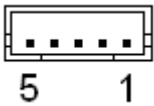
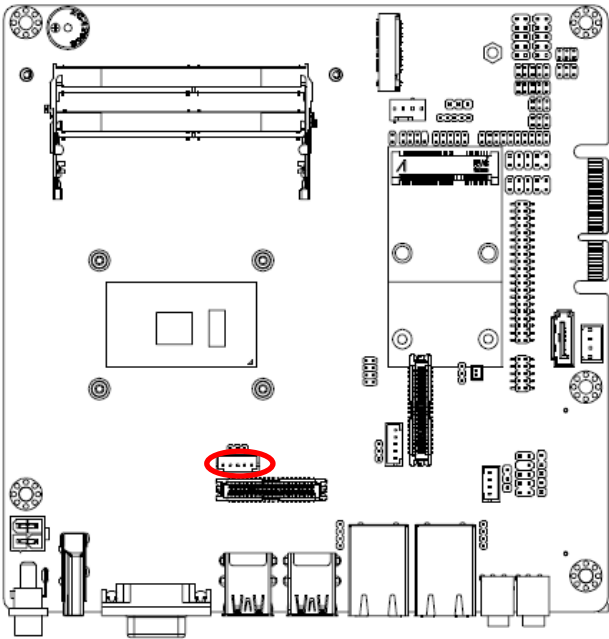
* Default

2.3.7 LCD Inverter connector (JBKL1)



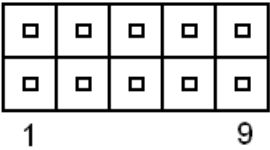
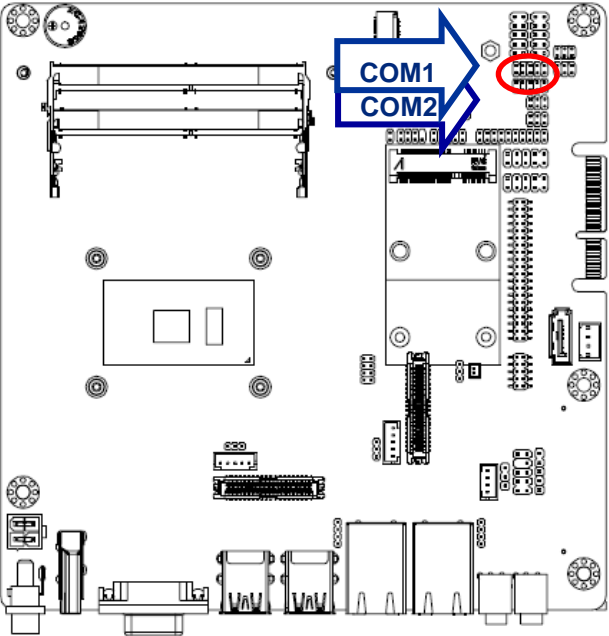
PIN	Signal
1	+12V
2	GND
3	LVDS_BKLT_EN
4	LVDS_BKLTCTL
5	+5V

2.3.8 LCD Inverter connector (JBKL2)



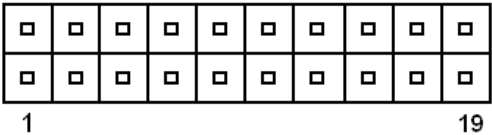
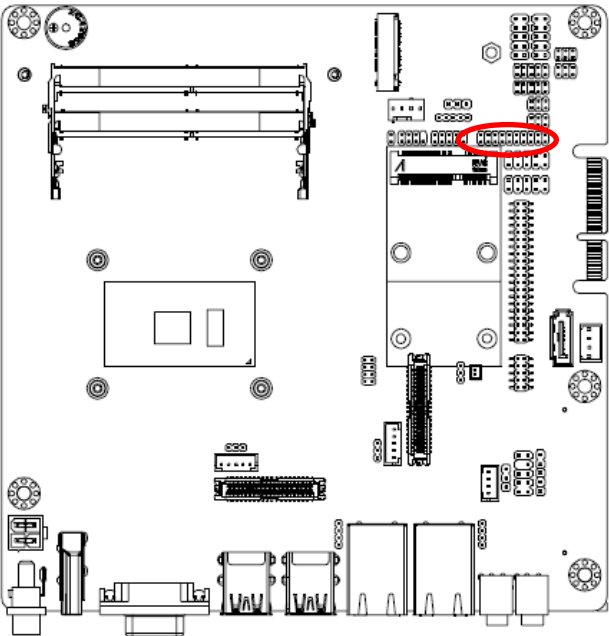
PIN	Signal
1	+12V
2	GND
3	LVDS2_BKLT_EN
4	LVDS2_BKLTCTL
5	+5V

2.3.9 Serial port 1/2 connector (COM1/2)



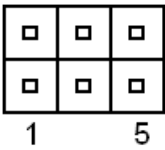
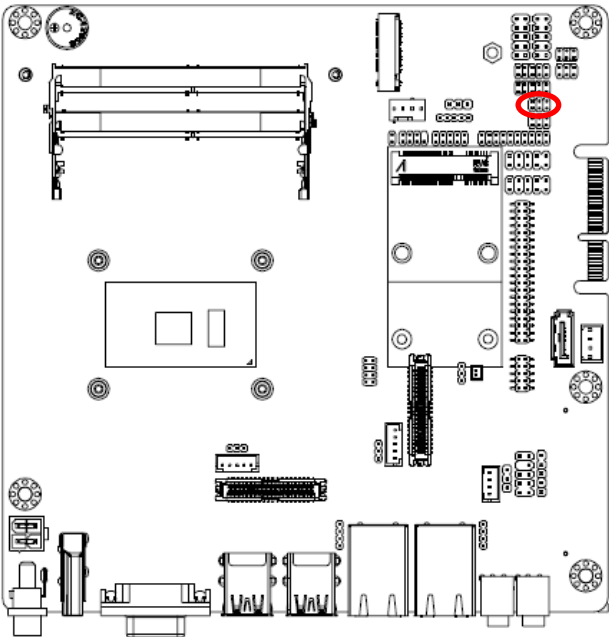
Signal	PIN	PIN	Signal
COM_DCD#	1	2	COM_RXD
COM_TXD	3	4	COM_DTR#
GND	5	6	COM_DSR#
COM_RTS#	7	8	COM_CTS#
COM_RI#	9	10	NC

2.3.10 General purpose I/O connector (DIO1)



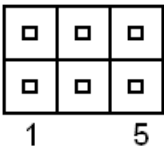
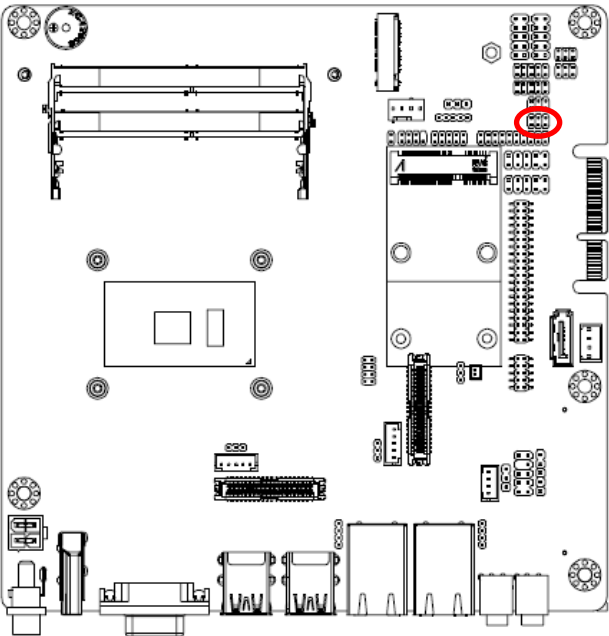
Signal	PIN	PIN	Signal
DI0	1	2	DO0
DI1	3	4	DO1
DI2	5	6	DO2
DI3	7	8	DO3
DI4	9	10	DO4
DI5	11	12	DO5
DI6	13	14	DO6
DI7	15	16	DO7
SMB_CLK_S	17	18	SMB_DATA_S
GND	19	20	+5V

2.3.12 Serial Port 1 RS485/422 Mode connector (JRS485_1)



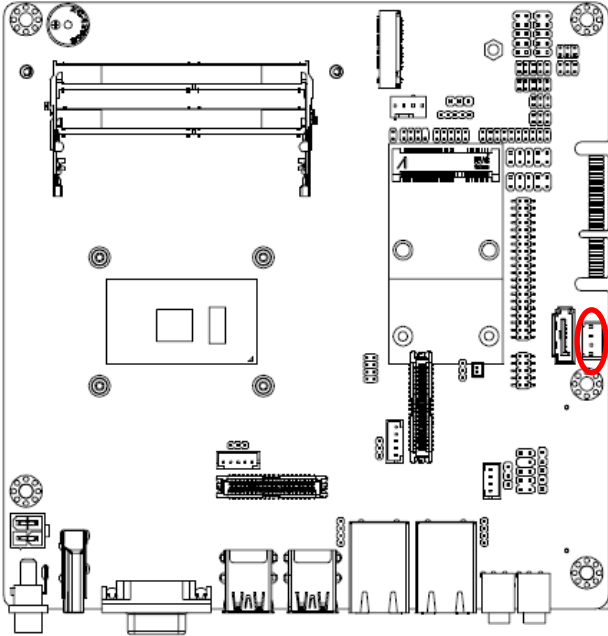
Signal	PIN	PIN	Signal
485_422TX1-	1	2	422RX1-
485_422TX1+	3	4	422RX1+
+5V	5	6	GND

2.3.13 Serial Port 2 RS485/422 Mode connector (JRS485_2)



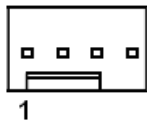
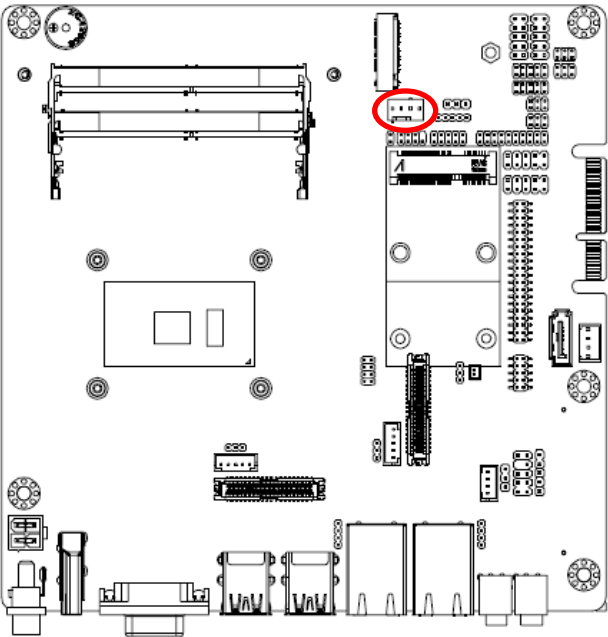
Signal	PIN	PIN	Signal
485_422TX2-	1	2	422RX2-
485_422TX2+	3	4	422RX2+
+5V	5	6	GND

2.3.14 SATA Power connector 1 (SPWR1)



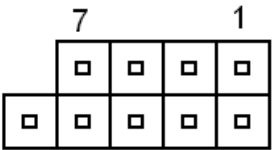
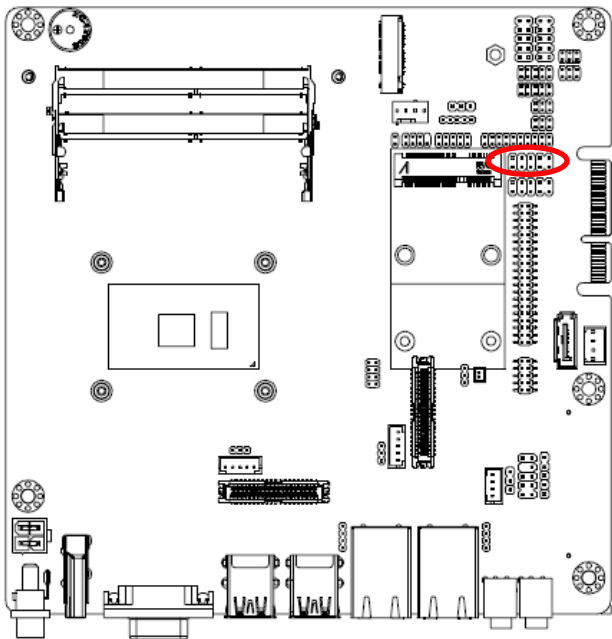
PIN	Signal
1	+V5S_SATA
2	GND
3	GND
4	+V12S_SATA

2.3.15 CPU Fan connector (FAN1)



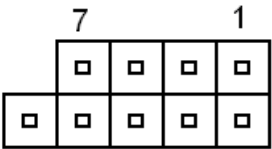
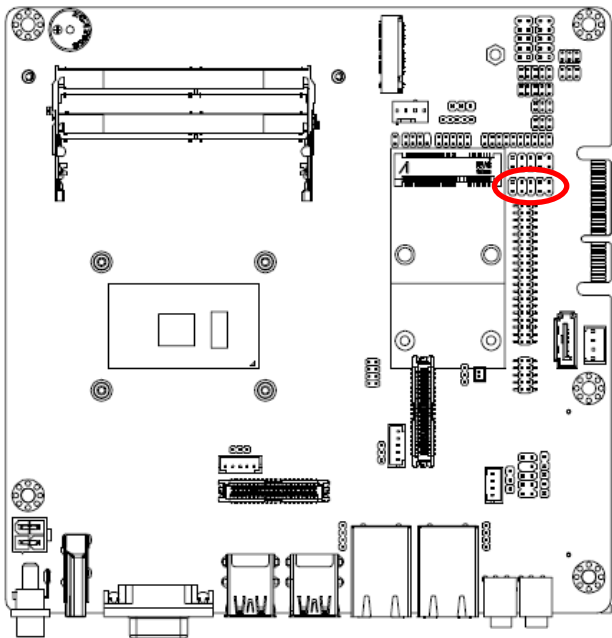
PIN	Signal
1	GND
2	+12V
3	CPUFANIN
4	FAN_PWM0

2.3.16 USB connector 3 (USB3)



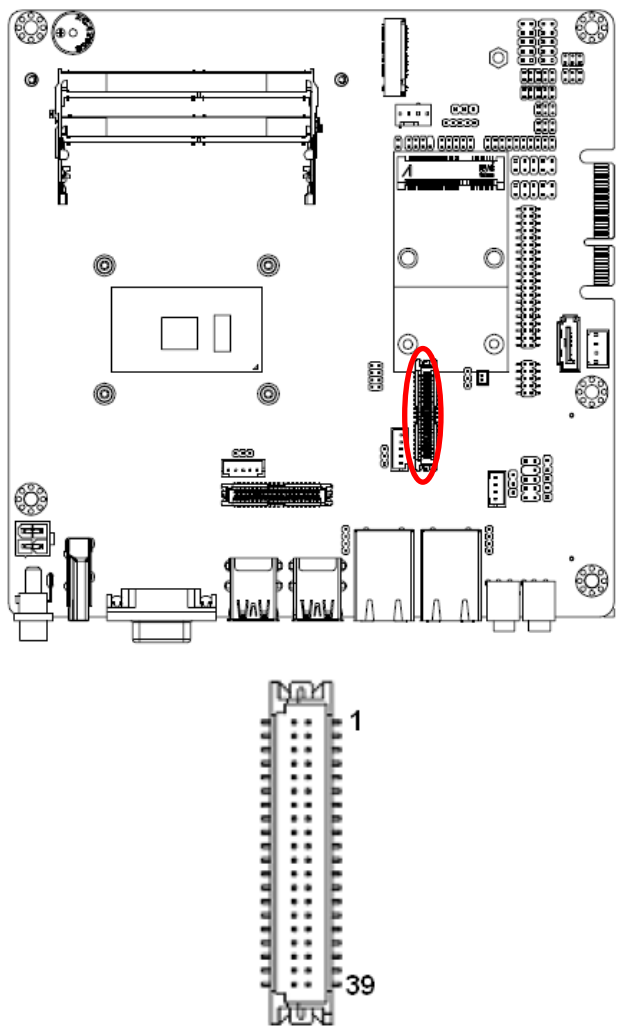
Signal	PIN	PIN	Signal
+V5A_USB78	1	2	+V5A_USB78
USB_DN7	3	4	USB_DN8
USB_DP7	5	6	USB_DP8
GND	7	8	GND
		10	NC

2.3.17 USB connector 4 (USB4)



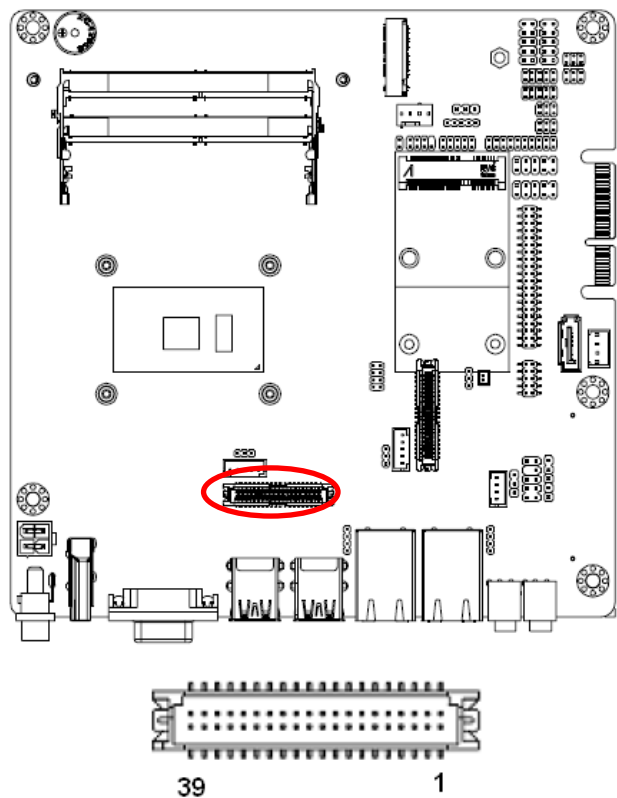
Signal	PIN	PIN	Signal
+V5A_USB910	1	2	+V5A_USB910
USB_DN9	3	4	USB_DN10
USB_DP9	5	6	USB_DP10
GND	7	8	GND
		10	NC

2.3.18 LVDS connector (LVDS1)



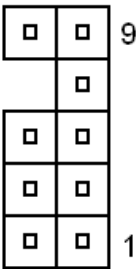
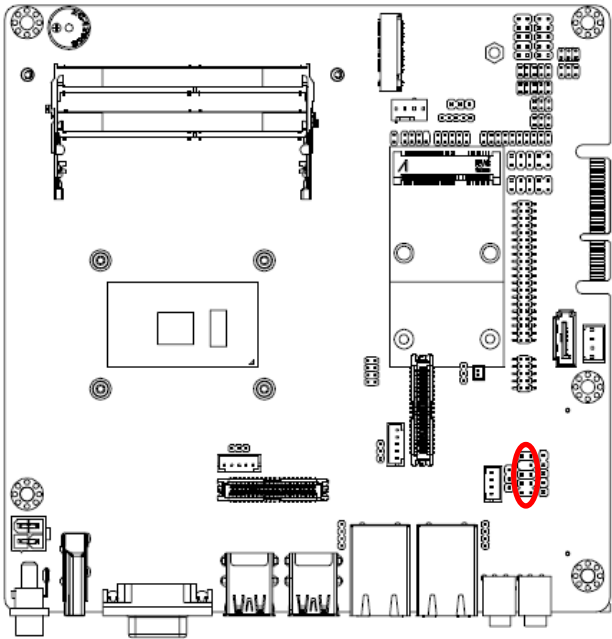
Signal	PIN	PIN	Signal
+5V	2	1	+3.3V
+5V	4	3	+3.3V
NC	6	5	NC
GND	8	7	GND
LVDS_DATA0_P	10	9	LVDS_DATA1_P
LVDS_DATA0_N	12	11	LVDS_DATA1_N
GND	14	13	GND
LVDS_DATA2_P	16	15	LVDS_DATA3_P
LVDS_DATA2_N	18	17	LVDS_DATA3_N
GND	20	19	GND
LVDS_DATA4_P	22	21	LVDS_DATA5_P
LVDS_DATA4_N	24	23	LVDS_DATA5_N
GND	26	25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

2.3.19 LVDS connector (LVDS2)



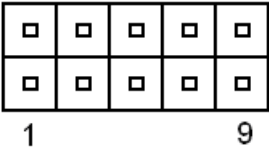
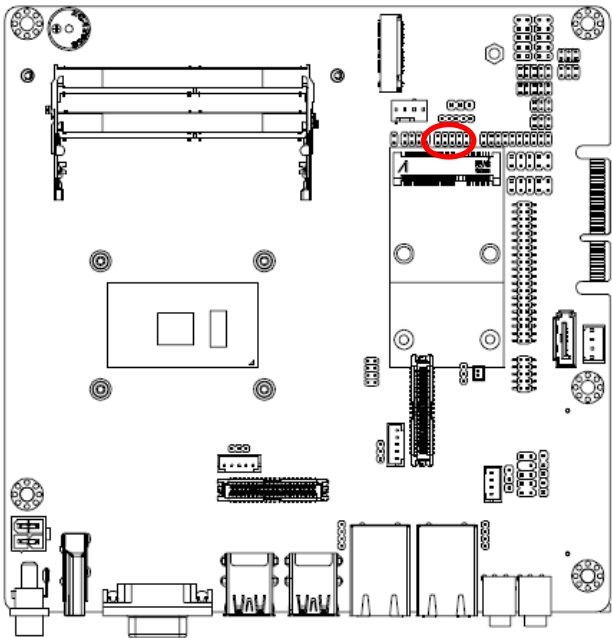
Signal	PIN	PIN	Signal
+5V	2	1	+3.3V
+5V	4	3	+3.3V
NC	6	5	NC
GND	8	7	GND
LVDS2_DATA0_P	10	9	LVDS2_DATA1_P
LVDS2_DATA0_N	12	11	LVDS2_DATA1_N
GND	14	13	GND
LVDS2_DATA2_P	16	15	LVDS2_DATA3_P
LVDS2_DATA2_N	18	17	LVDS2_DATA3_N
GND	20	19	GND
LVDS2_DATA4_P	22	21	LVDS2_DATA5_P
LVDS2_DATA4_N	24	23	LVDS2_DATA5_N
GND	26	25	GND
LVDS2_DATA6_P	28	27	LVDS2_DATA7_P
LVDS2_DATA6_N	30	29	LVDS2_DATA7_N
GND	32	31	GND
LVDS2_CLK1_P	34	33	LVDS2_CLK2_P
LVDS2_CLK1_N	36	35	LVDS2_CLK2_N
GND	38	37	GND
+12V	40	39	+12V

2.3.20 Audio connector (FAUD1)



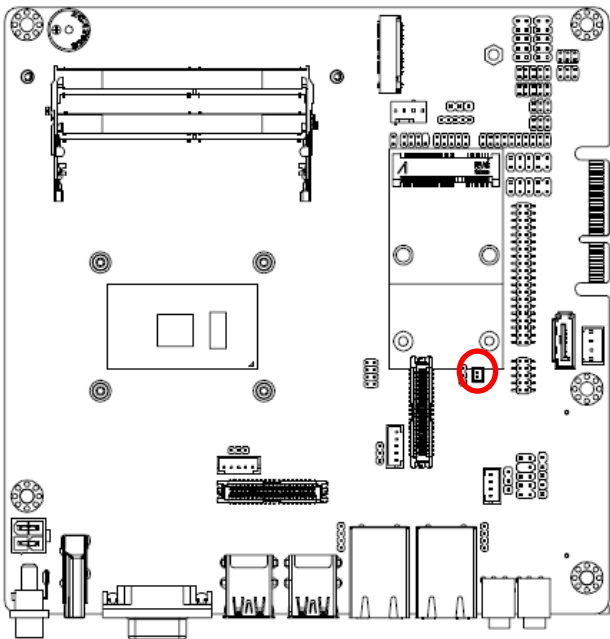
Signal	PIN	PIN	Signal
LINE2_JD	10	9	LINE2_LIN
		7	GND
MIC2_JD	6	5	LINE2_RIN
AUD_FRONT_DET	4	3	MIC2_RIN
GND	2	1	MIC2_LIN

2.3.21 EC Debug (JEC_SPI)



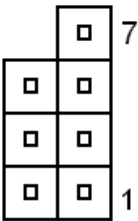
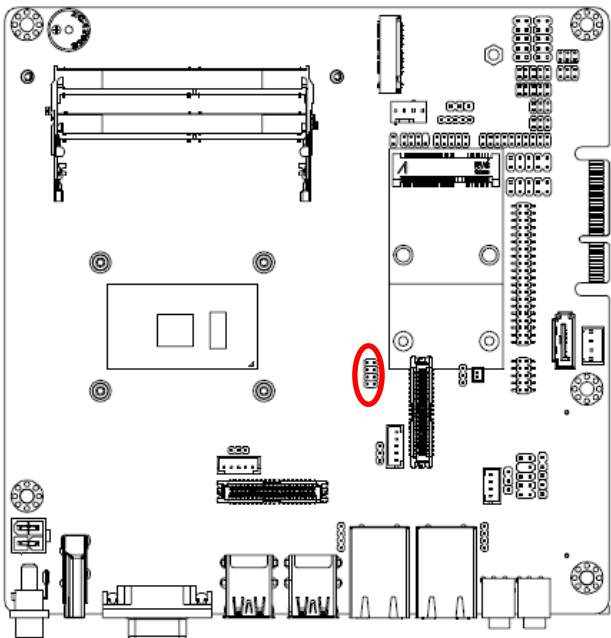
Signal	PIN	PIN	Signal
+3VSPi_EC	1	2	GND
EC_FSCE#	3	4	EC_FSCK
EC_FMISO	5	6	EC_FMOSI
EC_HOLD#	7	8	NC
EC_SMCLK	9	10	EC_SMDAT

2.3.22 Battery connector (BT1)



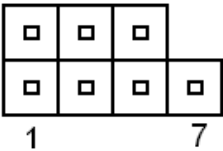
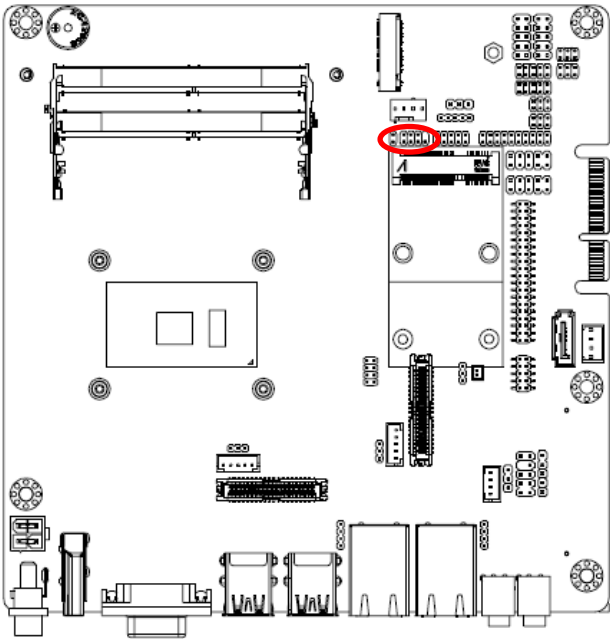
PIN	Signal
1	+RTCBAT
2	GND

2.3.23 SPI connector (JSPI1)



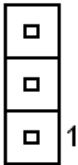
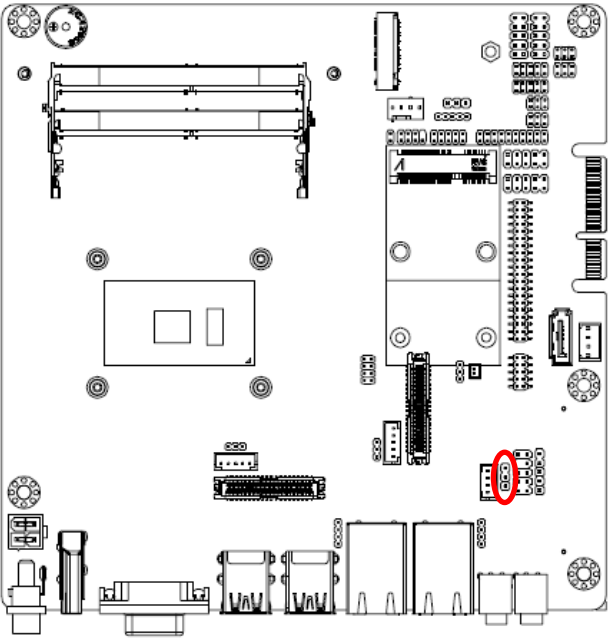
Signal	PIN	PIN	Signal
		7	HOLD#
SPI_SI	6	5	SPI_SO
SPI_CLK	4	3	SPI0_CS0#
GND	2	1	+3.3A_SPI

2.3.24 PS/2 keyboard & mouse header (KB/MS)



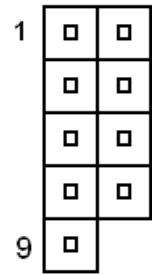
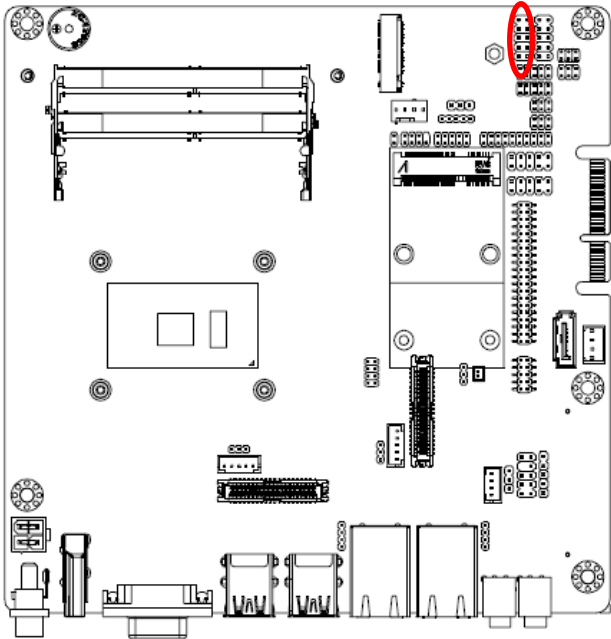
Signal	PIN	PIN	Signal
KBDAT	1	2	KBCLK
GND	3	4	5V
MSDAT	5	6	MSCLK
NC	7		

2.3.25 Sony/Philips Digital Interface (SPDIF1)



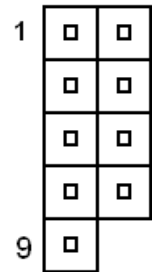
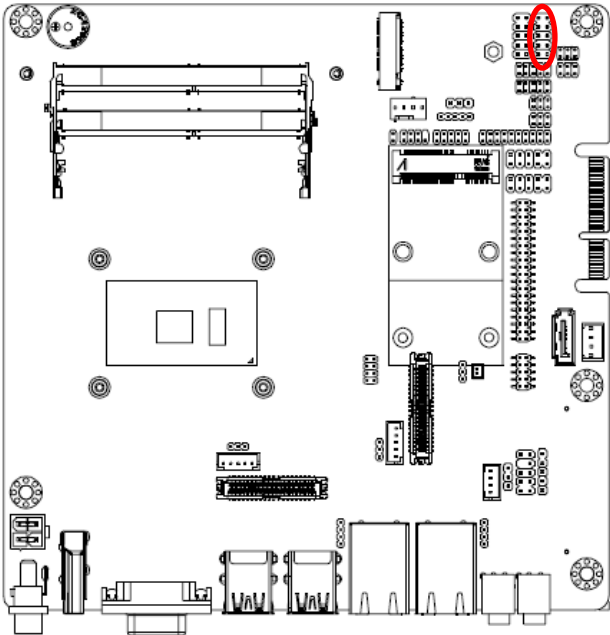
Signal	PIN
GND	3
SPDIF_OUT	2
+5V	1

2.3.26 Miscellaneous setting connector 1 (FPT1)



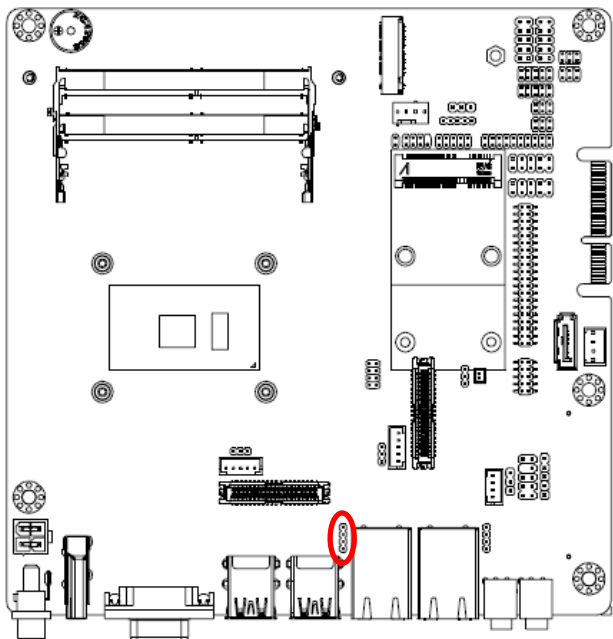
Signal	PIN	PIN	Signal
+HD_LED	1	2	+PWR_LED
-HD_LED	3	4	-PWE_LED
EC_SYSRST#	5	6	FP_PWR_BTN_EC#
GND	7	8	GND
NC	9		

2.3.27 Miscellaneous setting connector 2 (FPT2)



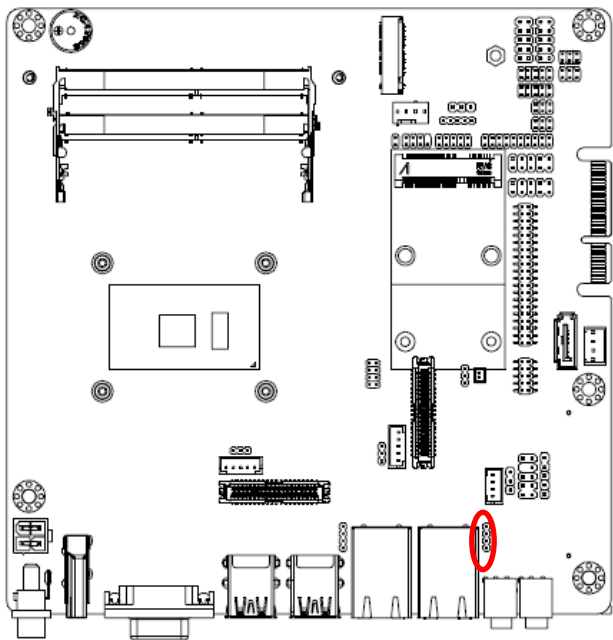
Signal	PIN	PIN	Signal
SPKR+	1	2	BLK_VR_MOD
NC	3	4	BLK_BRI_UP#
NC	5	6	BLK_BRI_DN#
SPKR-	7	8	GND
NC	9	10	

2.3.28 LED indicator connector 1 (LED1)



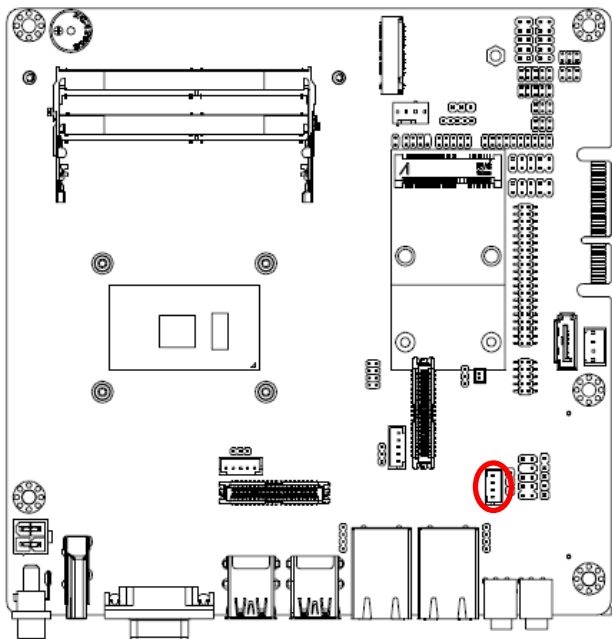
Signal	PIN
LAN1_1000#_LED	4
LAN1_100#_LED	3
LAN1_ACT_N	2
LAN1_ACT_P	1

2.3.29 LED indicator connector 2 (LED2)



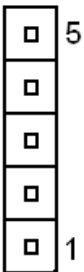
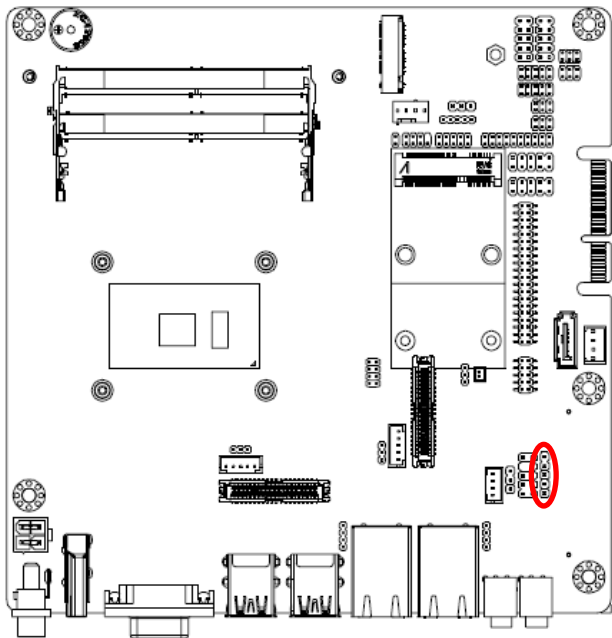
Signal	PIN
LAN2_1000#_LED	4
LAN2_100#_LED	3
LAN2_ACT_N	2
LAN2_ACT_P	1

2.3.30 Speaker connector (SPK1)



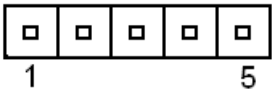
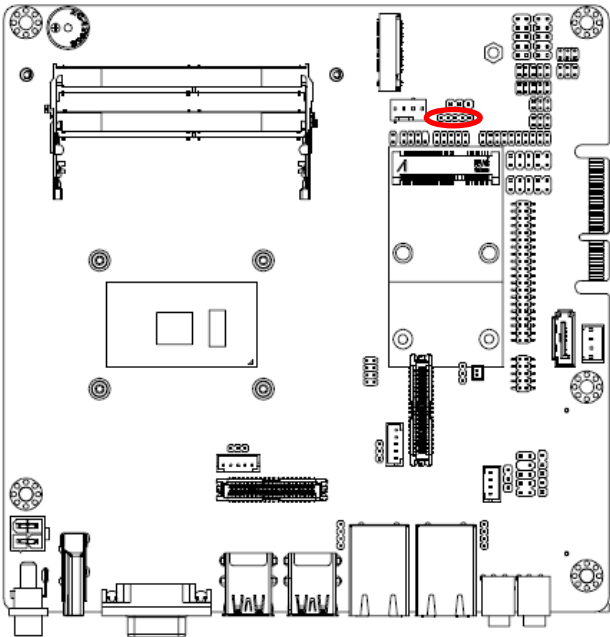
Signal	PIN
SPK_R-	4
SPK_R+	3
SPK_L-	2
SPK_L+	1

2.3.31 Mic-in connector (DMIC1)



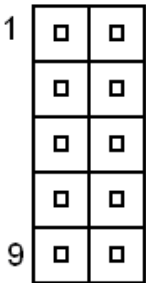
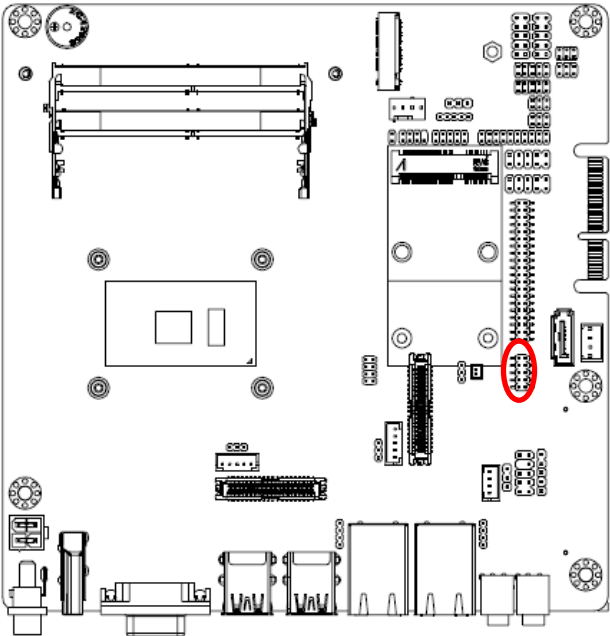
Signal	PIN
NC	5
DMIC_CLK	4
GND	3
DMIC_DATA	2
+3.3V	1

2.3.32 I2C connector (I2C1)



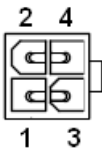
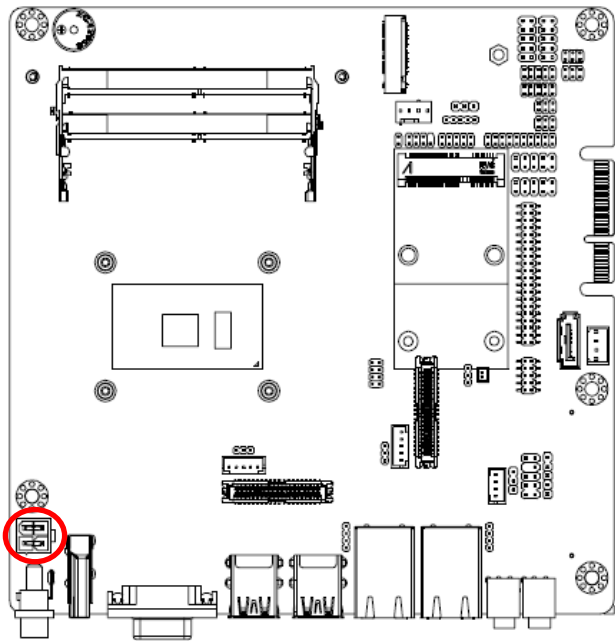
Signal	PIN
+3.3V	1
INT_I2C0#	2
I2C0_CLK	3
I2C0_DATA	4
GND	5

2.3.33 LPC connector (JLPC)



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

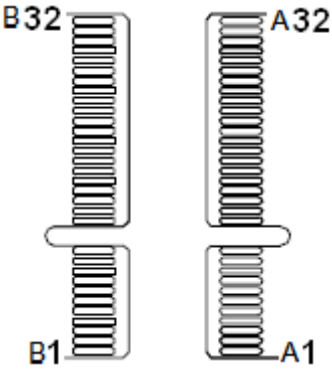
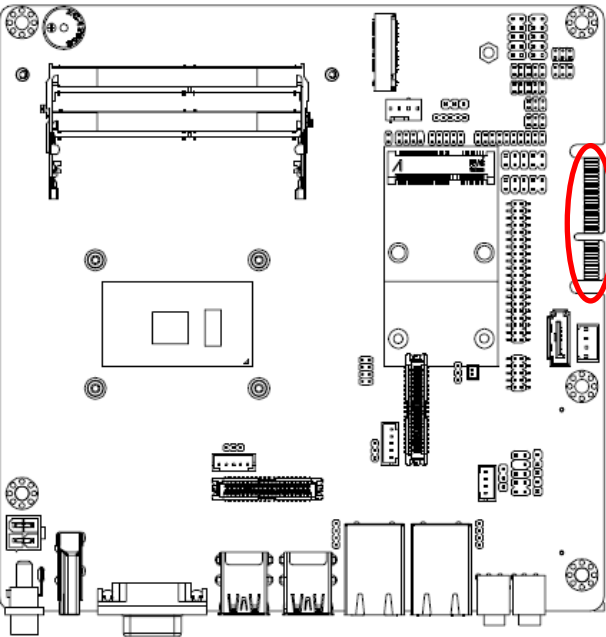
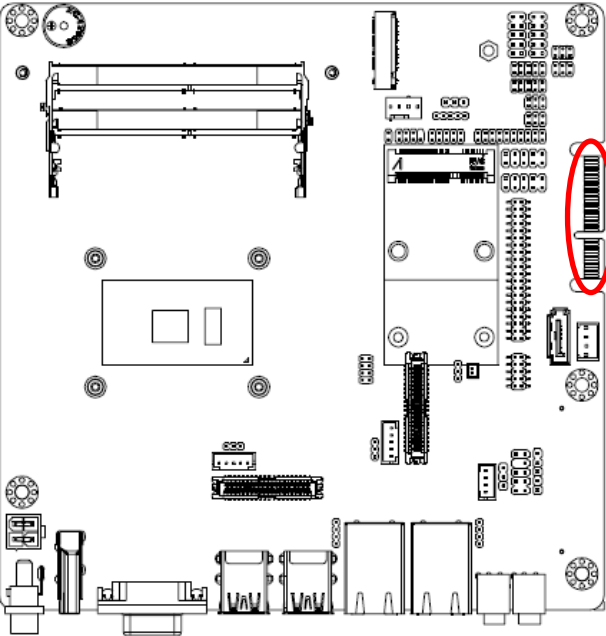
2.3.34 Power connector (PWR1)



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

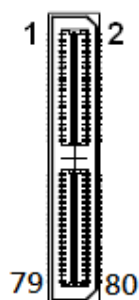
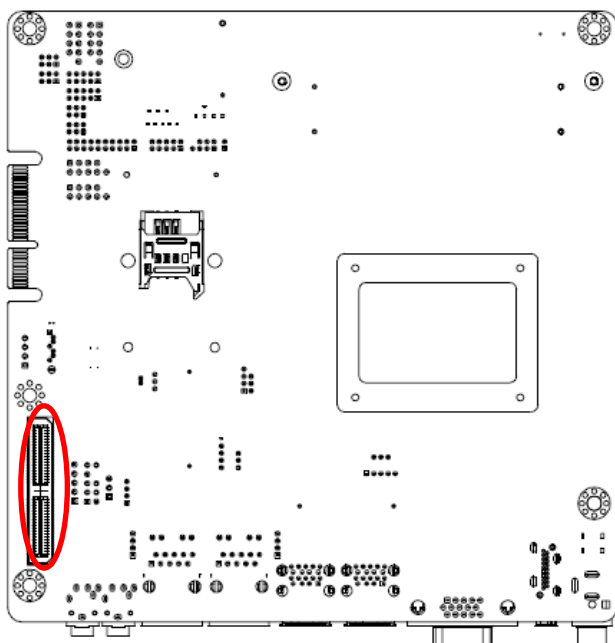
Note: VIN = 12~24V

2.3.35 Gold Finger (GF)



Signal	PIN	PIN	Signal
+12V	B1	A1	+12V
+12V	B2	A2	+12V
+12V	B3	A3	+12V
GND	B4	A4	GND
SMCLK	B5	A5	S3#
SMDAT	B6	A6	PWROK
GND	B7	A7	CKL_REQ#
VCCSB	B8	A8	VCCSB
VCCSB	B9	A9	VCCSB
VCCSB	B10	A10	VCCSB
WAKE#	B11	A11	PERST#
	KEY		
GND	B12	A12	GND
PCIE_TX0+	B13	A13	PCIE_CLK_REF+
PCIE_TX0-	B14	A14	PCIE_CLK_REF-
GND	B15	A15	GND
PCIE_TX1+	B16	A16	PCIE_RX0+
PCIE_TX1-	B17	A17	PCIE_RX0-
GND	B18	A18	GND
PCIE_TX2+	B19	A19	PCIE_RX1+
PCIE_TX2-	B20	A20	PCIE_RX1-
GND	B21	A21	GND
PCIE_TX3+	B22	A22	PCIE_RX2+
PCIE_TX3-	B23	A23	PCIE_RX2-
GND	B24	A24	GND
SATA_TX+	B25	A25	PCIE_RX3+
SATA_TX-	B26	A26	PCIE_RX3-
GND	B27	A27	GND
USB_D+	B28	A28	SATA_RX+
USB_D-	B29	A29	SATA_RX-
GND	B30	A30	GND
OC#	B31	A31	DEVS_LP
PWR_BTN#	B32	A32	NC

2.3.36 IET Connector (IET_CB1)



Signal	PIN	PIN	Signal
GND	1	2	GND
PCIE_RX0+	3	4	PCIE_TX0+
PCIE_RX0-	5	6	PCIE_TX0-
GND	7	8	GND
PCIE_RX1+	9	10	PCIE_TX1+
PCIE_RX1-	11	12	PCIE_TX1-
GND	13	14	GND
NC	15	16	NC
NC	17	18	NC
GND	19	20	GND

Signal	PIN	PIN	Signal
NC	21	22	NC
NC	23	24	NC
GND	25	26	GND
PCIE_CLK_REF+	27	28	NC
PCIE_CLK_REF-	29	30	NC
GND	31	32	NC
SMCLK	33	34	NC
SMDAT	35	36	NC
WAKE#	37	38	PWROK
PERST#	39	40	NC
83,84,85,86--GND	KEY		
S3#	41	42	LPC_CLK
NC	43	44	LPC_AD0
NC	45	46	LPC_AD1
GND	47	48	LPC_AD2
NC	49	50	LPC_AD3
NC	51	52	LPC_DRQ0#
GND	53	54	LPC_SERIRQ
NC	55	56	LPC_FRAME#
NC	57	58	GND
GND	59	60	USB_D0+
NC	61	62	USB_D0-
NC	63	64	GND
GND	65	66	USB_D1+
NC	67	68	USB_D2-
NC	69	70	GND
GND	71	72	NC
NC	73	74	NC
NC	75	76	GND
GND	77	78	OC#
+12V	79	80	+12V
87,88,89,90--VCCSB	KEY		

3.BIOS Setup

3.1 Introduction

The BIOS setup program allows users to modify the basic system configuration. In this following chapter will describe how to access the BIOS setup program and the configuration options that may be changed.

3.2 Starting Setup

The AMI BIOS™ is immediately activated when you first power on the computer. The BIOS reads the system information contained in the NVRAM and begins the process of checking out the system and configuring it. When it finishes, the BIOS will seek an operating system on one of the disks and then launch and turn control over to the operating system.

While the BIOS is in control, the Setup program can be activated in one of two ways:

By pressing or <F2> immediately after switching the system on, or

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

Press or <F2> to enter SETUP

If the message disappears before you respond and you still wish to enter Setup, restart the system to try again by turning it OFF then ON or pressing the "RESET" button on the system case. You may also restart by simultaneously pressing <Ctrl>, <Alt>, and <Delete> keys. If you do not press the keys at the correct time and the system does not boot, an error message will be displayed and you will again be asked to.

Press F1 to Continue, DEL to enter SETUP

3.3 Using Setup

In general, you use the arrow keys to highlight items, press <Enter> to select, use the PageUp and PageDown keys to change entries, press <F1> for help and press <Esc> to quit. The following table provides more detail about how to navigate in the Setup program using the keyboard.

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

- **Navigating Through The Menu Bar**

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



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

- **To Display a Sub Menu**

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

3.4 Getting Help

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

3.5 In Case of Problems

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

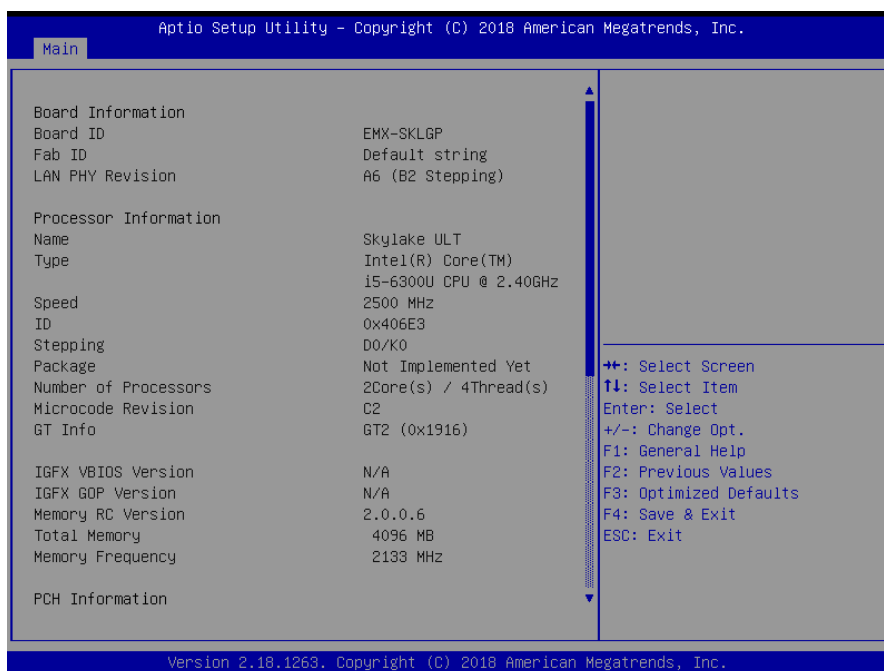
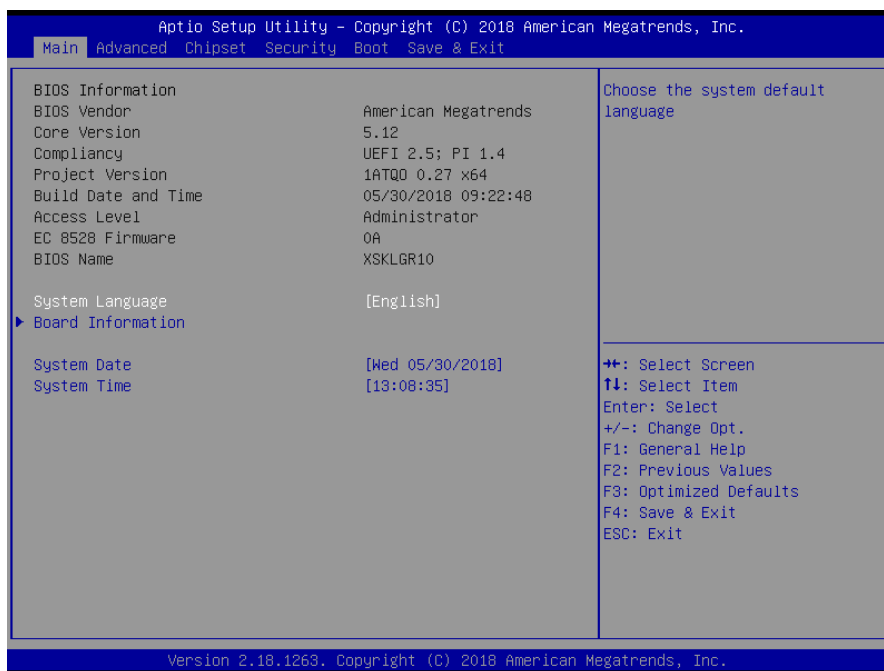
The best advice is to only alter settings which you thoroughly understand. To this end, we strongly recommend that you avoid making any changes to the chipset defaults. These defaults have been carefully chosen by both BIOS Vendor and your systems manufacturer to provide the absolute maximum performance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

3.6 BIOS setup

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

3.6.1 Main Menu

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



3.6.1.1 System Language

This option allows choosing the system default language.

3.6.1.2 System Date

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

3.6.1.3 System Time

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

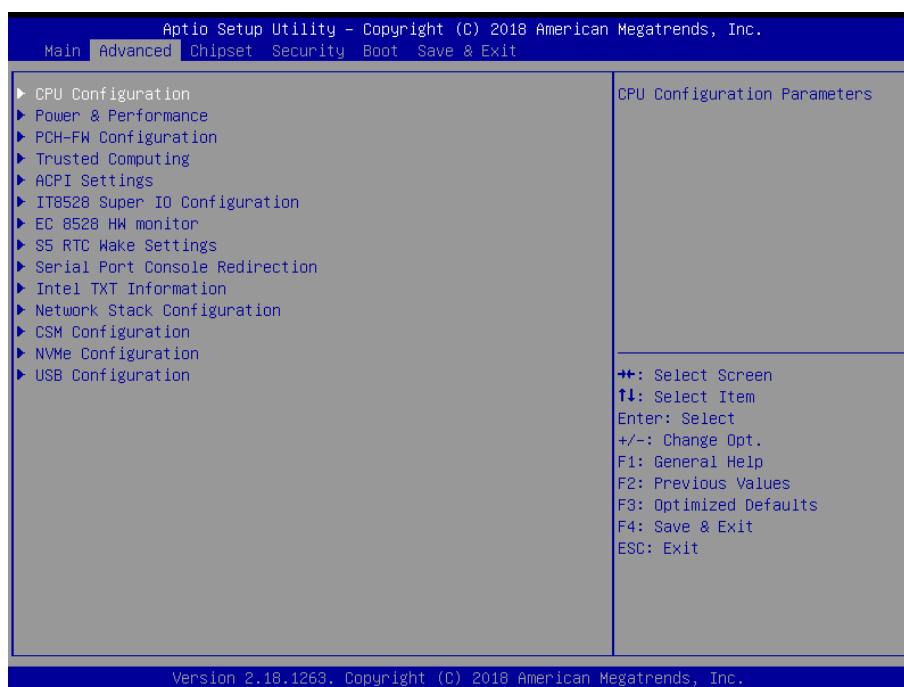


Note: The BIOS setup screens shown in this chapter are for reference purposes only, and may not exactly match what you see on your screen.

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

3.6.2 Advanced Menu

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



3.6.2.1 CPU Configuration

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



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

3.6.2.2 Power & Performance



3.6.2.2.1 CPU-Power Management Control

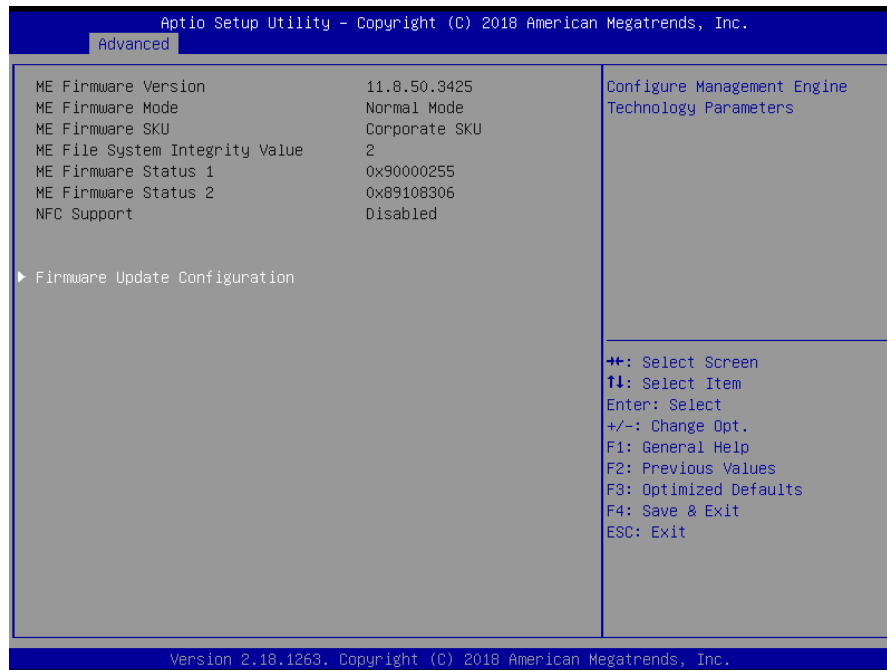


Item	Options	Description
Turbo Mode	Disabled, Enabled [Default]	Enable/Disable processor Turbo Mode (requires EMTTM enabled too). AUTO means enabled, unless max turbo ratio is bigger than 16 – SKL A0 W/A.

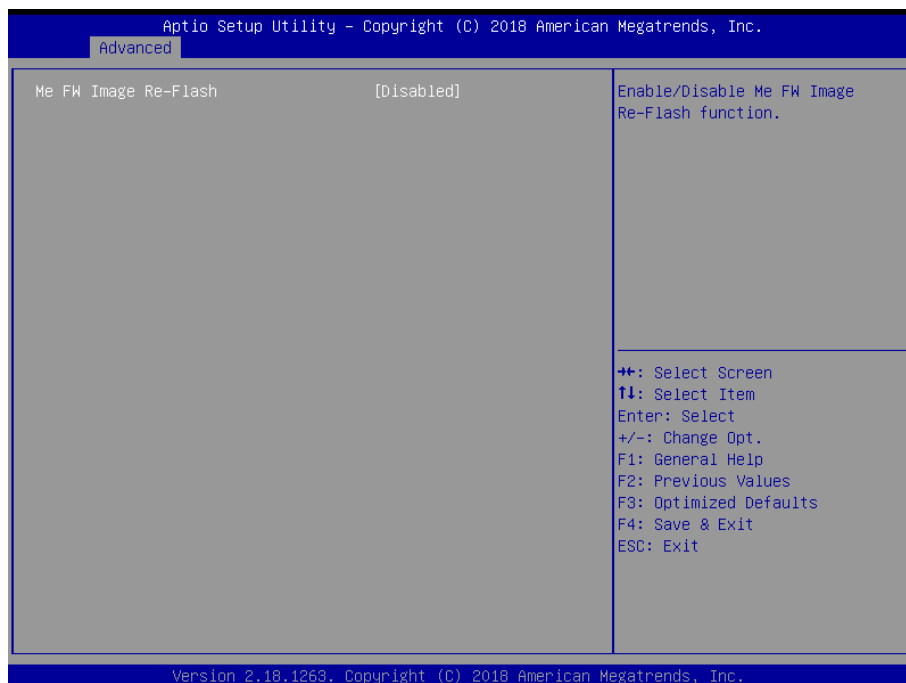
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C states	Enabled [Default] Disabled,	Enable/Disable CPU Power Management. Allows CPU to go to C states when it's not 100% utilized.
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3.6.2.3 PCH-FW Configuration



3.6.2.3.1 Firmware Update Configuration



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

3.6.2.4 Trusted Computing



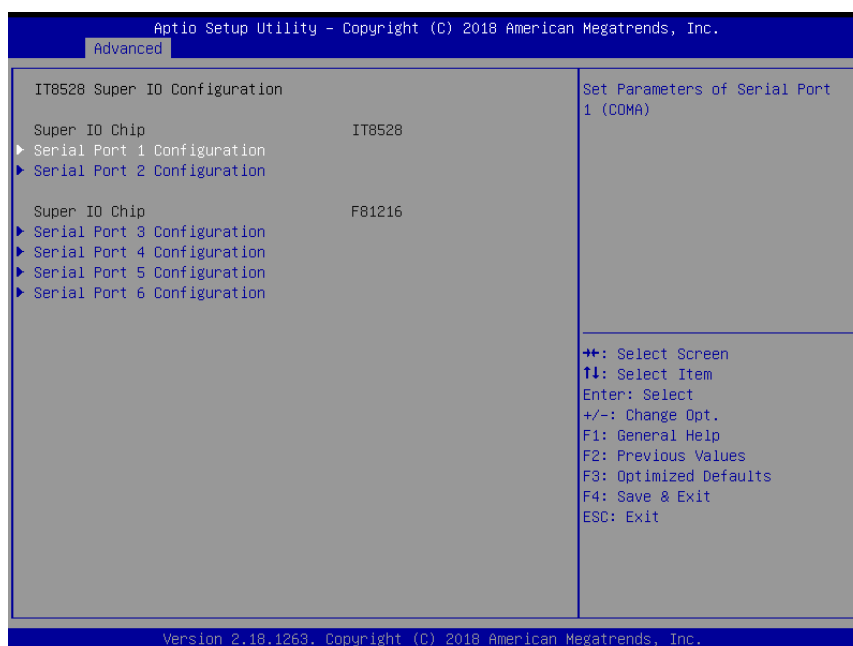
Item	Options	Description
Security Device Support	Enabled[Default] Disabled,	Enable/Disable BIOS support for security device. O.S. will not show Security Device.TCG EFI protocol and INT1A interface will not be available.

3.6.2.5 ACPI Settings



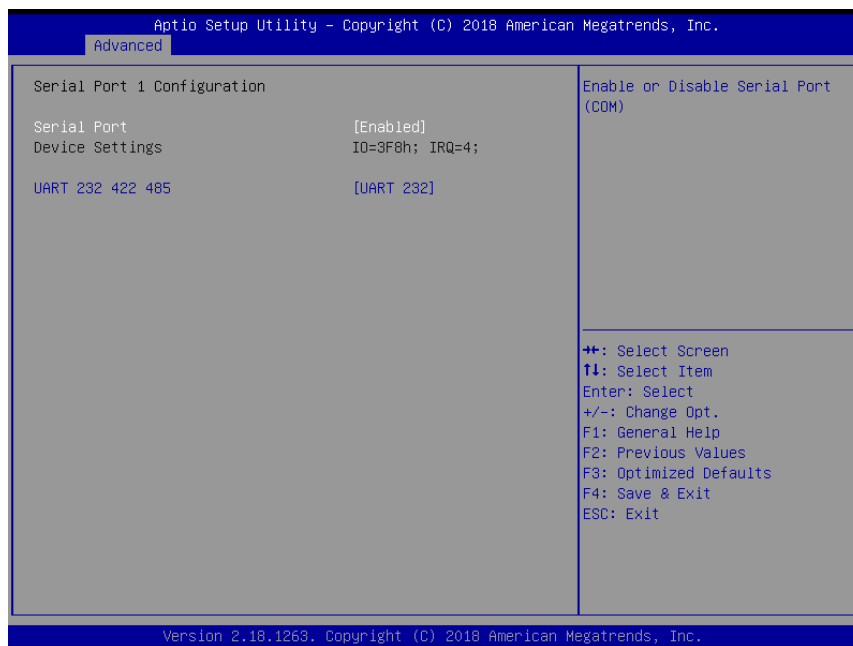
Item	Options	Description
Enable Hibernation	Disabled Enabled[Default],	Enables or Disables System ability to Hibernates (OS/S4 Sleep State). This option may be not effective with some operating systems.
ACPI Sleep State	Suspend Disabled, S3 (Suspend to RAM)[Default]	Select the highest ACPI sleep state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

3.6.2.6 IT8528 Super IO Configuration



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

3.6.2.6.1 Serial Port 1 Configuration



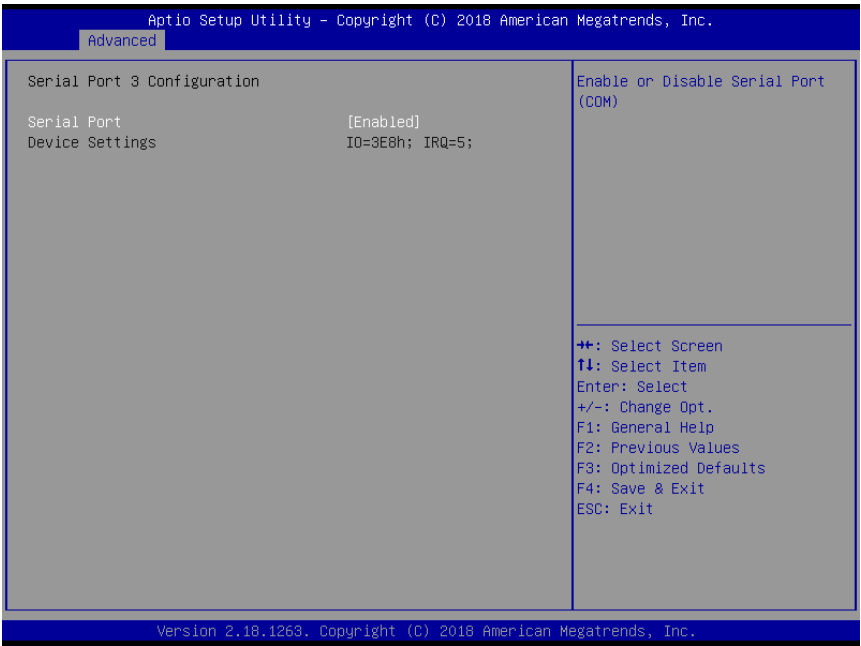
Item	Option	Description
Serial Port	Enabled[Default], Disabled	Enable or Disable Serial Port (COM).
UART 232 422 485	UART 232[Default], UART 422, UART 485	Change the Serial Port as RS232/422/485.

3.6.2.6.2 Serial Port 2 Configuration



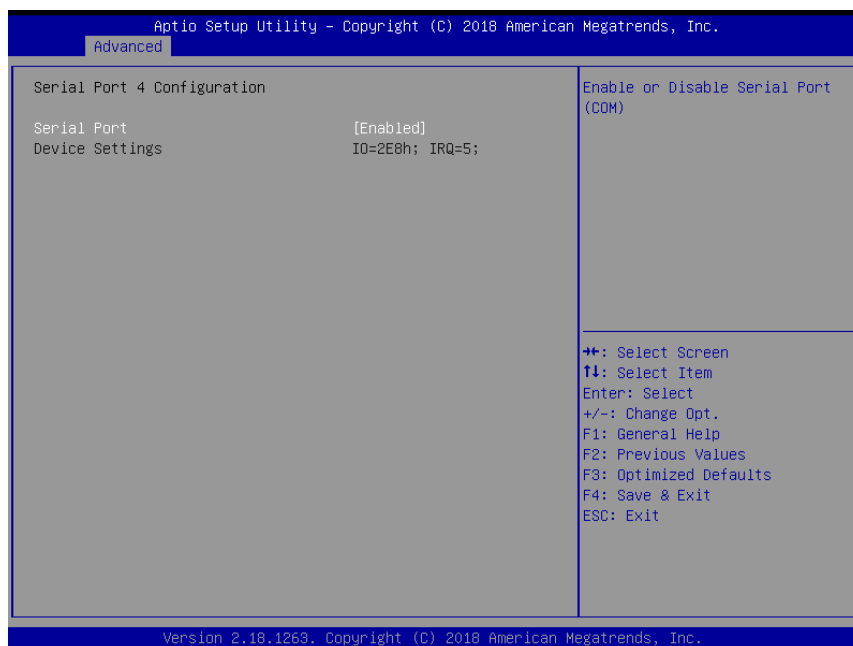
Item	Option	Description
Serial Port	Enabled[Default], Disabled	Enable or Disable Serial Port (COM).
UART 232 422 485	UART 232[Default], UART 422, UART 485	Change the Serial Port as RS232/422/485.

3.6.2.6.3 Serial Port 3 Configuration



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

3.6.2.6.4 Serial Port 4 Configuration



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

3.6.2.6.5 Serial Port 5 Configuration



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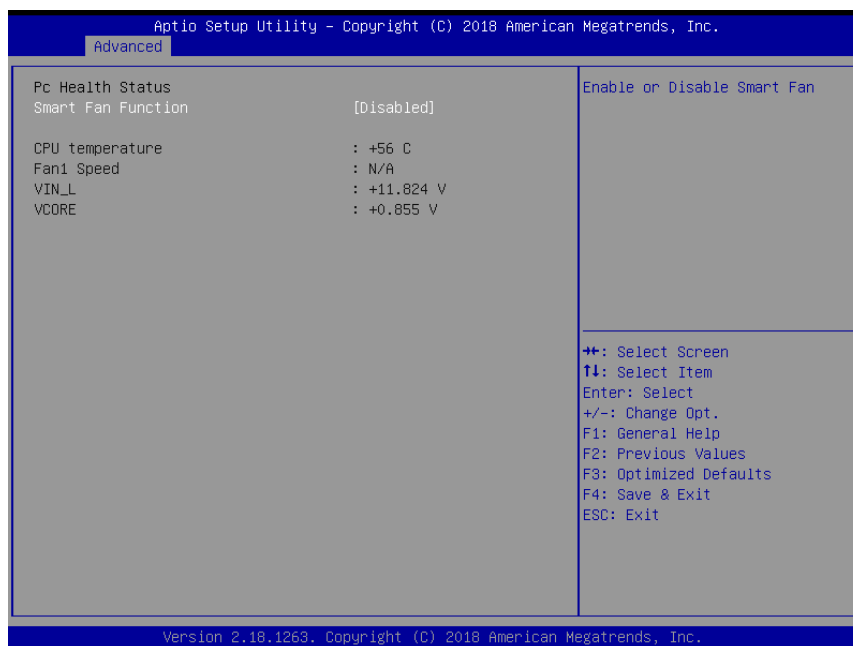
Item	Option	Description
Serial Port	Disabled Enabled[Default],	Enable or Disable Serial Port (COM).

3.6.2.6.6 Serial Port 6 Configuration



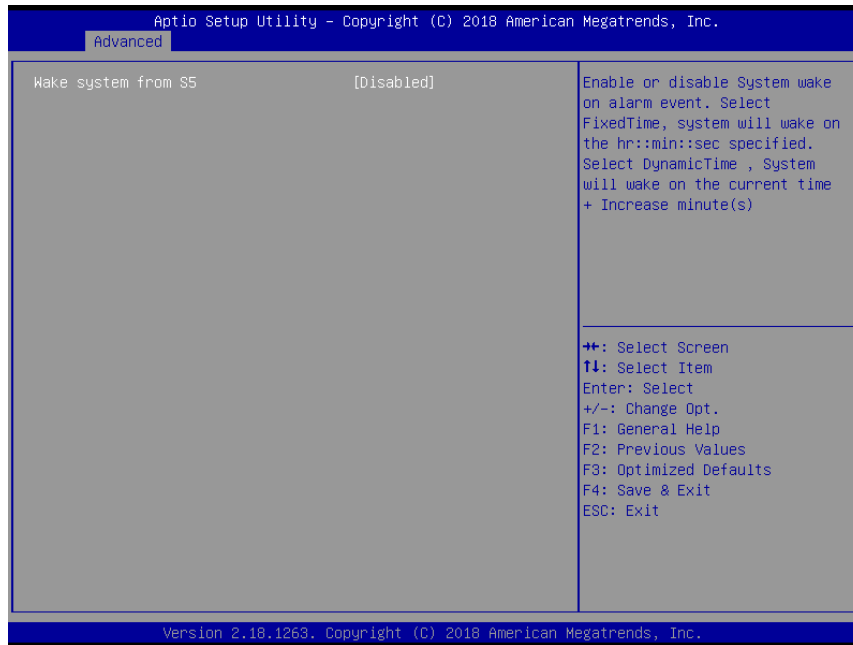
Item	Option	Description
Serial Port	Disabled Enabled[Default],	Enable or Disable Serial Port (COM).

3.6.2.7 EC 8528 HW monitor



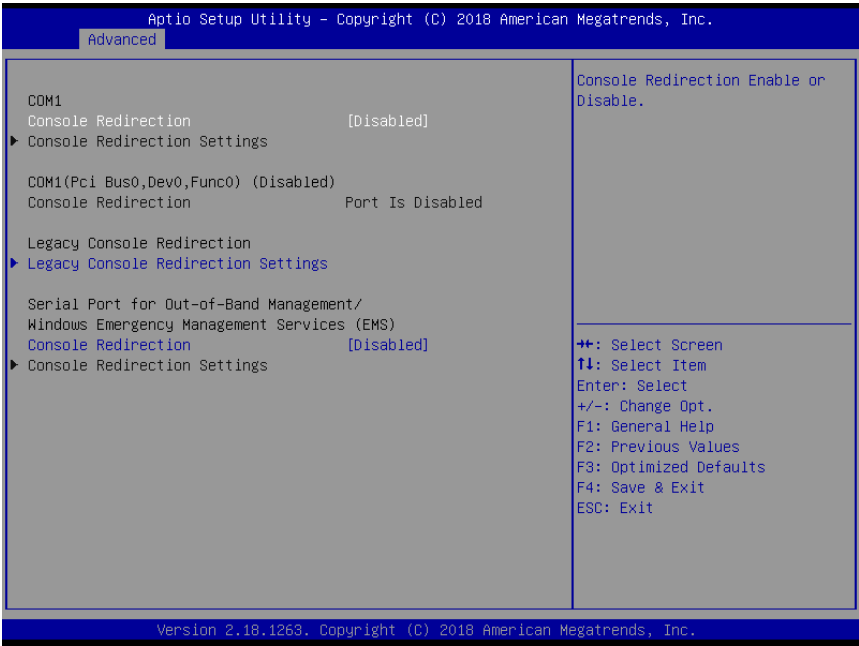
Item	Options	Description
Smart Fan Function	Disabled [Default] , Enabled	Enabled or Disable Smart Fan

3.6.2.8 S5 RTC Wake Settings



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

3.6.2.9 Serial Port Console Redirection



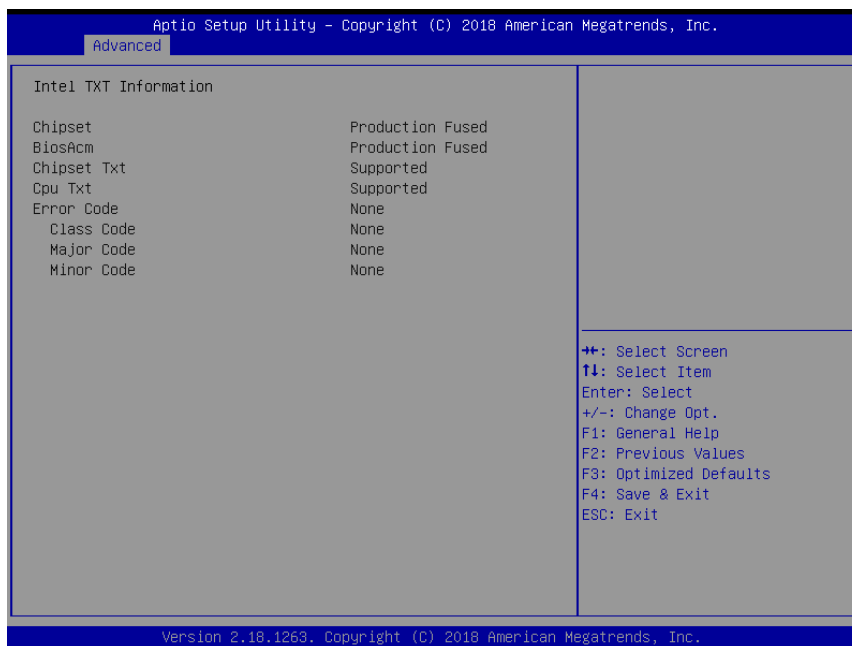
Item	Option	Description
Console Redirection	Disabled[Default], Enabled	Console Redirection Enabled or Disable.
Legacy Console Redirection Settings		Legacy Console Redirection Settings
Console Redirection	Disabled[Default], Enabled	Console Redirection Enabled or Disable.

3.6.2.10 Legacy Serial Redirection Port



Item	Option	Description
Legacy Serial Redirection Port	COM1	Select a COM port to display redirection of Legacy OPROM Messages

3.6.2.11 Intel TXT Information



3.6.2.12 Network Stack Configuration



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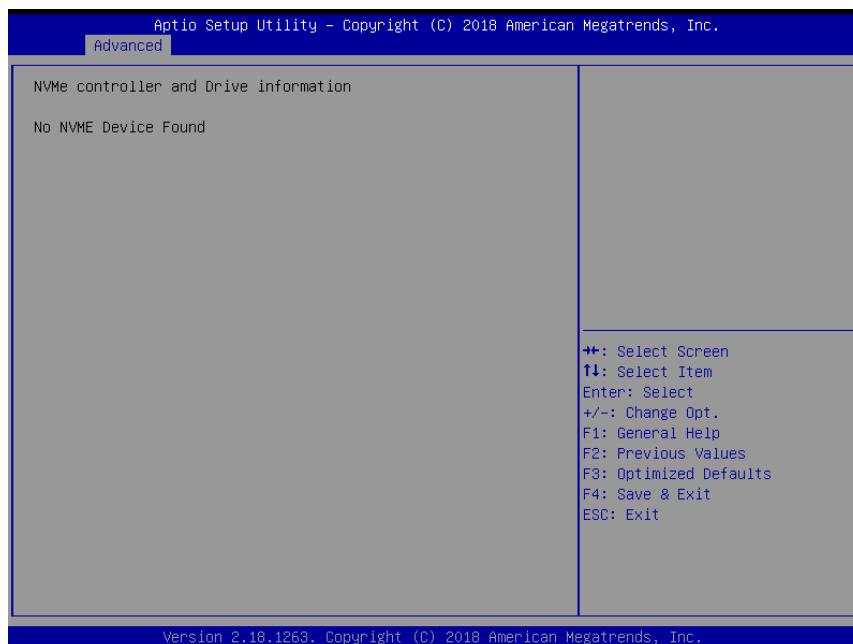
Item	Options	Description
Network Stack	Disabled[Default] Enabled	Enable/Disable UEFI Network Stack.

3.6.2.13 CSM Configuration

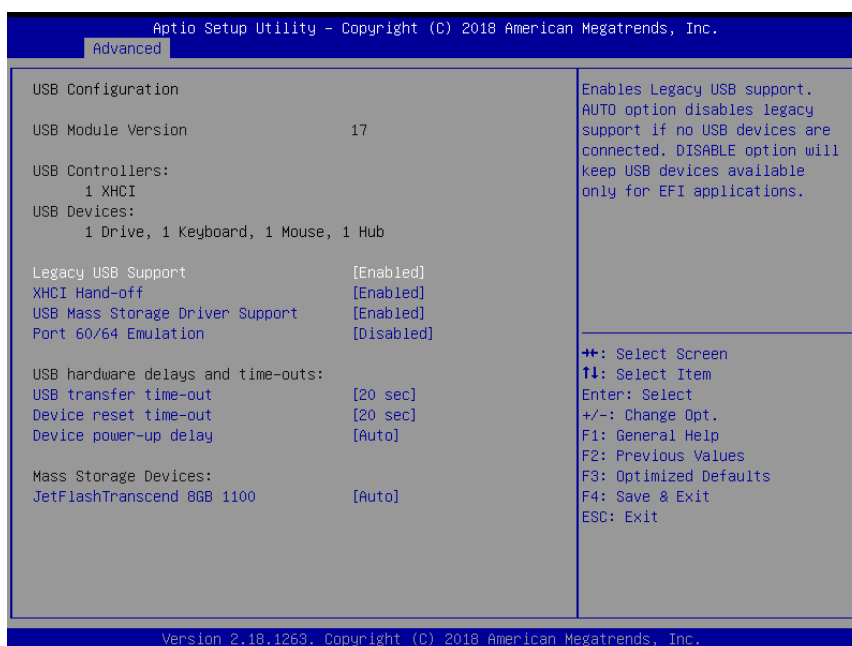


Item	Options	Description
CSM Support	Enabled Disabled[Default]	Enable/Disable CMS Support.

3.6.2.14 NVMe controller and Drive information



3.6.2.15 USB Configuration

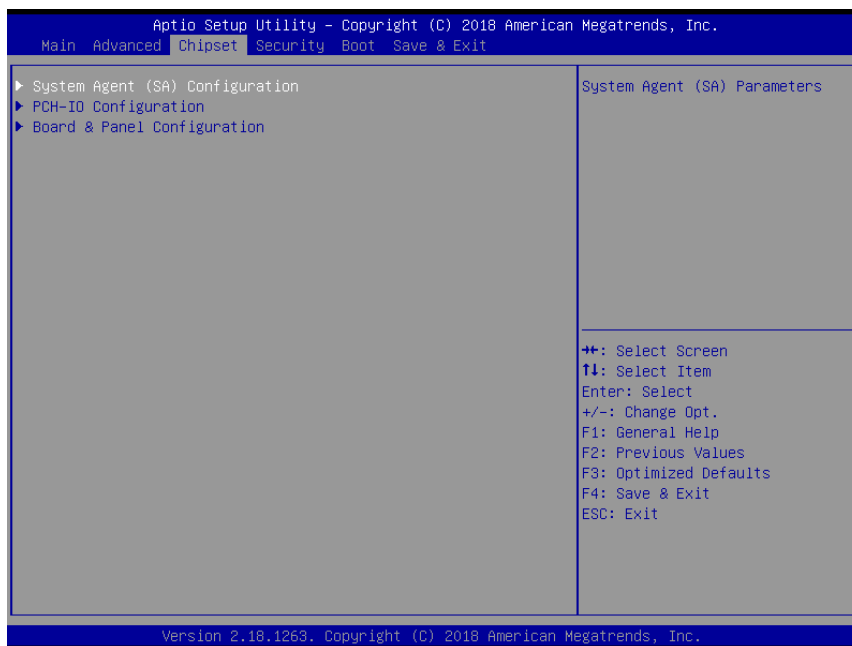


Item	Options	Description
Legacy USB Support	Enabled[Default] Disabled Auto	Enables Legacy USB support. AUTO option disables legacy support if no USB devices are connected. DISABLE option will keep USB devices available only for EFI applications.
XHCI Hand-off	Enabled[Default] Disabled	This is a workaround for OS without XHCI hand-off support. The XHCI ownership change should be claimed by XHCI driver.
USB Mass Storage Driver Support	Enabled[Default] Disabled	Enable/Disable USB Mass Storage Driver Support.
Port 60/64 Emulation	Enabled Disabled[Default]	Enables I/O port 60h/64h emulation support. This should be enabled for the complete USB keyboard legacy support for non-USB aware OSes.
USB transfer time-out	1 sec 5 sec 10 sec 20 sec[Default]	The time-out value for Control, Bulk, and Interrupt transfers.
Device reset time-out	10 sec 20 sec[Default] 30 sec 40 sec	USB mass storage device Start Unit command time-out.
Device power-up delay	Auto[Default] Manual	Maximum time the device will take before it properly reports itself to the Host Controller. 'Auto' uses default value: for a Root port it is 100ms, for a Hub port the delay is taken from Hub descriptor.
JetFlashTranscend 8GB 1100	Auto[Default] Floppy Forced FDD	Mass storage device emulation. 'AUTO' enumerates devices according to their media format. Optical drives are emulated as

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	Hard Disk CD-ROM	'CDROM', drive with no media will be emulated according.
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3.6.3 Chipset

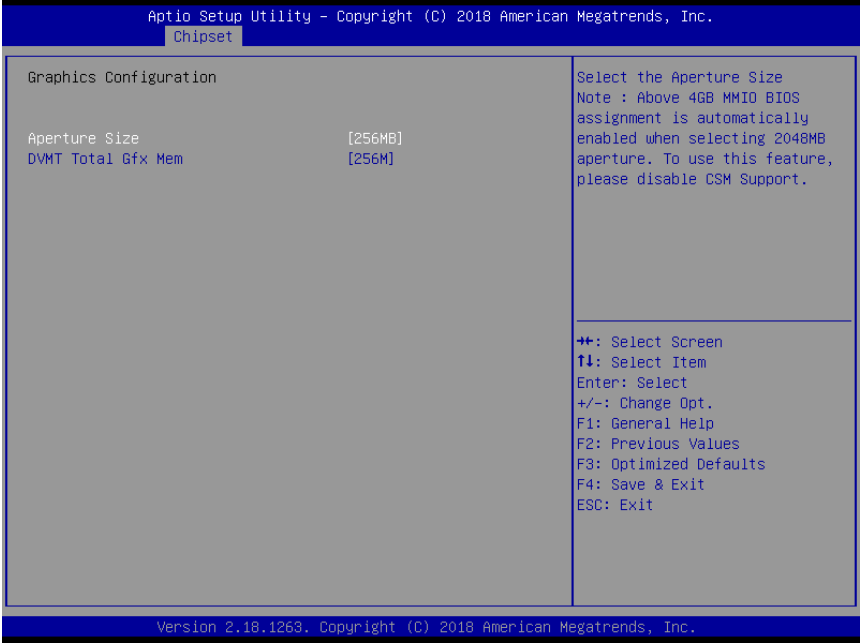


3.6.3.1 System Agent (SA) Configuration



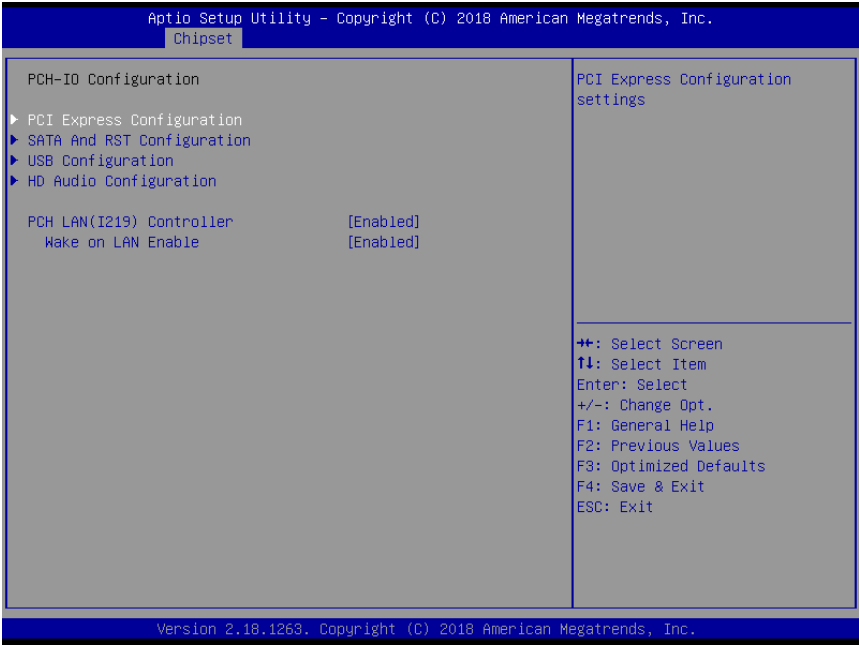
Item	Option	Description
VT-d	Enabled[Default] Disabled	VT-d capability.

3.6.3.1.1 Graphics Configuration



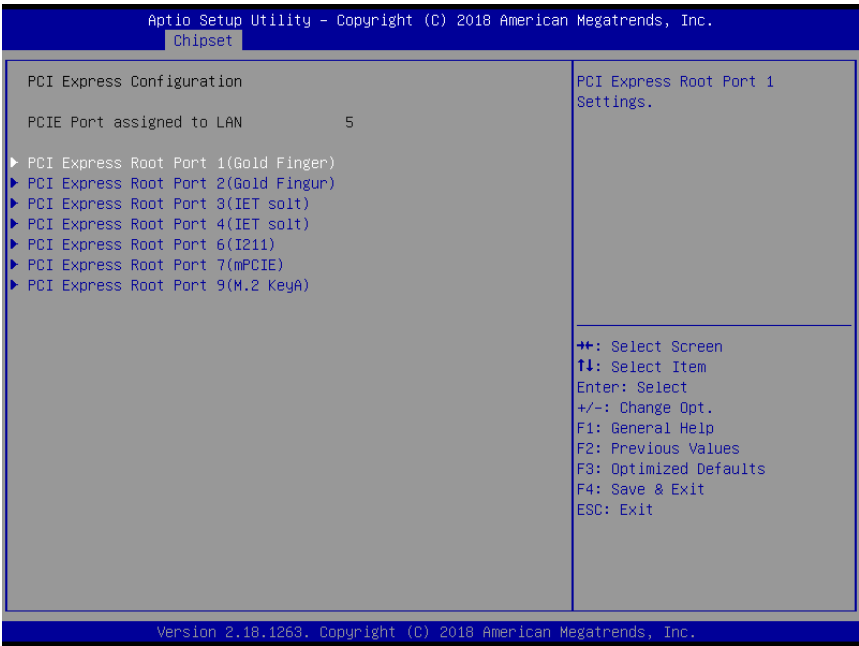
Item	Option	Description
Aperture Size	128MB 256MB[Default] 512MB 1024MB 2048MB	Select the Aperture Size Note:Above 4GB MMIO BIOS assignment is automatically enabled when selecting 2048MB aperture.To use this feature, To use this feature,please disable CSM Support.
DVMT Total Gfx Mem	256M[Default] 128M MAX	Select DVMT5.0 Total Graphic Memory size used by the Internal Graphics Device.

3.6.3.2 PCH-IO Configuration

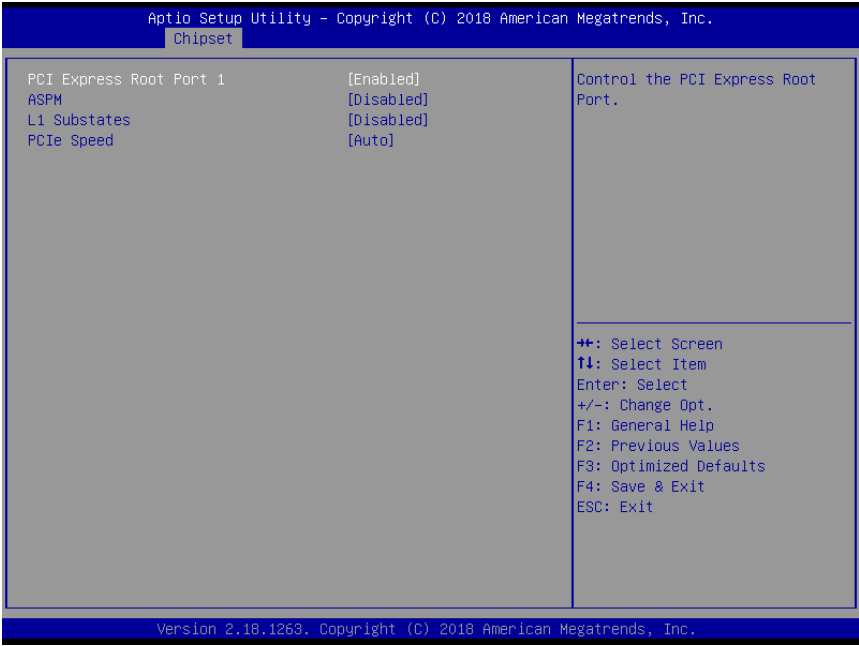


Item	Option	Description
PCH LAN(I219) Controller	Enabled[Default] Disabled	Enable/Disable onboard NIC.
Wake on LAN Enavle	Enabled[Default] Disabled	Enable/Disable integratsd LAN to wake the system.

3.6.3.2.1 PCI Express Configuration

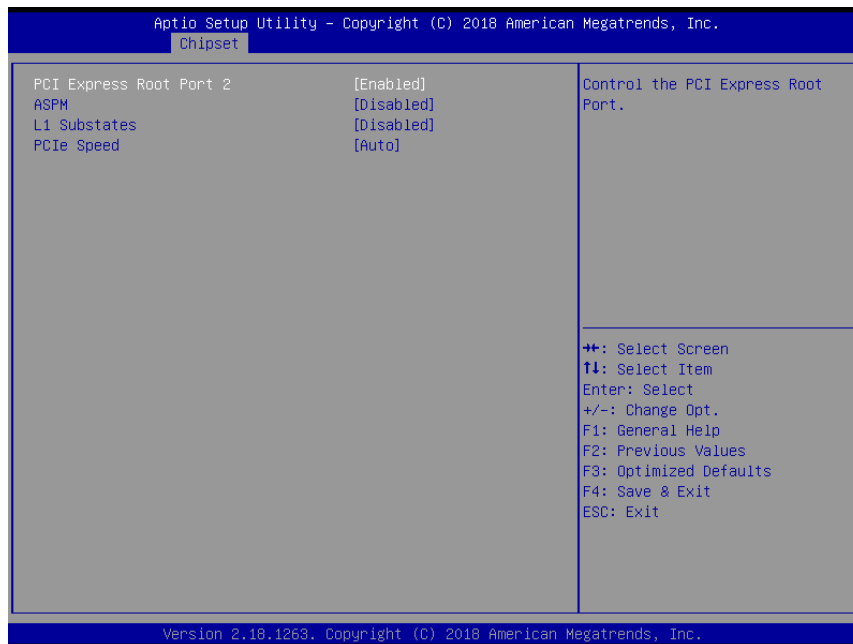


3.6.3.2.1.1 PCI Express Root Port 1 (Gold Finger)



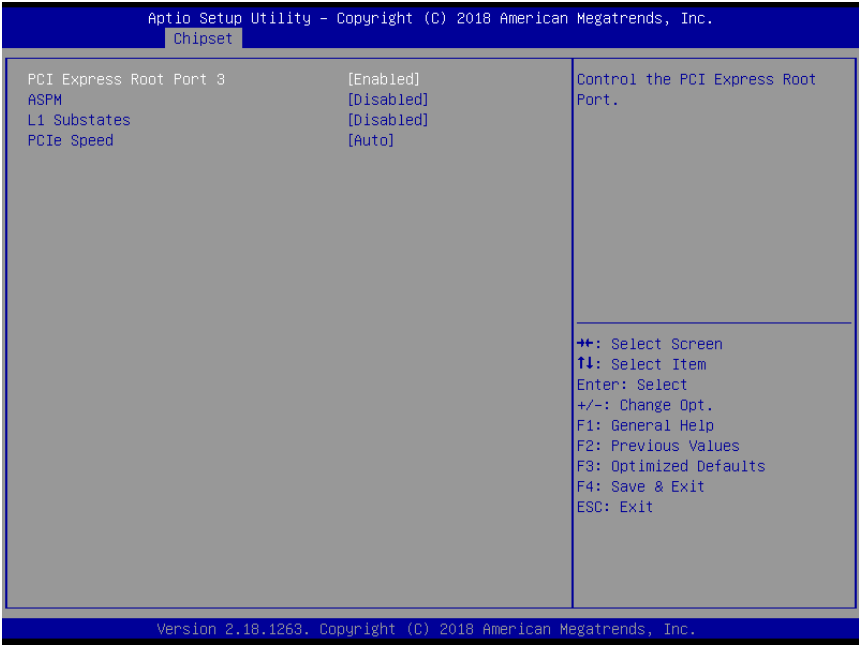
Item	Option	Description
PCI Express Root Port 1	Disabled Enabled [Default]	Control the PCI Express Root Port.
ASPM	Auto, L0sL1 L1 L0s Disabled [Default]	Set the ASPM Level: Force L0s – Force all links to L0s State AUTO – BIOS auto configure DISABLE – Disables ASPM.
L1 Substates	Disabled [Default] L1.1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

3.6.3.2.1.2 PCI Express Root Port 2(Gold Finger)



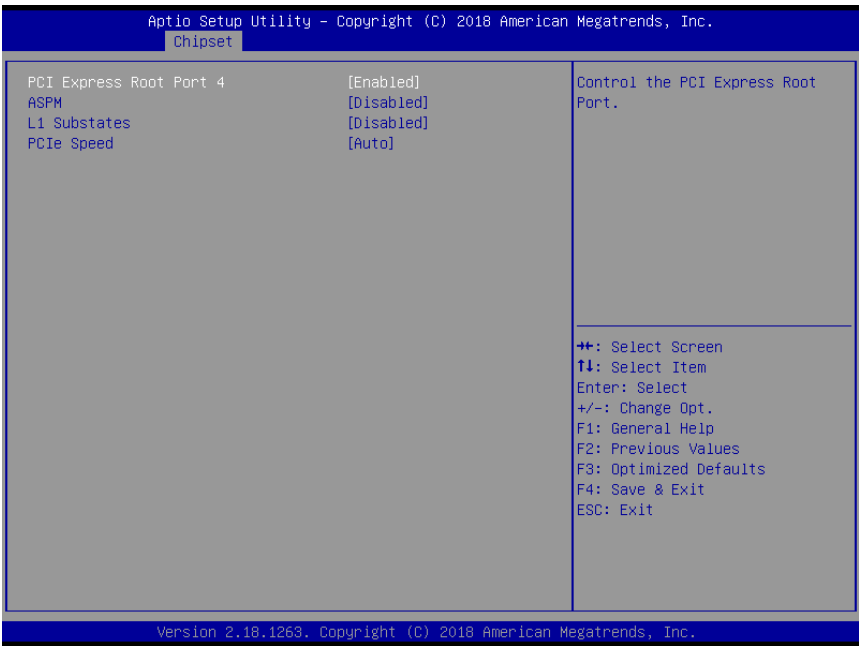
Item	Option	Description
PCI Express Root Port 2	Disabled Enabled[Default]	Control the PCI Express Root Port.
ASPM	Auto, L0sL1 L1 L0s Disabled[Default]	Set the ASPM Level: Force L0s – Force all links to L0s State AUTO – BIOS auto configure DISABLE – Disables ASPM.
L1 Substates	Disabled[Default] L1.1 L1.2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

3.6.3.2.1.3 PCI Express Root Port3 (IET Solt)



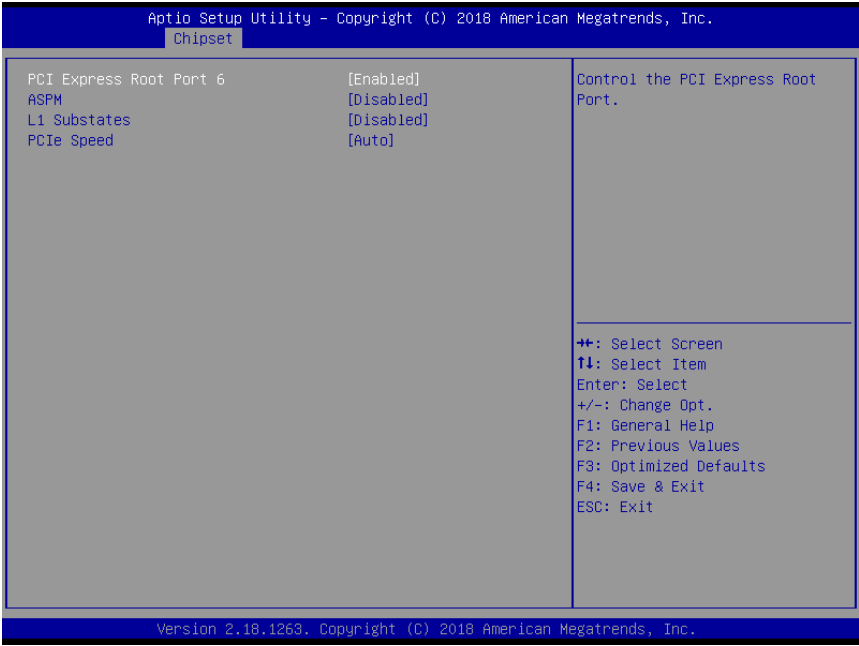
Item	Option	Description
PCI Express Root Port 3	Disabled Enabled [Default]	Control the PCI Express Root Port.
ASPM	Auto, L0sL1 L1 L0s Disabled [Default]	Set the ASPM Level: Force L0s – Force all links to L0s State AUTO – BIOS auto configure DISABLE – Disables ASPM.
L1 Substates	Disabled [Default] L1.1 L1.2 L1.1 & L1.2,	PCI Express L1 Substates settings.
PCIe Speed	Auto [Default] Gen1 Gen2 Gen3	Configure PCIe speed.

3.6.3.2.1.4 PCI Express Root Port4(IET Solt)



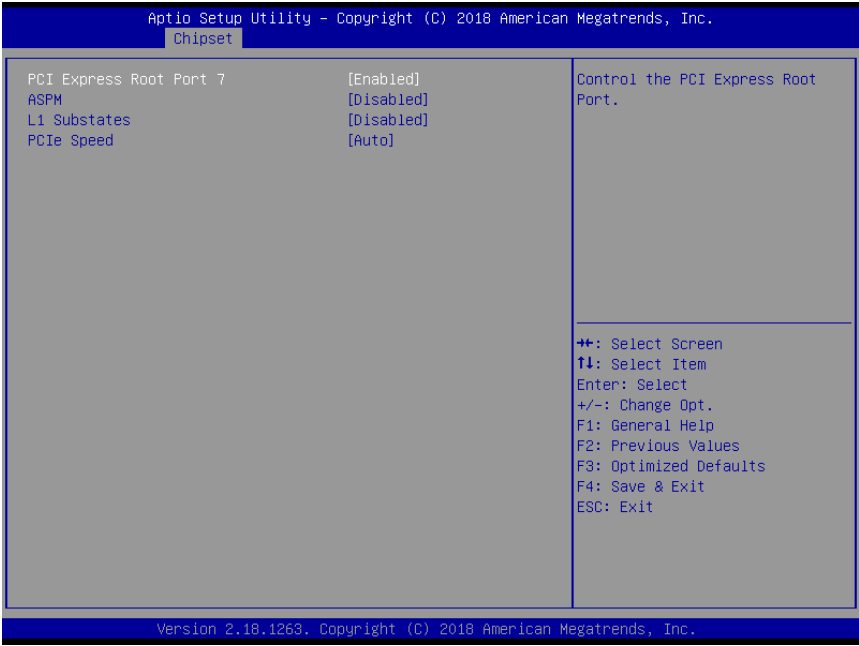
Item	Option	Description
PCI Express Root Port 4	Disabled Enabled[Default]	Control the PCI Express Root Port.
ASPM	Auto, L0sL1 L1 L0s Disabled[Default]	Set the ASPM Level: Force L0s – Force all links to L0s State AUTO – BIOS auto configure DISABLE – Disables ASPM.
L1 Substates	Disabled[Default] L1.1 L1.2 L1.1 & L1.2,	PCI Express L1 Substates settings.
PCIe Speed	Auto[Default] Gen1 Gen2 Gen3	Configure PCIe speed.

3.6.3.2.1.5 PCI Express Root Port6(I211)



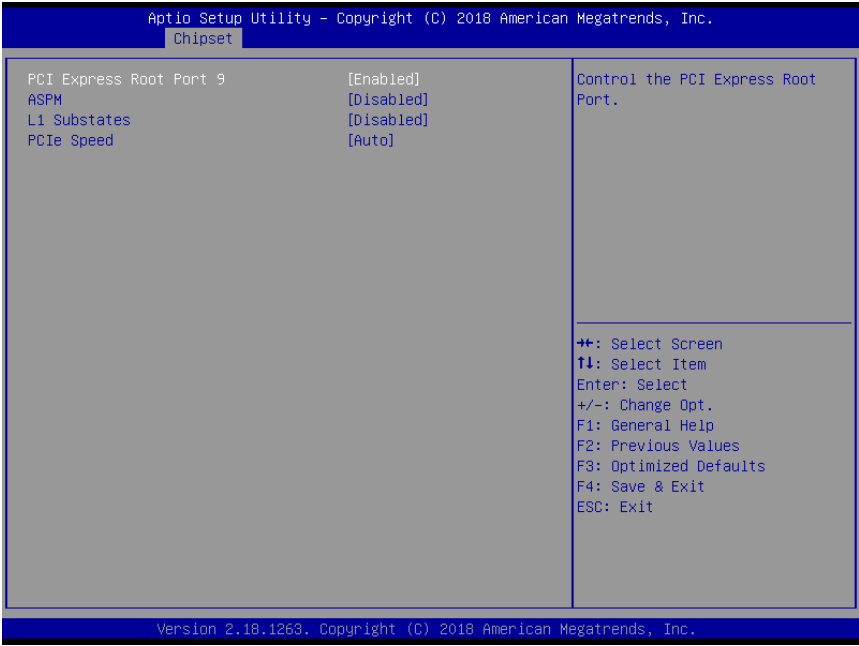
Item	Option	Description
PCI Express Root Port 6	Disabled Enabled[Default]	Control the PCI Express Root Port.
ASPM	Auto, L0sL1 L1 L0s Disabled[Default]	Set the ASPM Level: Force L0s – Force all links to L0s State AUTO – BIOS auto configure DISABLE – Disables ASPM.
L1 Substates	Disabled[Default] L1.1 L1.2 L1.1 & L1.2,	PCI Express L1 Substates settings.
PCIe Speed	Auto[Default] Gen1 Gen2 Gen3	Configure PCIe speed.

3.6.3.2.1.6 PCI Express Root Port7(mPCIe)



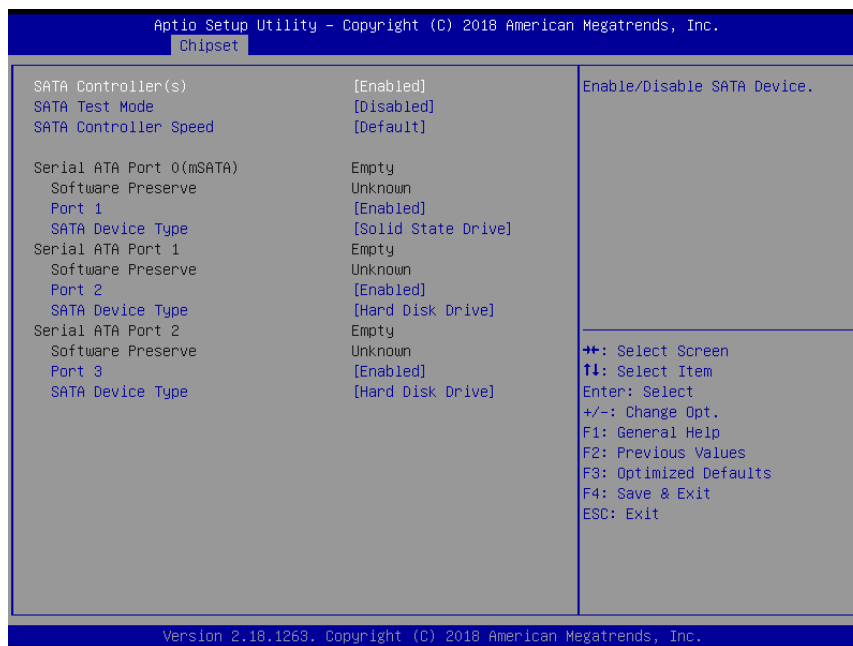
Item	Option	Description
PCI Express Root Port 7	Disabled Enabled[Default]	Control the PCI Express Root Port.
ASPM	Auto, L0sL1 L1 L0s Disabled[Default]	Set the ASPM Level: Force L0s – Force all links to L0s State AUTO – BIOS auto configure DISABLE – Disables ASPM.
L1 Substates	Disabled[Default] L1.1 L1.2 L1.1 & L1.2,	PCI Express L1 Substates settings.
PCIe Speed	Auto[Default] Gen1 Gen2 Gen3	Configure PCIe speed.

3.6.3.2.1.7 PCI Express Root Port9(M.2 KeyA)



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

3.6.3.2.2 SATA And RST Cofiguration



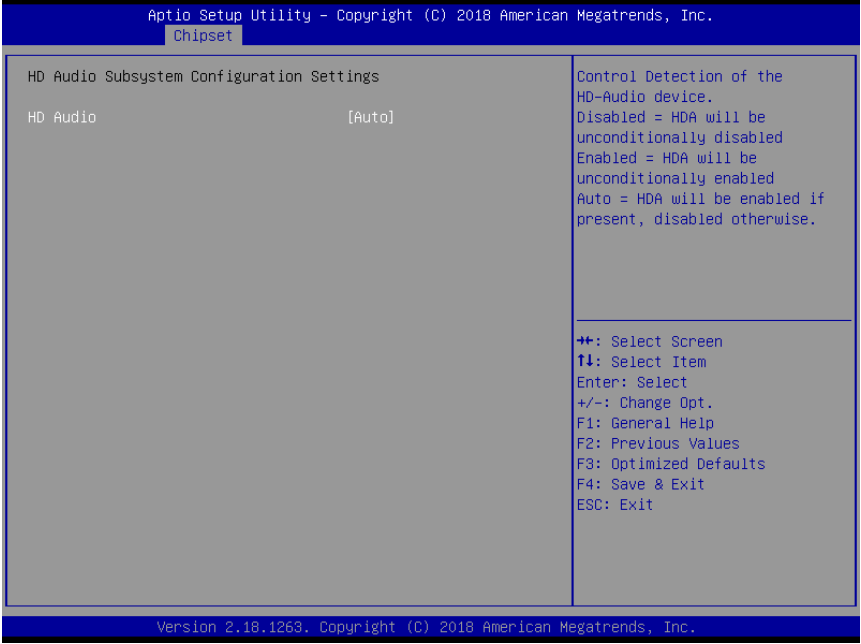
Item	Options	Description
SATA Controller(s)	Disabled, Enabled [Default]	Enable/Disable SATA Device.
SATA Test Mode	Disabled [Default] , Enabled	Test Mode Enable/Disable (Loop Back).
SATA Controller Speed	Default [Default] Gen1 Gen2 Gen3	Indicates the maximum speed the SATA controller can support.
Port1	Disabled, Enabled [Default]	Enable/Disable SATA Port.
SATA Device Type	Hard Disk Drive Solid State Drive [Default]	Identify the SATA port is connected to Solid State Drive or Hard Disk Drive.
Port2	Disabled, Enabled [Default]	Enable/Disable SATA Port.
SATA Device Type	Hard Disk Drive [Default] Solid State Drive	Identify the SATA port is connected to Solid State Drive or Hard Disk Drive.
Port3	Disabled, Enabled [Default]	Enable/Disable SATA Port.
SATA Device Type	Hard Disk Drive [Default] Solid State Drive	Identify the SATA port is connected to Solid State Drive or Hard Disk Drive.

3.6.3.2.3 USB Configuration



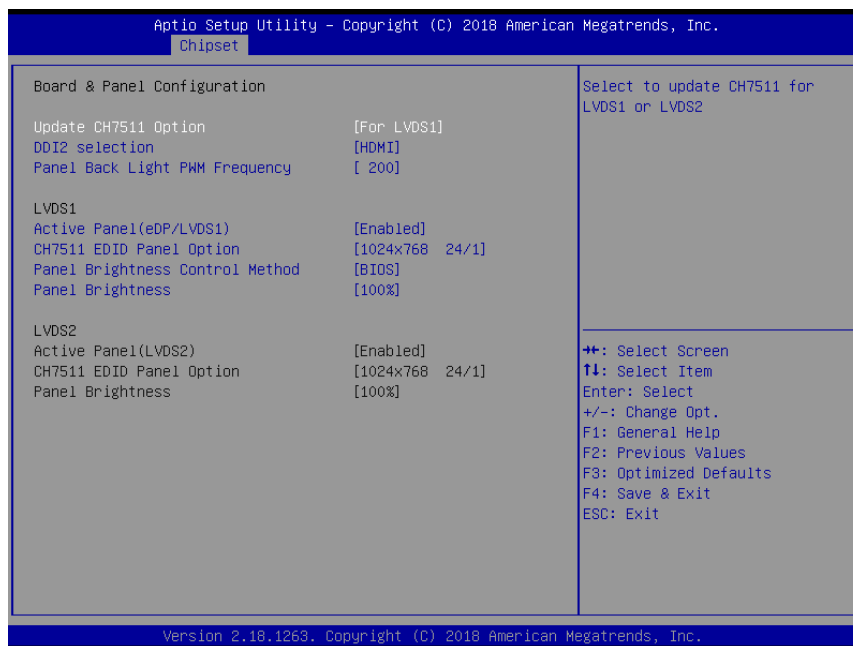
Item	Option	Description
XHCI Disable Compliance Mode	FALSE[Default], TRUE	Option to disable Compliance Mode. Default is FALSE to not disable Compliance Mode. Set TRUE to disable Compliance Mode.

3.6.3.2.4 HD Audio Configuration



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

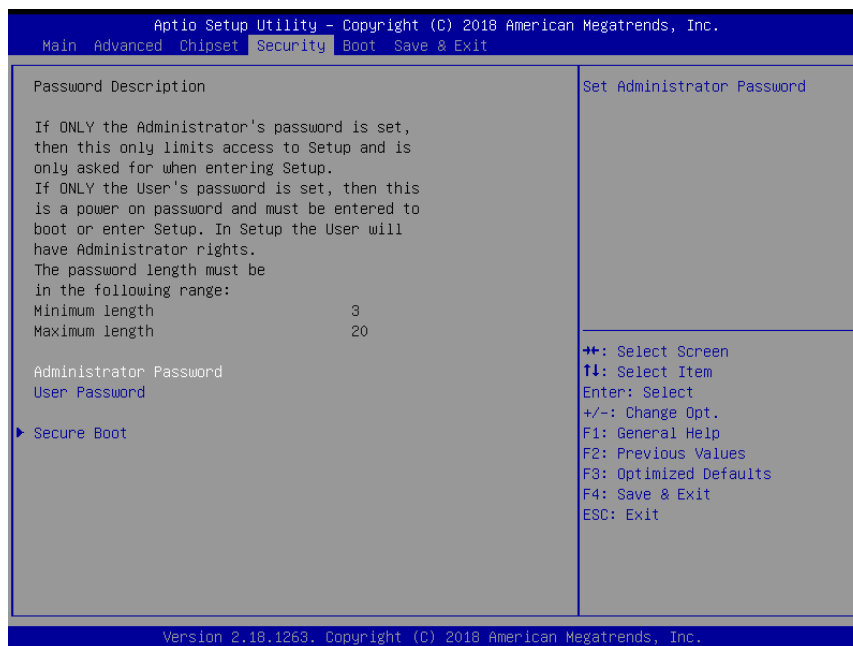
3.6.3.3 Board & Panel Configuration



Item	Option	Description
Update CH7511 Option	For LVDS1[Default] For LVDS2	Select to update CH7511 for LVDS1 or LVDS2
DDI2 selection	HDMI[Default] LVDS2	Select to display HDMI or LVDS2 only(for DDI2)
Panel Back Light PWM Frequency	200[Default] 300 400 500 700 1k 2k 3k 5k 10k 20k	Select Panel(LVDS1/ LVDS2)back light PWM Frequency.
Active Panel(eDP/LVDS1)	Disabled Enabled [Default],	Active Internal LVDS(eDP - > Ch7511-to-LVDS1)
CH7511 EDID Panel Option	1024X768 24/1[Default] 800x600 18/1 1024X768 18/1	Port2-DP to LVDS(Chrontel Configuration 7511)Panel EDID Option

	1366X768 18/1 1024X600 18/1 1280X800 18/1 1920X1200 24/2 1920X1080 24/2 1280X1024 24/2	
Panel Brightness control Method	BIOS[Default] BR Button VR OS Driver	LVDS1: BIOS/BR Button/VR/OS Driver LVDS2: BIOS only
Panel Brightness	00% 25% 50% 75% 100% [Default]	Select Panel(eDP/LVDS1) back light PWM duty.

3.6.4 Security



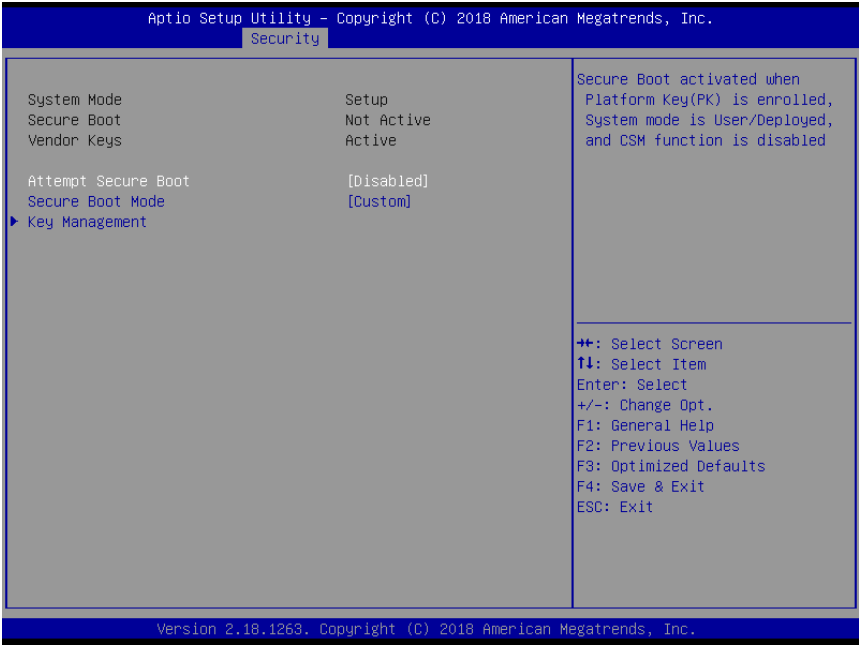
- **Administrator Password**

Set Administrator Password

- **User Password**

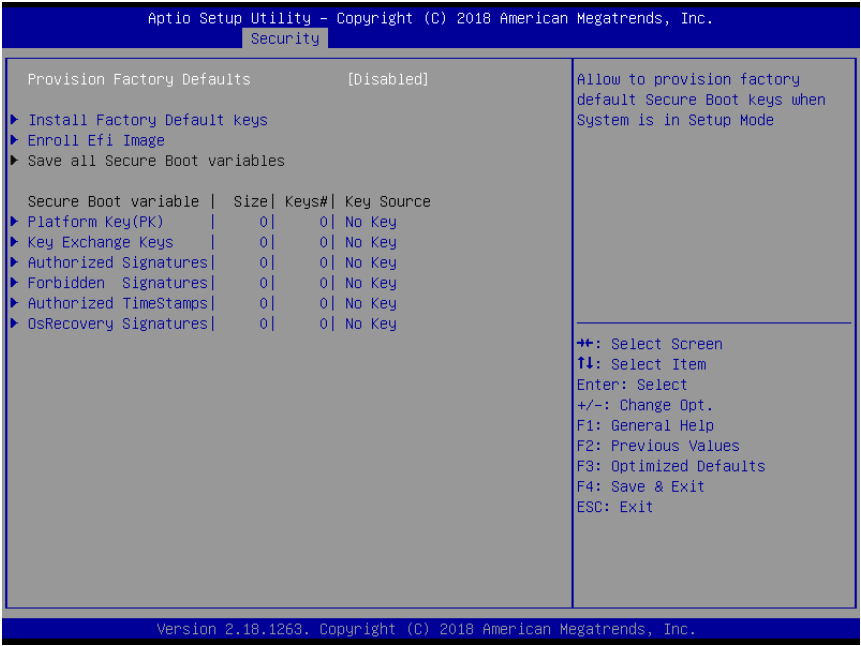
Set User Password

3.6.4.1 Secure Boot



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

3.6.4.1.1 Key Management



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

3.6.5 Boot



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Item	Option	Description
Setup Prompt Timeout	1	Number of seconds to wait for setup activation key. 65535(0xFFFF) means indefinite waiting.
Bootup NumLock State	On[Default] Off	Select the Keyboard NumLock state
Quiet Boot	Disabled[Default] Enabled	Enables or disables Quiet Boot option
Boot Option #1	Set the system boot order.	
Fast Boot	Disabled[Default] Enabled	Enables or disables boot with initialization of a minimal set of devices required to launch active boot option. Has no effect for BBS boot options.

3.6.6 Save and Exit



3.6.6.1 Save Changes and Reset

Reset the system after saving the changes.

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



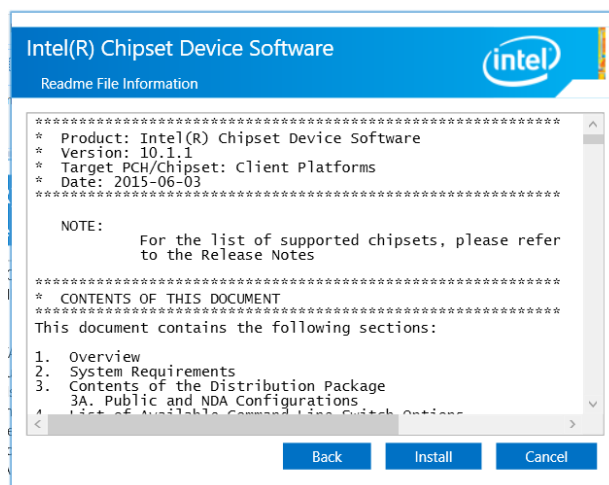
Note: Installation procedures and screen shots in this section are for your reference and may not be exactly the same as shown on your screen.

4.1 Install Chipset Driver

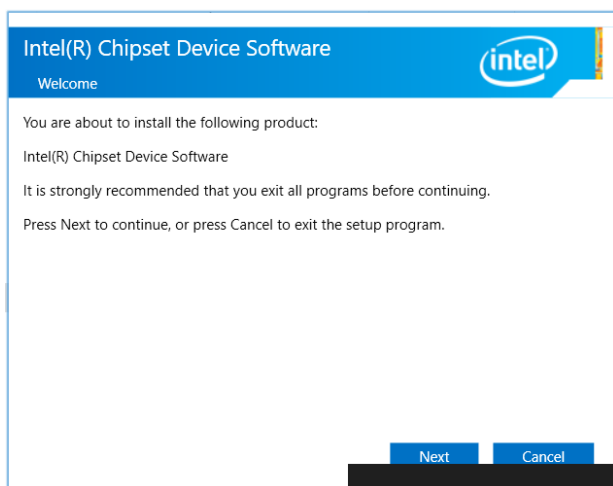
Insert the Supporting DVD-ROM to DVD-ROM drive, and it should show the index page of Avalue's products automatically. If not, locate Index.htm and choose the product from the menu left.



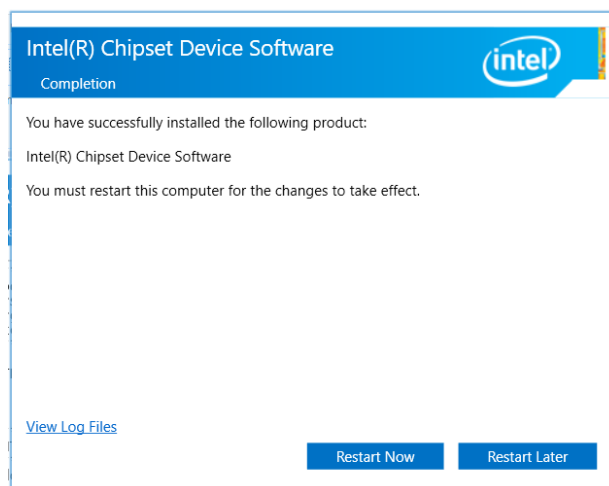
Note: The installation procedures and screen shots in this section are based on Windows 10 operation system. If the warning message appears while the installation process, click Continue to go on.



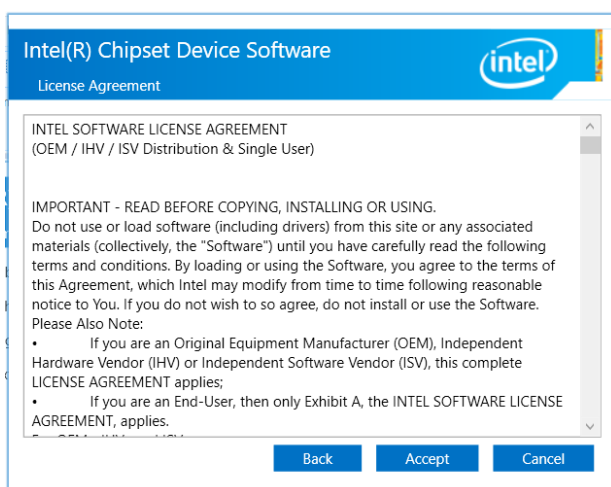
Step 3. Click Install.



Step1. Click Next.



Step 4. Complete setup.



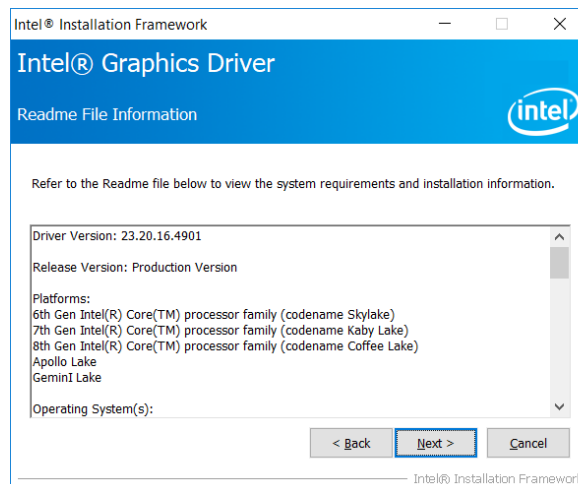
Step 2. Click Accept.

4.2 Install VGA Driver

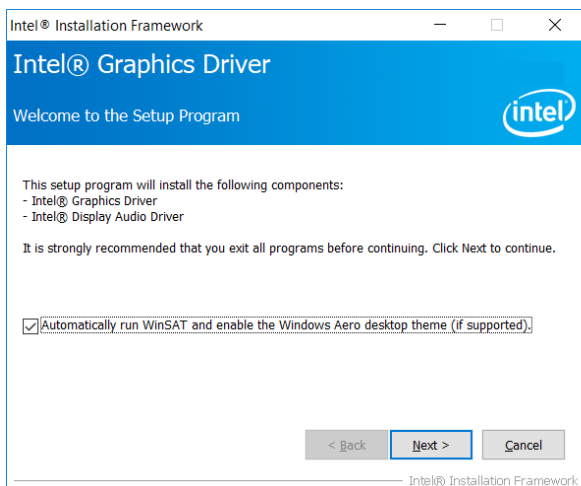
Insert the Supporting DVD-ROM to DVD-ROM drive, and it should show the index page of Avalue's products automatically. If not, locate Index.htm and choose the product from the menu left.



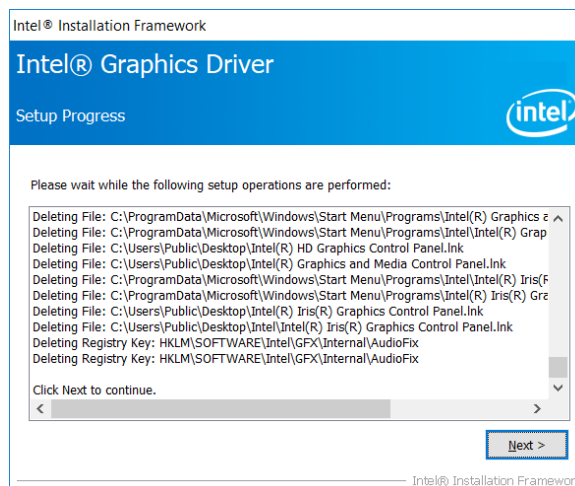
Note: The installation procedures and screen shots in this section are based on Windows 10 operation system.



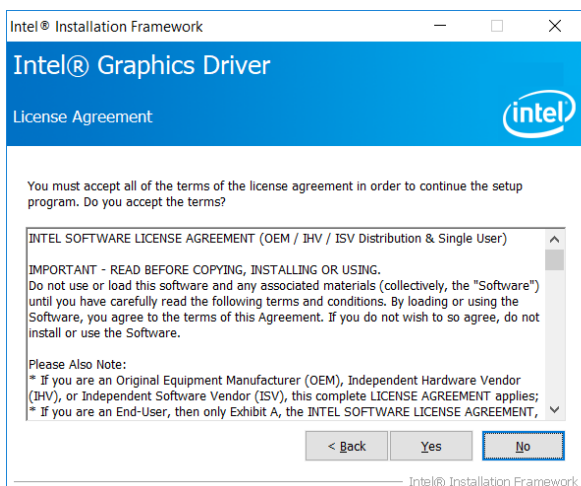
Step 3. Click Install.



Step 1. Click Next to continue installation.

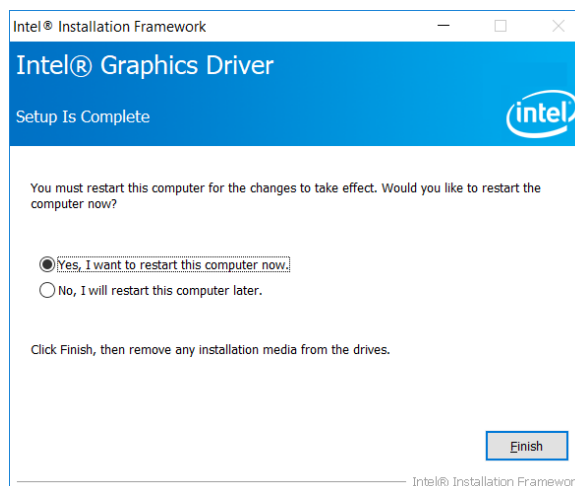


Step 4. Click Next



Step 2.

Click **Yes** to accept license agreement.



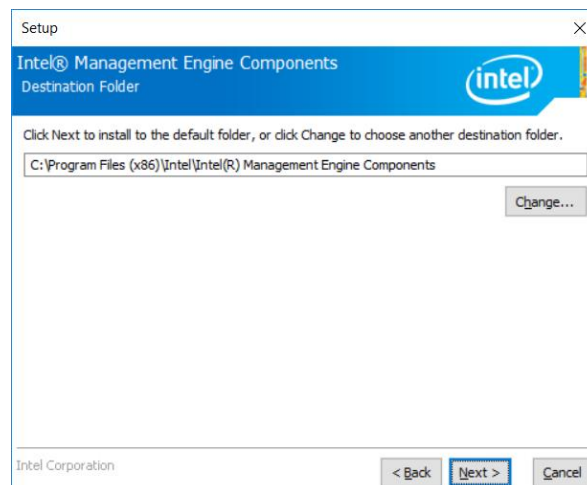
Step 5. Click Finish to complete setup.

4.3 Install ME Driver

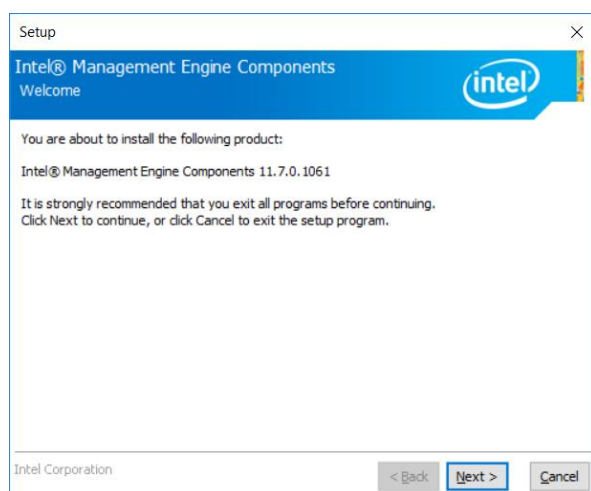
Insert the Supporting CD-ROM to CD-ROM drive, and it should show the index page of Avalue's products automatically. If not, locate Index.htm and choose the product from the menu left.



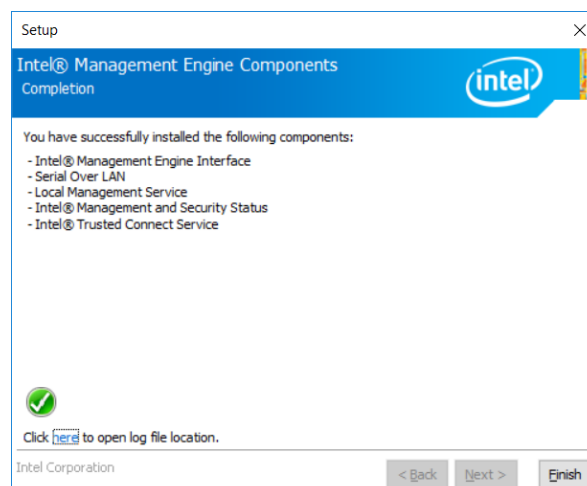
Note: The installation procedures and screen shots in this section are based on Windows 10 operation system.



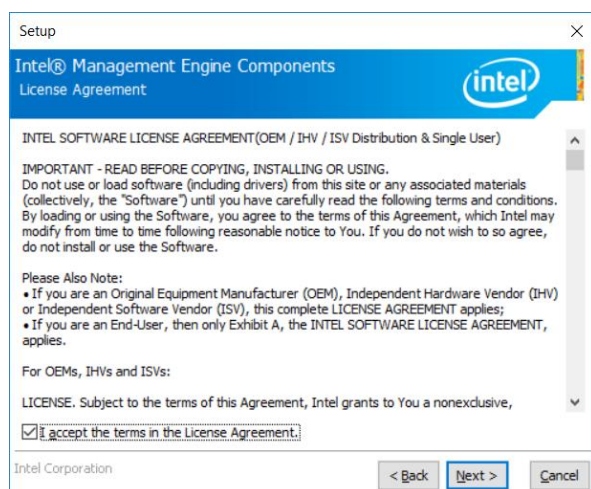
Step 3. Click **Next**.



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



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



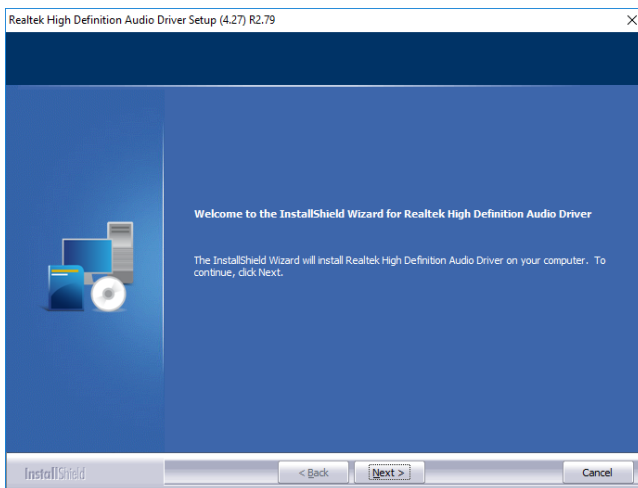
Step 2. Click **Next**.

4.4 Install Audio Driver (For Realtek ALC888S HD Audio)

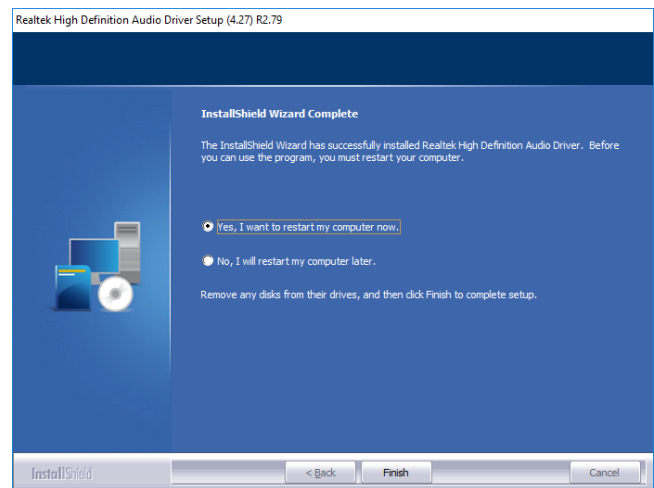
Insert the Supporting DVD-ROM to DVD-ROM drive, and it should show the index page of Avalue's products automatically. If not, locate Index.htm and choose the product from the menu left.



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.



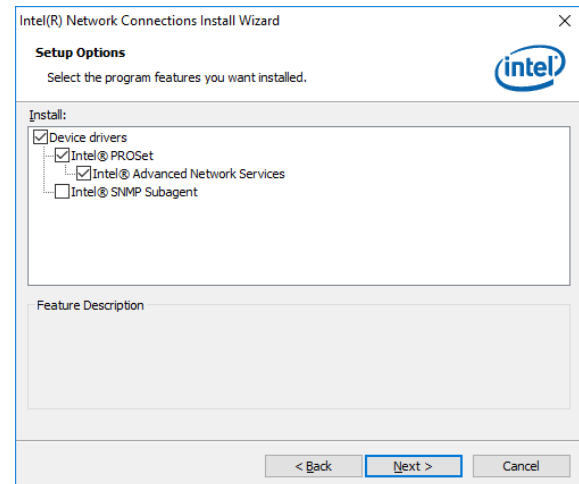
Step 2. Click **Finish** to complete setup.

4.5 Install LAN Driver

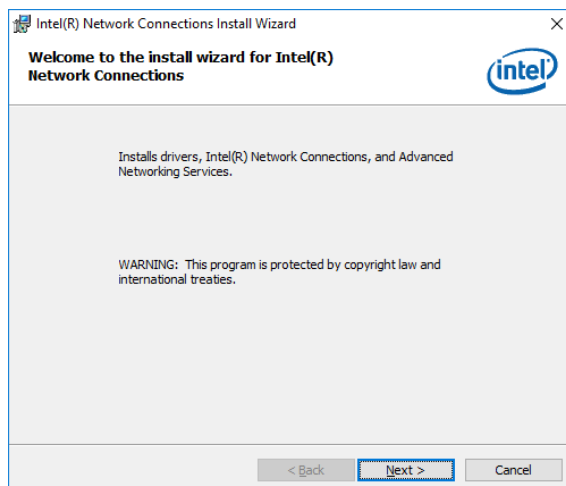
Insert the Supporting DVD-ROM to DVD-ROM drive, and it should show the index page of Avalue's products automatically. If not, locate Index.htm and choose the product from the menu left.



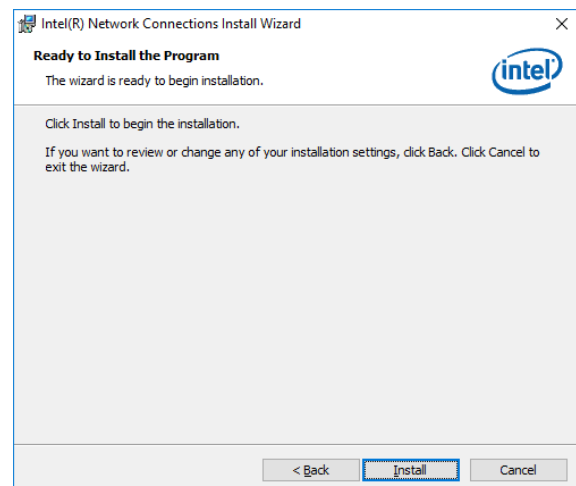
Note: The installation procedures and screen shots in this section are based on Windows 10 operation system.



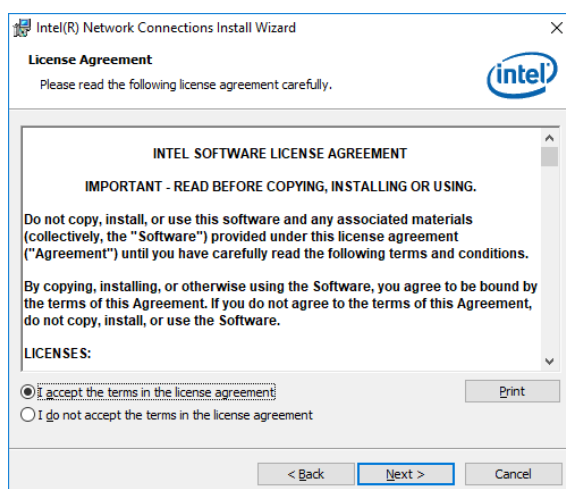
Step 3. Click Next.



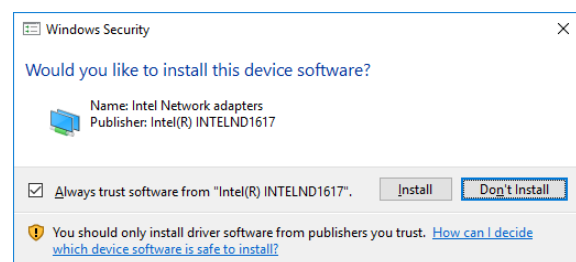
Step 1. Click Next to continue installation.



Step 4. Click Install.

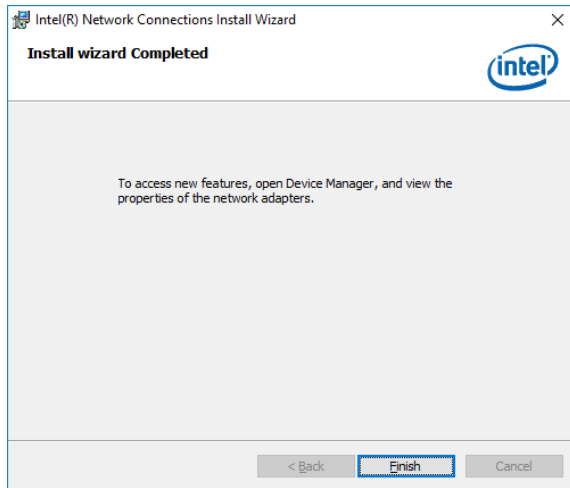


Step 2. Click Next.



Step 5. Click Don't Install.

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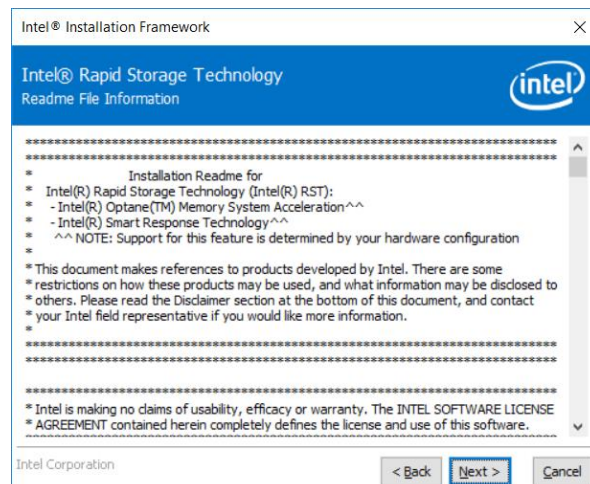
Step 6. Click **Finish** to complete setup.

4.6 Install RST Driver

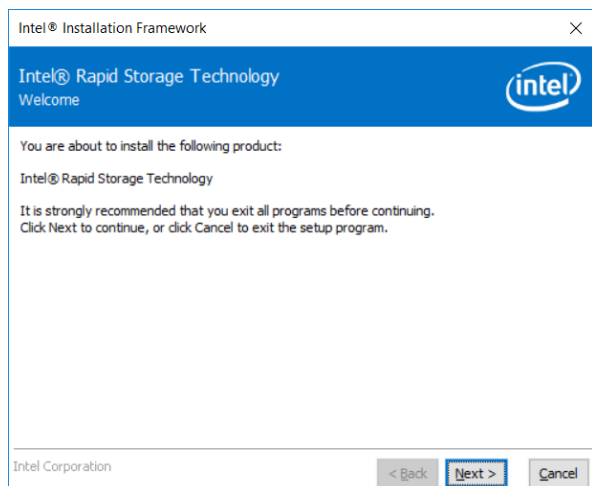
Insert the Supporting DVD-ROM to DVD-ROM drive, and it should show the index page of Avalue's products automatically. If not, locate Index.htm and choose the product from the menu left.



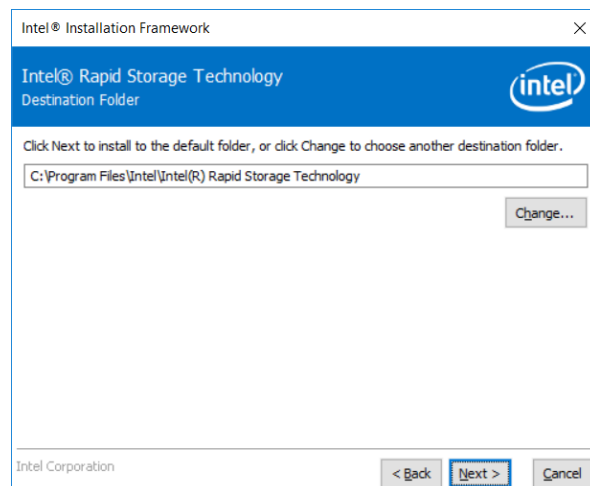
Note: The installation procedures and screen shots in this section are based on Windows 10 operation system.



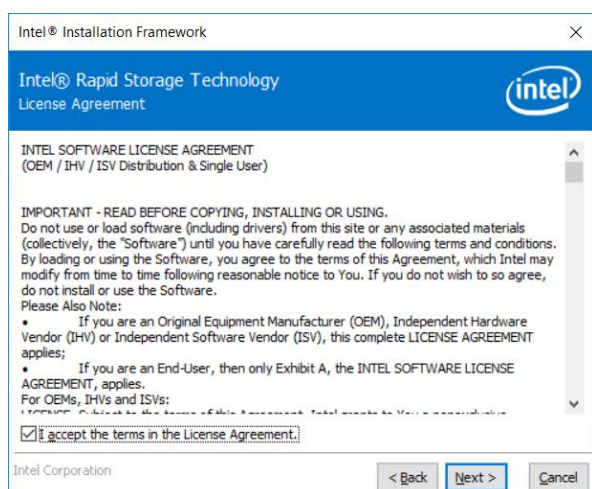
Step 3. Click Next.



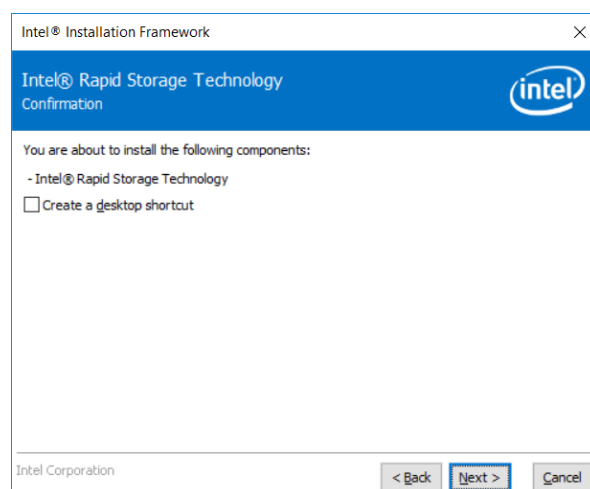
Step 1. Click Next to continue installation.



Step 4. Click Next.

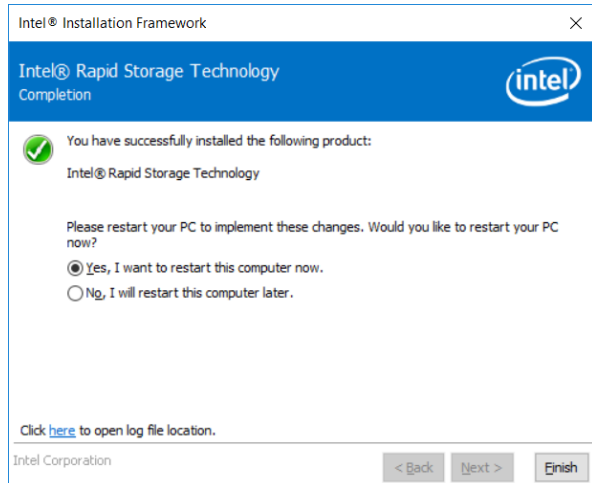


Step 2. Click Next.



Step 5. Click Next.

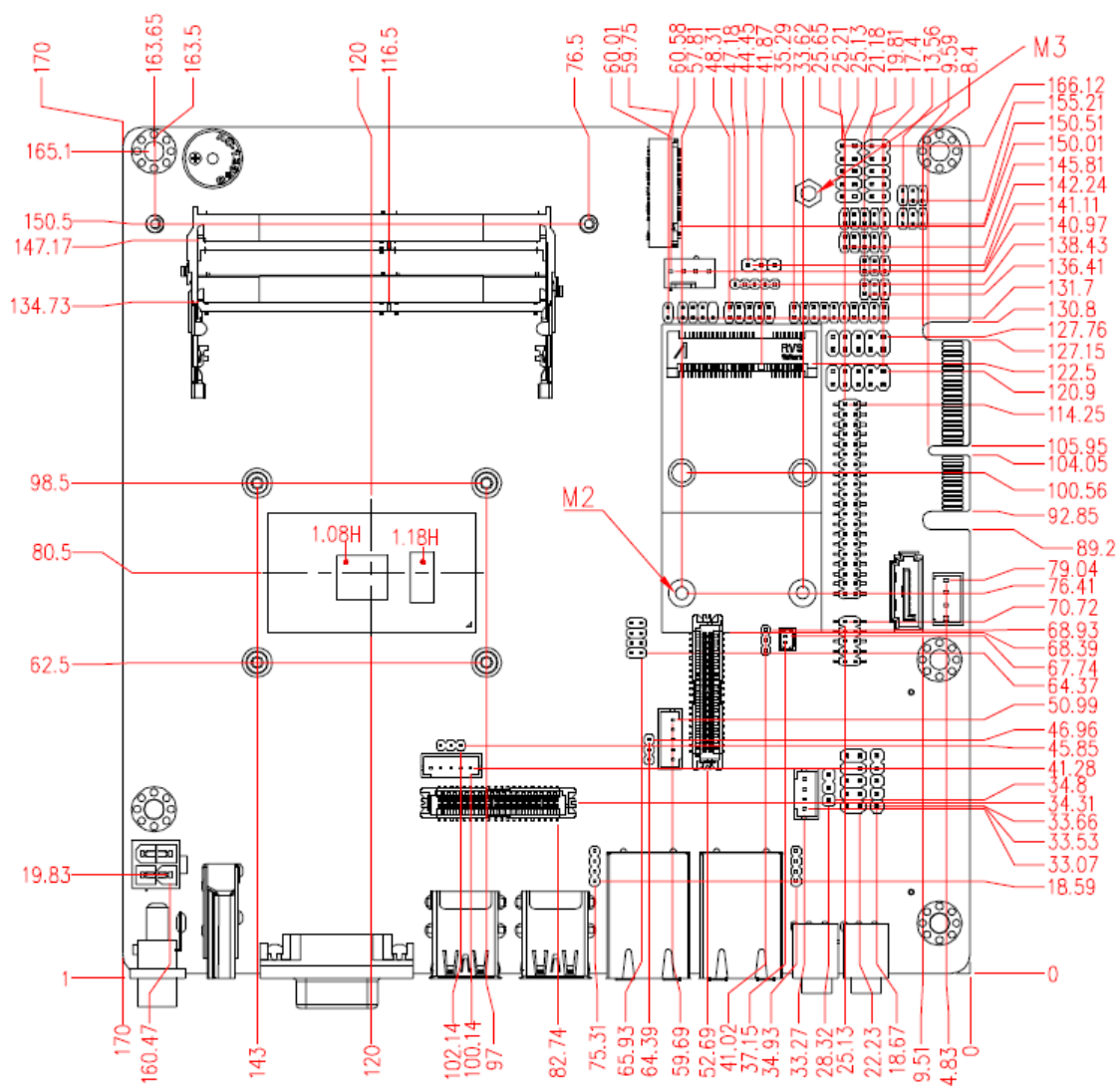
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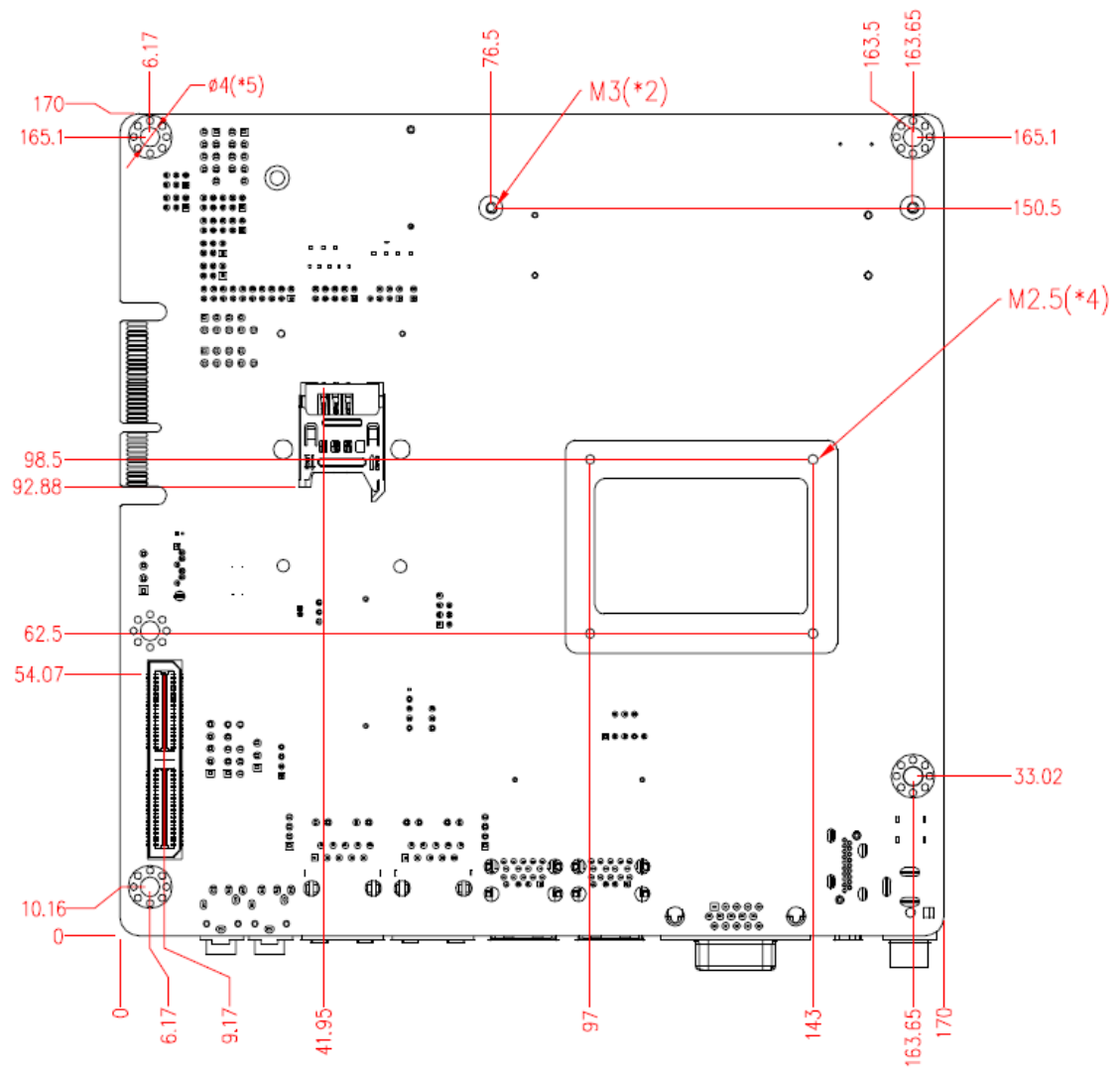
Step 6. Click **Finish** to complete setup.

5. Mechanical Drawing

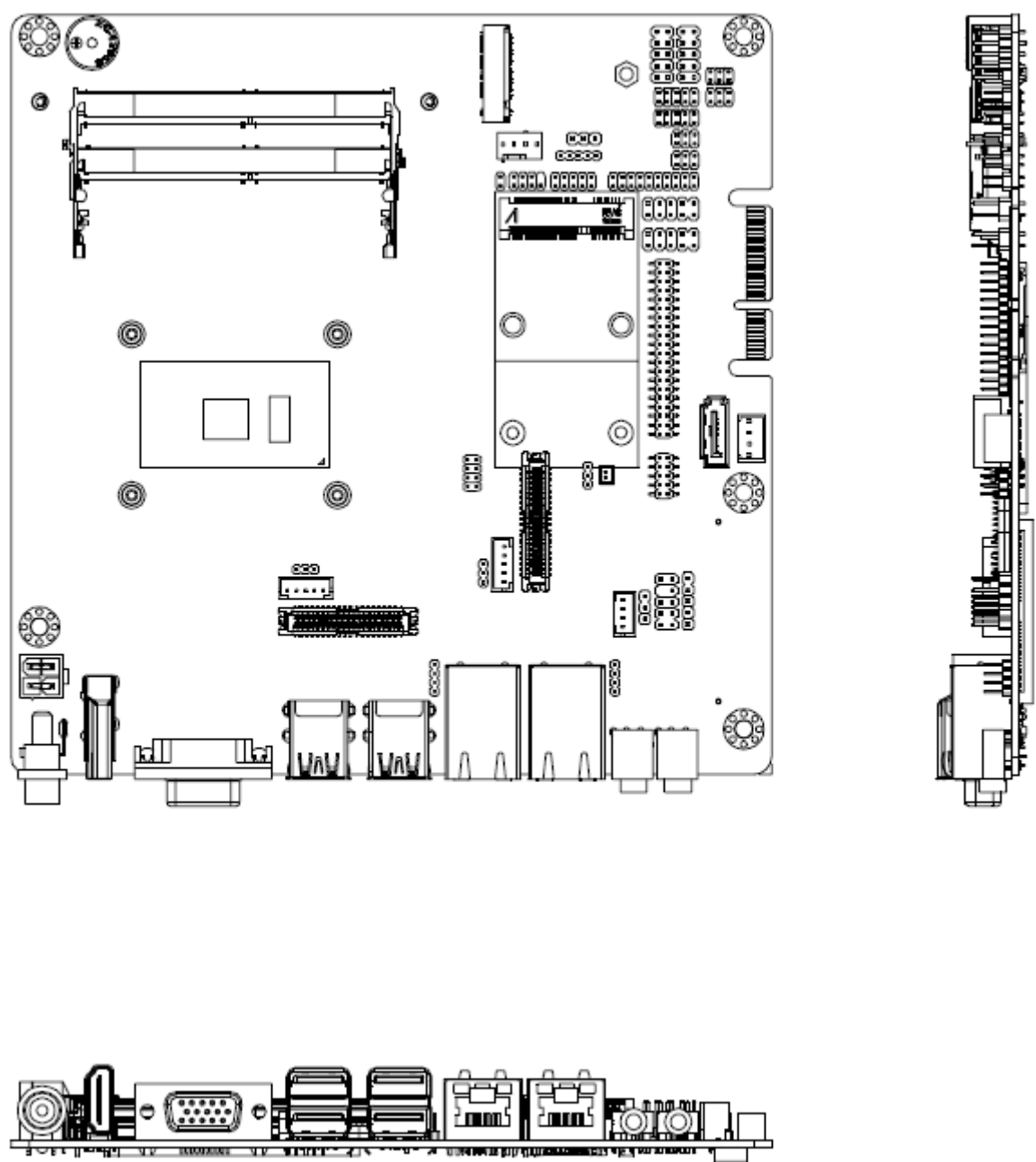
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Unit: mm



Unit: mm



Unit: mm

