



MPC-6726

**Fanless Intel® Core™ i7 - 6th Generation
Rugged Embedded System**

Quick Reference Guide

1ST Ed –4 December 2017

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FCC Statement



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

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

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

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

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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

- ☒ 1 x MPC-6726 Fanless Ruggedized Marine Grade Chassis
- ☒ 1 x DVD-ROM contains the followings:
 - User Manual in PDF file
 - Ethernet driver and utilities
 - VGA drivers and utilities
 - Audio drivers and utilities
- ☒ Other major components include the followings:
 - 44 Pin Multi I/O Cable
 - Wall Mount Kit
 - Terminal Block to Lockable DC Jack cable
 - DP to VGA Converter



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

1.3 System Specifications

System	
Board	EBM-SKLUS
CPU	Intel® Core™ i7 -6600U Processor (4M Cache, up to 3.40 GHz)
BIOS	AMI uEFO BIOS 128 Mbit SPI Flash ROM
I/O Chip	EC ITE IT8528E
System Memory	One 260-pin SODIMM Socket Up to 16GB DDR4 2133MHz SDRAM
Watchdog Timer	H/W Reset, 1sec. ~ 65535sec.
H/W Status Monitor	CPU & system temperature monitoring and Voltages monitoring
Battery	- Horizontal battery socket - Supports no RTC battery mode
Expansion	- IET interface (1 x DP, 4 x PCIe1, 3 x USB, 1 x LPC, 1 x Line-Out(R/L), 1 x SMBus) 1 x mini-PCIe Socket, supports PCIe, USB 2.0 and SIM Card slot 1 x M.2, supports B-Key 2242/3042 and SIM Card slot (SSD & 3G/4G)
Storage	
Combination	1 x 2.5" Drive Bay 1 x M.2 B-Key 2242/3042
External I/O	
Front Side External I/O Connector	1 x Dual deck USB connector for two USB 3.0 ports (USB 2.0 signal included) 2 x USB 3.0 1 x Swappable 2.5" drive bay (SATA III, 2A, 12mm) 2 x SIM Card Slot (Mini PCIe, M.2) 1 x Push Button for Power on/off (Sunk type) 1 x Push Button for Reset (Hidden Type) 1 x 2-Pin Terminal Block for wire-control power on/off 1 x Power LED (Green) 1 x Storage LED (Green)
Rear Side External I/O Connector	1 x 3-Pin Terminal Block for DC-Input 2 x USB 3.0 2 x USB 2.0

	☒ 1 x DP+ (DP to VGA converter is the standard accessory, and optional DP to DVI, DP to HDMI converters) ☒ 1 x DB-9 male connector for COM1, RS 232/ 422/ 485(4-wire) selectable by Jumper; RS 485 supports Auto Flow ☒ 2 x RJ-45 for GbE ☒ 1 x Dual deck USB connector for two USB 3.0 ports (USB 2.0 signal included) ☒ 1 x DB-44 male connector for multi-I/O output. - COM2 with COM1, RS 232/ 422/ 485(4-wire) selectable by Jumper; RS 485 supports Auto Flow - 2 x PS/2 keyboard and mouse - SMBus - 12-bit DIO; 6-bits for input and 6-bits for output - Line-In, Line-Out and Mic-In with plug-in detection ☒ 6 x COM Port (4 support Isolation) ☒ 2 x Antenna mounting w/ cover
Internal I/O Connector	☒ 1 x 7+15-pin SATAIII connector (2A) ☒ 1 x 4-pin wafer connector for +5V, +12V and GND output. ☒ 1 x 6-Pin wafer connector for DC-OUT ☒ 1 x 3-pin header for CMOS (protect*Clear) ☒ 2 x 2 x 3-pin header for COM1/ 2 pin 9 signal selection (+5, +12, Ring) ☒ 1 x 2 x 7-pin header for LPC ☒ 1 x 2 x 3-Pin header for SPI ☒ 1 x 3-pin DIP Switch for Power mode (AT/ATX) ☒ 1 x Buzzer ☒ 1 x 1 x 5-Pin header for 1 x USB 2.0 reservation ☒ 1 x 3-pin for EC
Display	
Chipset	☒ Intel® Skylake Processor integrated Graphics
Resolution	☒ 1 x DP+ ☒ One Panel Display max. 4096 x 2304@60Hz ☒ DP to VGA will be the standard accessory ☒ DP to DVI-I and DP to HDMI will be the optional accessory
Ethernet	
Chipset	☒ 1 x Intel I211AT GbE controller ☒ 1 x Intel I219LM Gigabit Ethernet PHY
Ethernet Interface	☒ 10/100/1000 Base-Tx GbE compatible
Audio	
Chipset	☒ Realtek ALC892 HD codec
Audio Interface	☒ Mic-In, Line-In and Line-Out

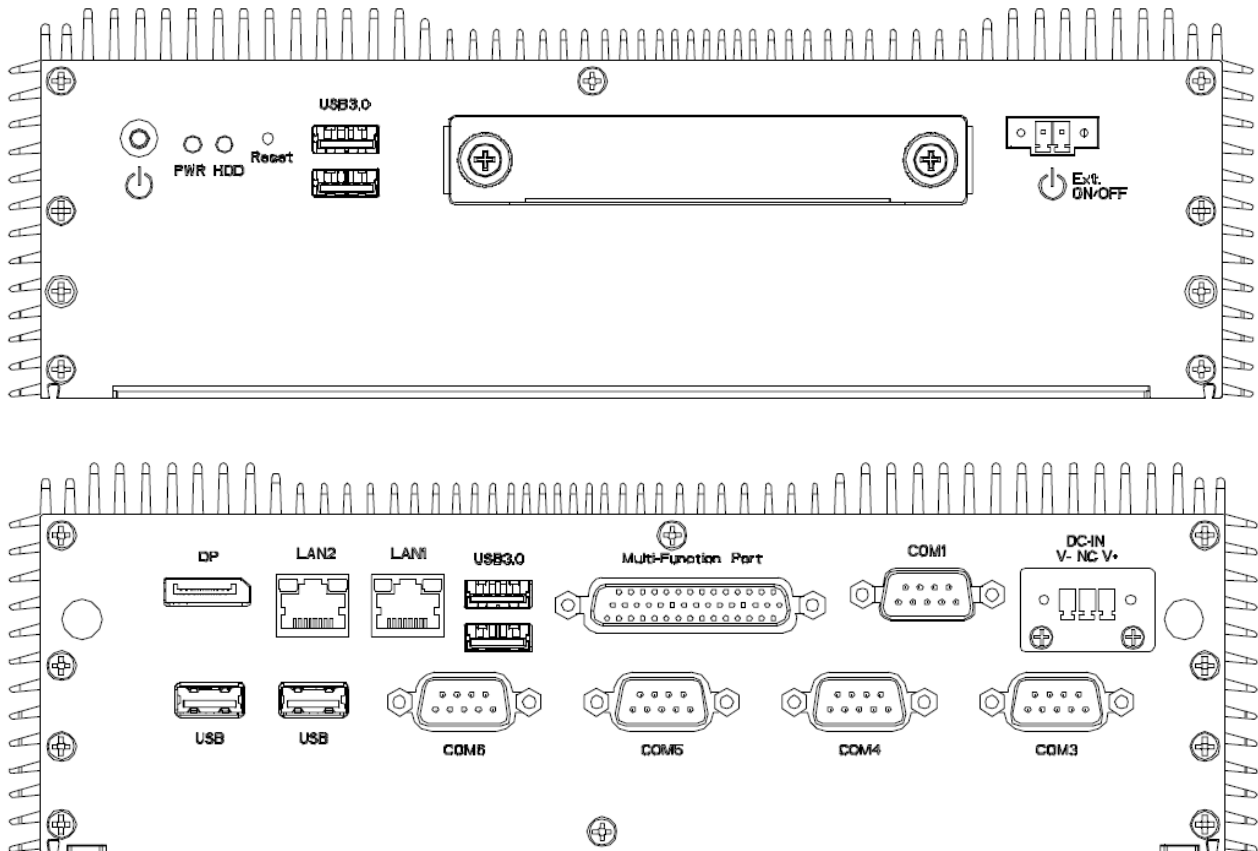
Mechanical & Environmental	
Power Requirement	☒ Typical 12/24Vdc (9 ~ 36Vdc) ☒ TVS component for surge protection ☒ Reverse current/voltage protection
ACPI	☒ Single power ATX Supports S0, S3, S4, S5 ☒ Compliant with ACPI 5.0
Power Connector Type	☒ 3-Pin Terminal Block (V+, V-, Ground)
Power Mode	☒ AT/ATX (ATX is the default setting)
Dimension	☒ 9.45" x 5.96" x 2.95" (240mm x 151.5mm x 75mm)
Weight	☒ 4.4 lbs (2 Kg)
Color	☒ Black
Mounting Kit	☒ Wall mount kit (Standard) ☒ Din Rail mount kit (Optional)
Reliability	
EMI Test	☒ CE & FCC Class A w/ERP
Safety	☒ Avalue Standard Test Criteria
Dust and Rain Test	☒ IP50
Vibration Test	☒ With SSD : 5Grms, IEC 60068-2-64, Random, 5 ~ 500Hz, 1hr/axis
Mechanical Shock Test	☒ With SSD : 50Grms, IEC 60068-2-27, Half Sine, 11ms
Drop Test	☒ Standard Test Criteria
Operating Temperature	☒ -20°C ~ 60°C (w/SSD) ambient w/ air flow ☒ 0°C ~ 40°C (w/HDD) ambient w/ air flow
Operating Humidity	☒ 5% ~ 90% relative humidity, non-condensing
Storage Temperature	☒ -40°C ~ 85°C



Note: Specifications are subject to change without notice.

1.4 System Overview

1.4.1 Connector Views

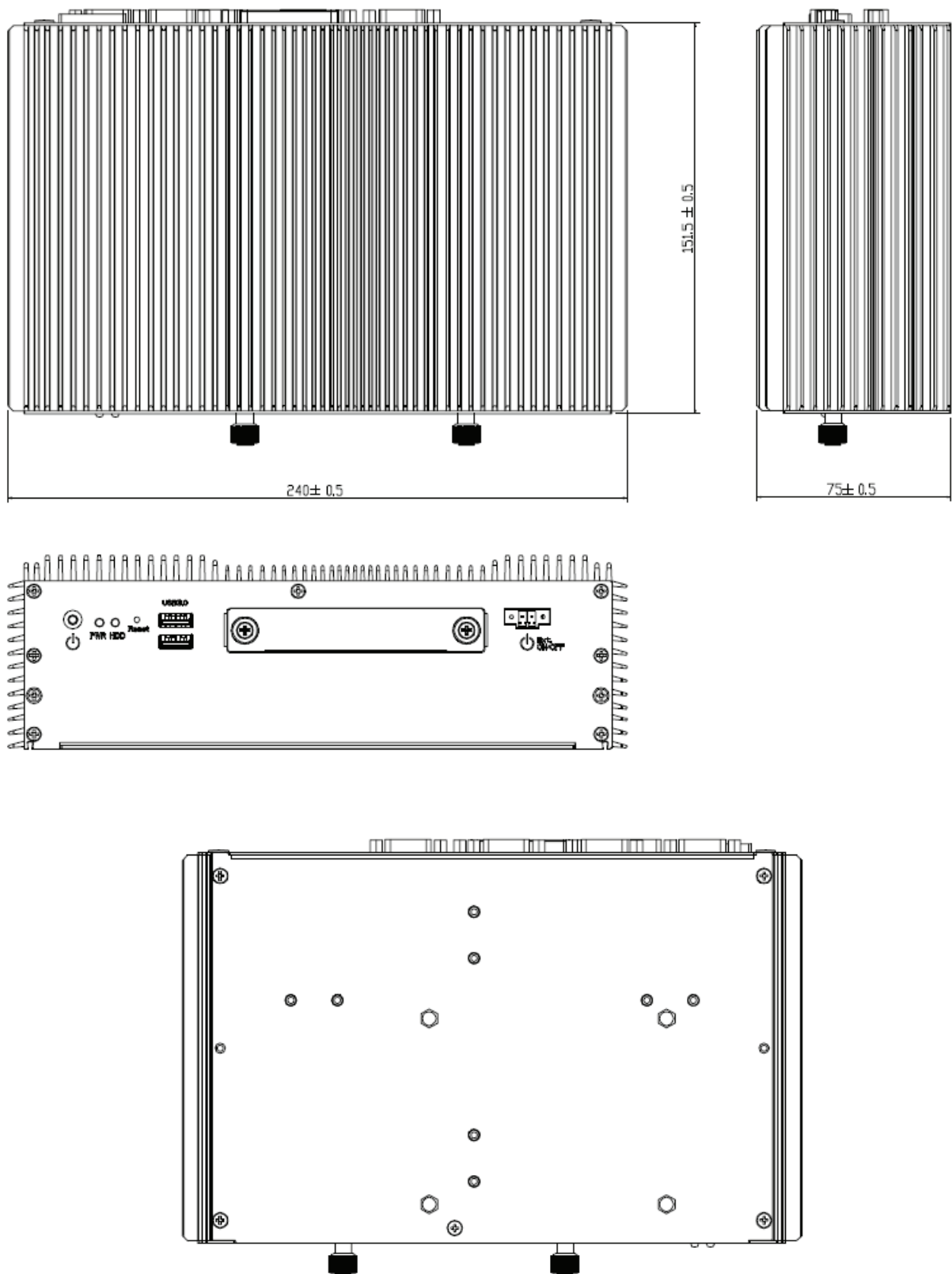


Connectors

Label	Function	Note
PWR	System power indicator	
HDD	HDD indicator	
RESET	Reset button	
USB3.0	4 x USB3.0 connector	
USB	2 x USB2.0 connector	
Ext. ON/OFF	Power on button	
DP	DP connector	
LAN1/2	RJ-45 Ethernet 1/2	
COM1	Serial port connector 1	
Multi-function port	Multi-Function Port combined COM2, 2 PS/2, Audio, GPIO and SMBus	
COM3/4/5/6	Serial port connector 3/4/5/6 - Isolated	
DC-IN	DC power-in connector	

1.5.2

MPC-6726 Front & Top view



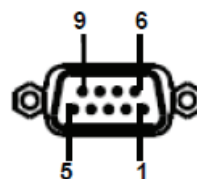
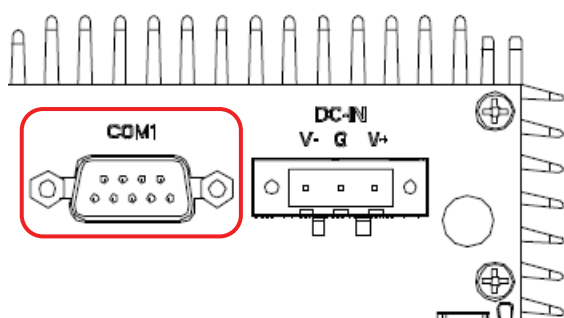
(Unit: mm)

2. Hardware Configuration

Jumper and Connector Setting, Driver and BIOS Installation

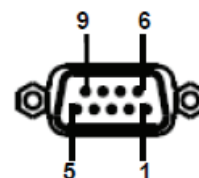
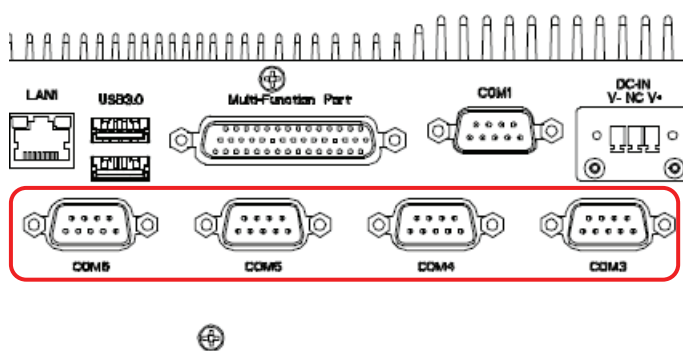
2.1 EMS-SKLU connector mapping

2.1.1 Serial port connector 1 (COM1)



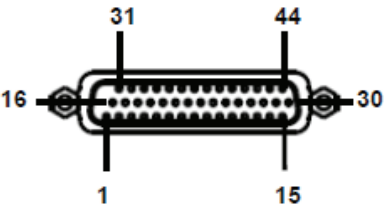
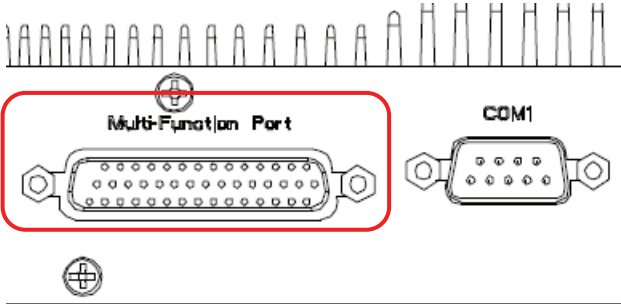
Pin	RS-232	RS-485	RS-422
1	DCD	TXD-/RXD-	TXD-
2	RXD	TXD+/RXD+	TXD+
3	TXD		RXD+
4	DTR		RXD-
5	GND	GND	GND
6	DSR		
7	RTS		
8	CTS		
9	RI		

2.1.2 Serial port connector 3/4/5/6 (COM3/4/5/6)

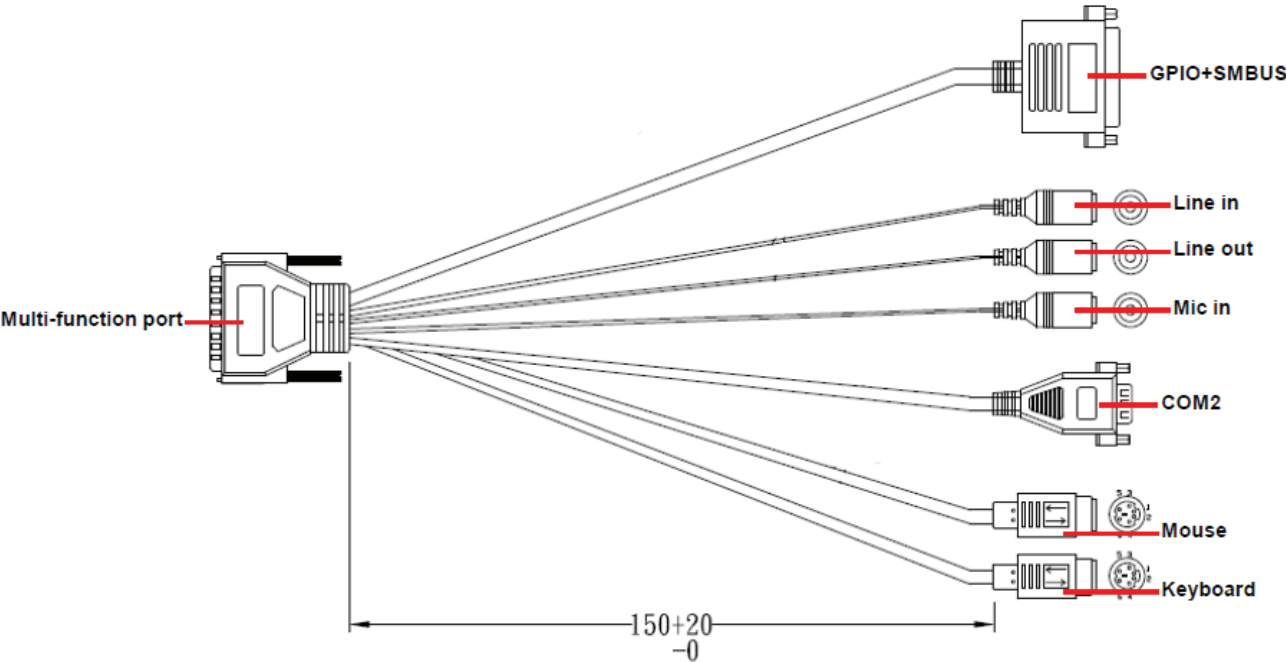


Pin	RS-232	RS-485	RS-422
1	DCD	TXD-/RXD-	TXD-
2	RXD	TXD+/RXD+	TXD+
3	TXD		RXD+
4	DTR		RXD-
5	GND	GND	GND
6	DSR		
7	RTS		
8	CTS		
9	RI		

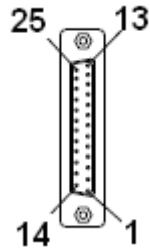
2.1.3 Multi-Function Port combined COM2, 2 PS/2, Audio, GPIO and SMBus
(Multi-function port)



PIN	Signal	PIN	Signal	PIN	Signal
1	LINE1_JD	16	FRONT_JD	31	LINE1_RIN
2	MIC1_JD	17	LINEOUT_R	32	GND
3	MIC_RIN	18	GND	33	LINE1_LIN
4	GND	19	LINEOUT_L	34	+5V
5	MIC_LIN	20	GND	35	DO3
6	DO5	21	DO4	36	DO0
7	DO2	22	DO1	37	DI3
8	DI5	23	DI4	38	DI0
9	DI2	24	DI1	39	SMB_CLK
10	MSCK	25	SMB_DATA	40	NRIB#
11	GND	26	GND	41	NRTSB#
12	MSDA	27	NCTSB#	42	COM2_GND
13	KBDA	28	NDSRB#	43	NTXDB_485RXP
14	VCC_PS2	29	NDTRB#_485RXN	44	NDCDB#_485TXN
15	KBCK	30	NRXDB_485TXP		

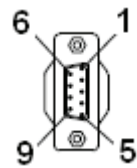


2.1.3.1 GPIO+SMBUS



Signal	PIN	PIN	Signal
	25	13	
	24	12	
	23	11	
	22	10	
SMBUS_DATA	21	9	
SMBUS_CLK	20	8	GND
GPI-D5	19	7	5V
GPI-D4	18	6	GPO-D5
GPI-D3	17	5	GPO-D4
GPI-D2	16	4	GPO-D3
GPI-D1	15	3	GPO-D2
GPI-D0	14	2	GPO-D1
		1	GPO-D0

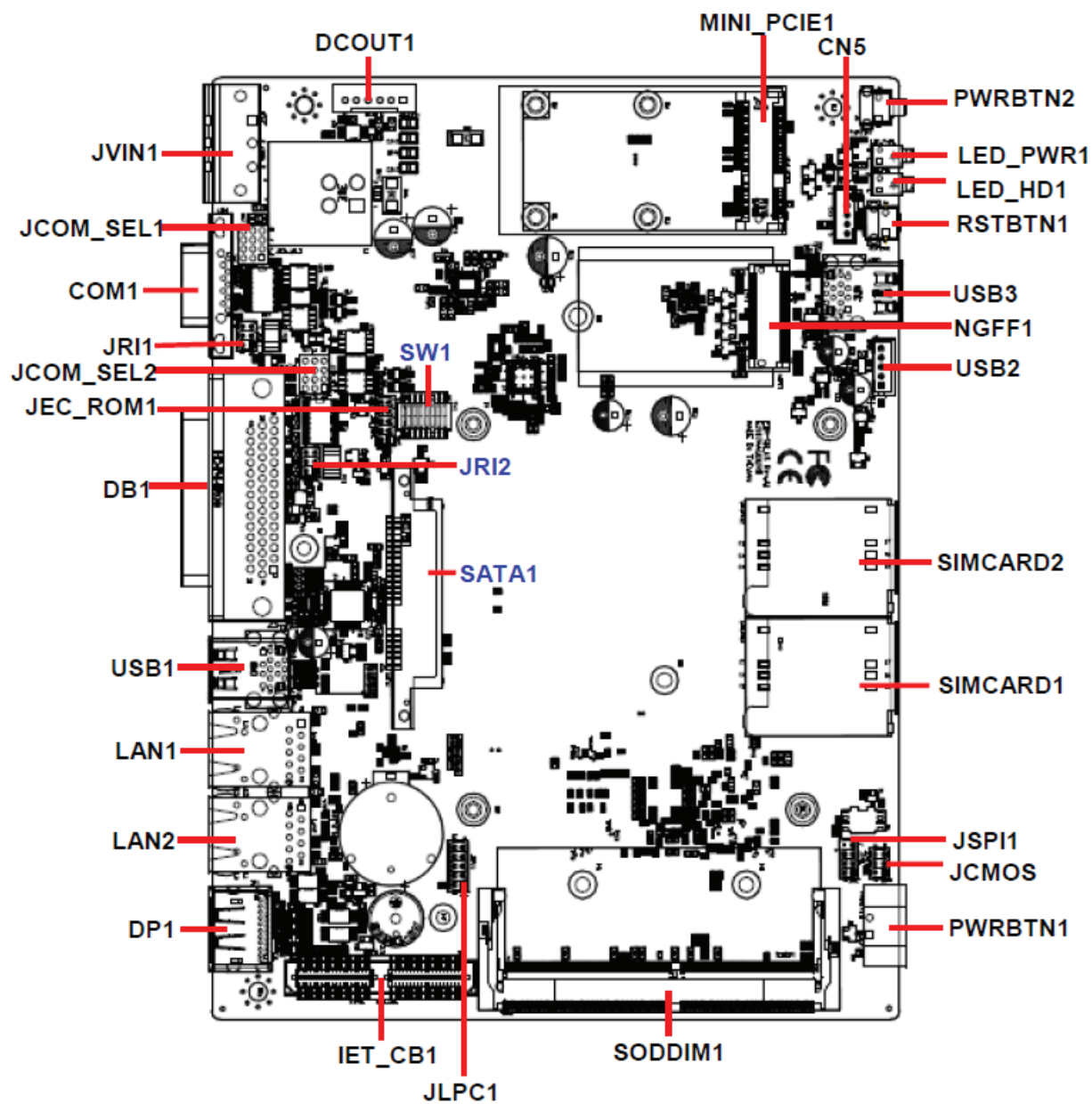
2.1.3.2 COM2



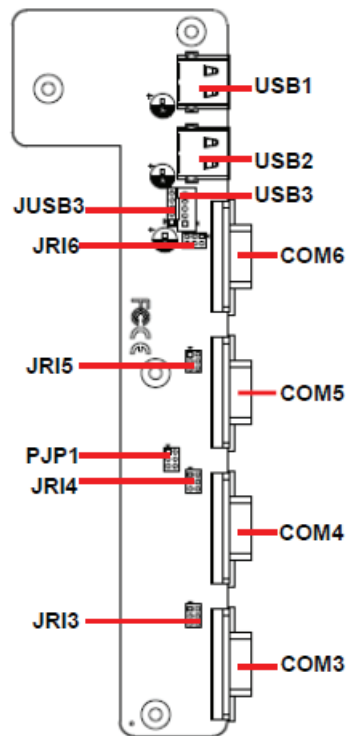
Pin	RS-232	RS-485	RS-422
1	DCD	TXD-/RXD-	TXD-
2	RXD	TXD+/RXD+	TXD+
3	TXD		RXD+
4	DTR		RXD-
5	GND	GND	GND
6	DSR		
7	RTS		
8	CTS		
9	RI		

2.2 MOTHERBOARD CONFIGURATION

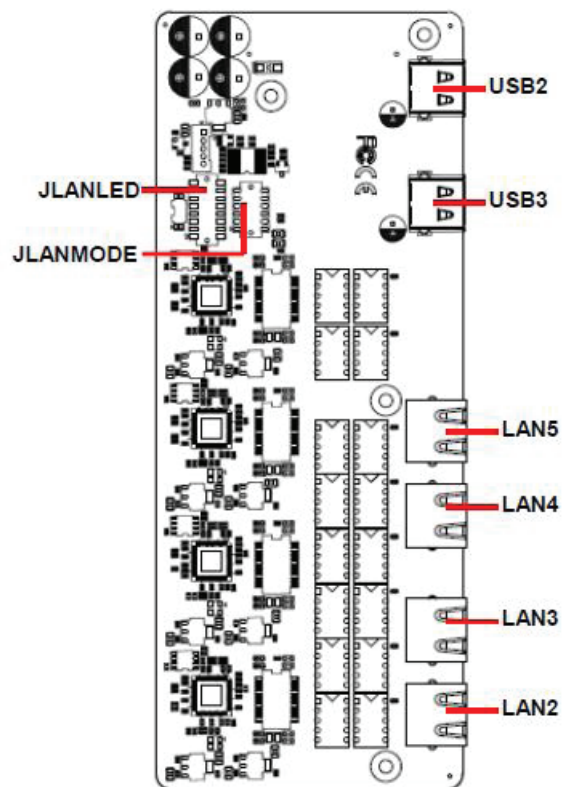
2.2.1 EBM-SKLUS



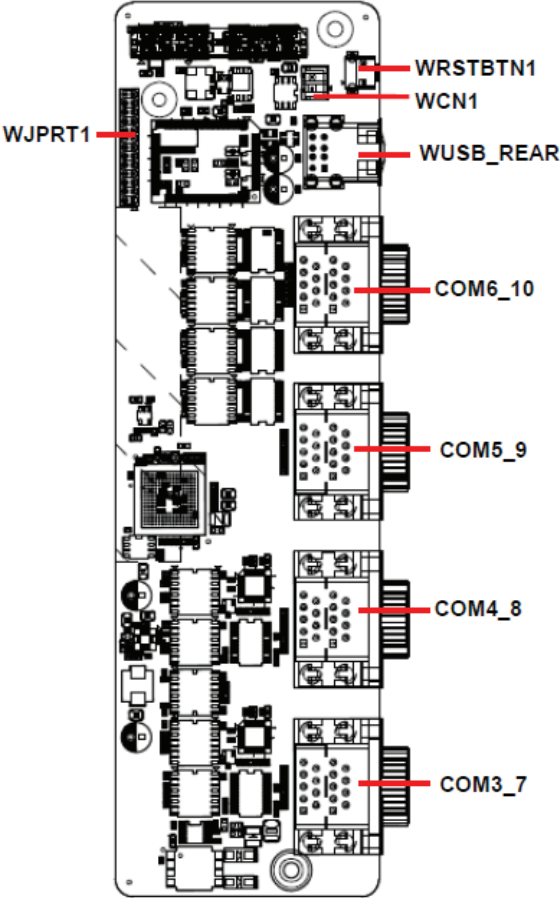
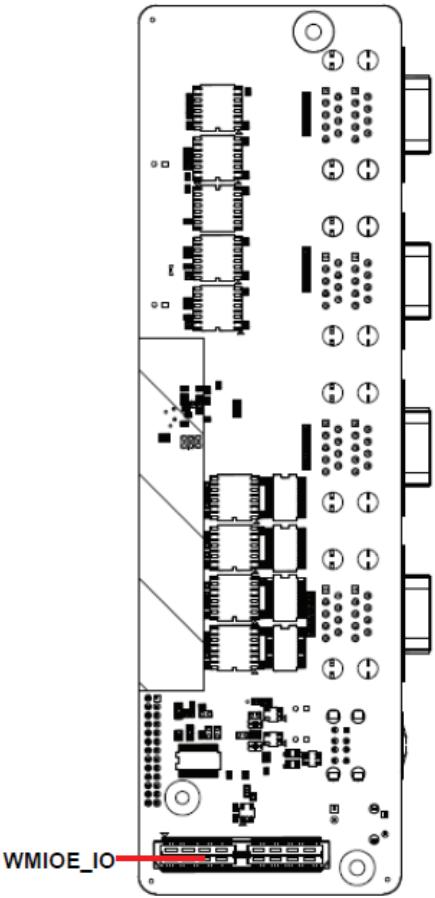
2.2.2 AUX-M01



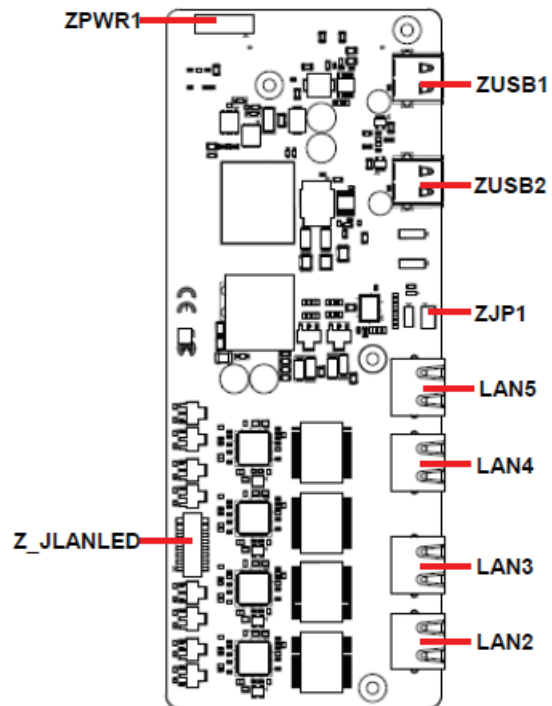
2.2.3 AUX-M02



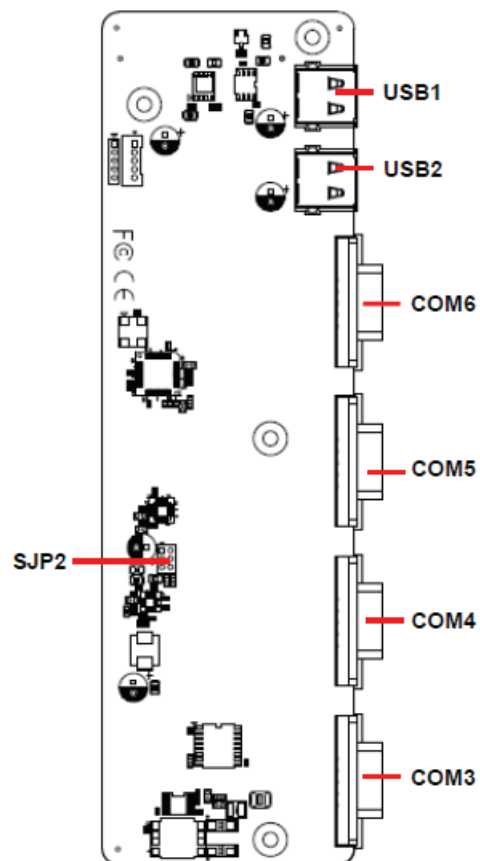
2.2.4 AUX-M03



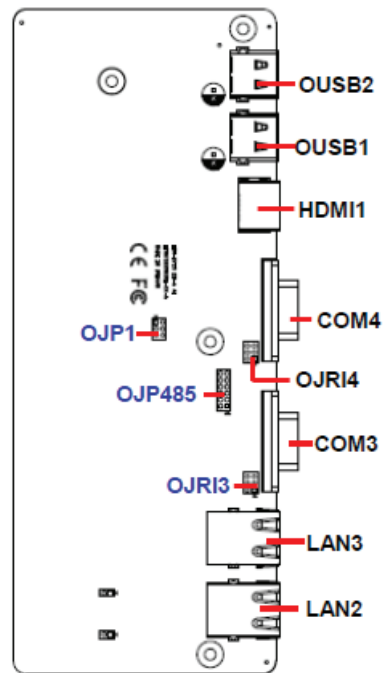
2.2.5 AUX-M04



2.2.6 AUX-M07



2.2.7 EBM-BYTS DB-A



NOTES

2.3 EBM-SKLUS Jumper & Connector list

Jumpers

Label	Function	Note
JCMOS	Clear CMOS	3 x 2 header, pitch 2.00mm
JRI1/2	COM 1/2 pin 9 signal select	3 x 2 header, pitch 2.00 mm
JCOM_SEL1/2	Serial port 1/2 – RS232/422/485 mode select	4 x 3 header, pitch 2.00 mm
SW1	Multi-function select	DIP switch 8pin

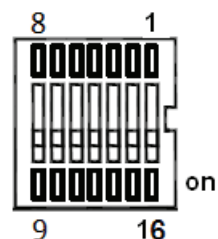
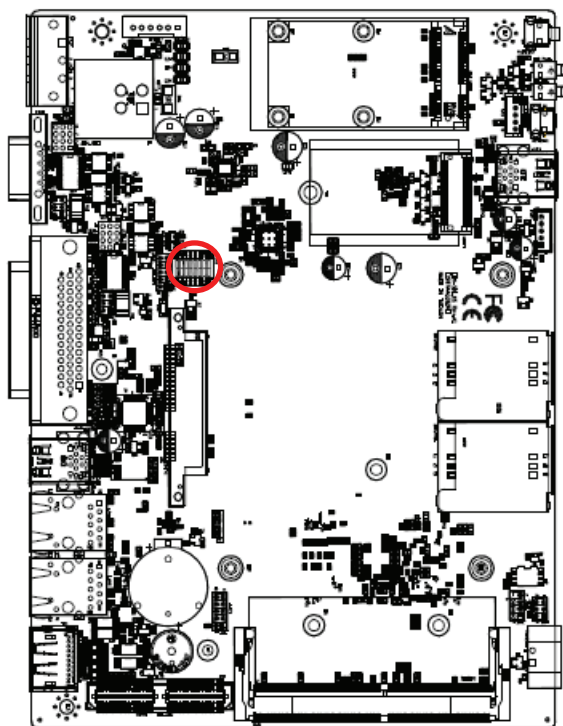
Connectors

Label	Function	Note
USB1	2 x USB3.0 connector	
USB2	On-board header for USB2.0	5 x 1 wafer, pitch 2.00 mm
USB3	2 x USB3.0 connector	
LAN1/2	RJ-45 Ethernet 1/2	
DB-1	Multi-function port	1. COM2 2. Audio(line-in, line-out, mic-in) 3. 2 x PS/2 for KB/MS 4. 12 bit GPIO/SMBUS
COM1	Serial port connector 1	
MINI_PCIE1	Mini PCI Express connector	
CN5	Front Panel Connector	5 x 1 wafer, pitch 2.00 mm
PWRBTN1	Power on/off connector	1 x 2 terminal block, pitch 3.50 mm
PWRBTN2	Power on/off button	
RSTBTN1	Reset button	
LED_PWR1	LED Power	
LED_HD1	LED HDD	
SIMCARD1/2	SIM card slot 1/2	
SODDIM1	DDR4 SODIMM connector	
IET_CB1	IET Expansion slot	
JLPC1	LPC port connector	5 x 2 header, pitch 2.00 mm
JSPI1	SPI connector	4 x 2 header, pitch 2.00 mm
SATA1	Serial ATA connector	
DP1	DP connector	

NGFF1	M.2 KEY-B 2242/3042 connector	
DCOUT1	DC Output connector	6 x 1 wafer, pitch 2.50 mm
JVIN1	DC-Input connector	1 x 3 terminal block, pitch 5.08 mm
JEC_ROM1	EC Debug connector	5 x 2 header, pitch 2.00 mm

2.4 EBM-SKLUS Jumpers & Connectors settings

2.4.1 Multi-function select (SW1)



In Serial Port 1 mode

	RS-232	RS-422	RS-485
1	OFF	ON	ON
2	ON	OFF	ON

In Serial Port 2 mode

	RS-232	RS-422	RS-485
3	OFF	ON	ON
4	ON	OFF	ON

Power mode

	AT	ATX
5	ON	OFF

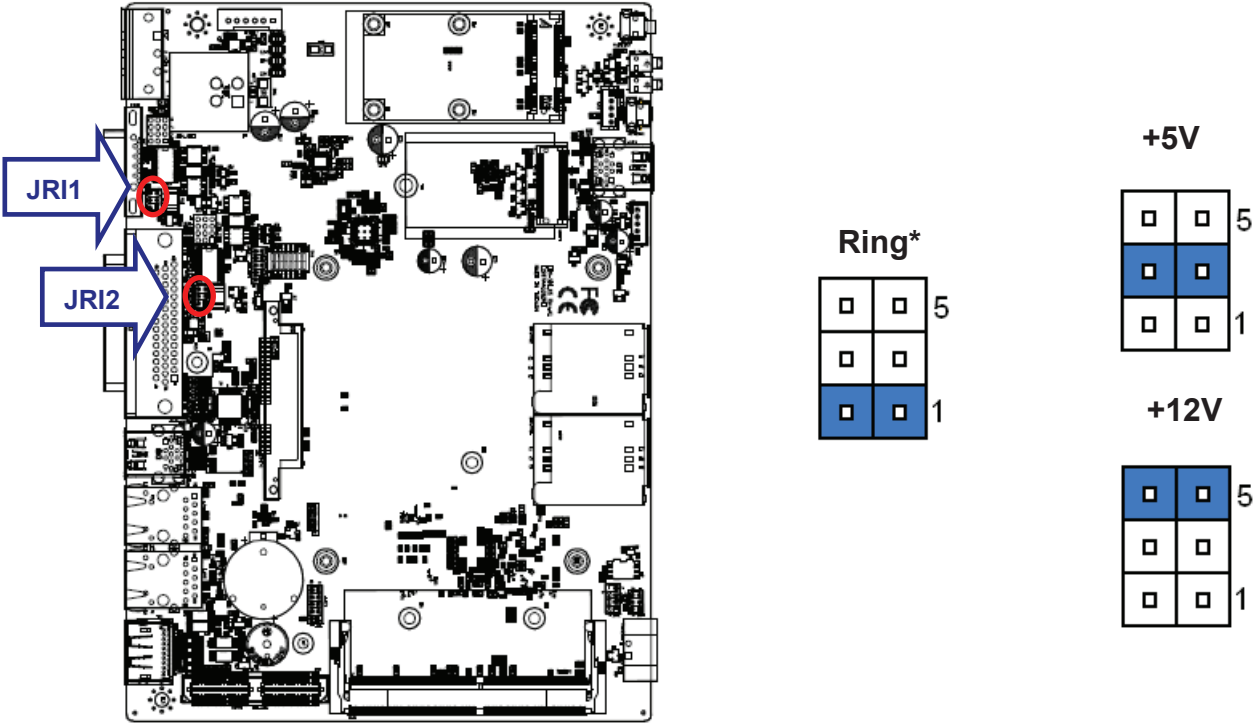
DDI1 mode

	DisplayPort	HDMI
6	ON	OFF

DDI2 mode

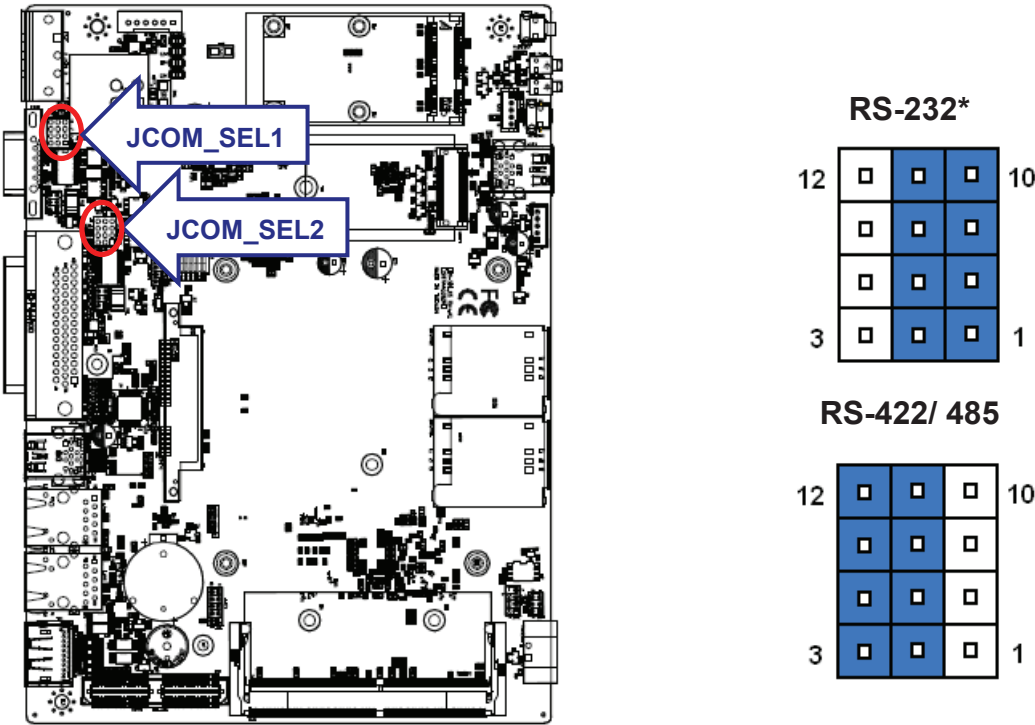
	DisplayPort	HDMI	Cable select
7	OFF	OFF	ON
8	ON	OFF	OFF

2.4.2 COM 1/2 pin 9 signal select (JRI1/2)



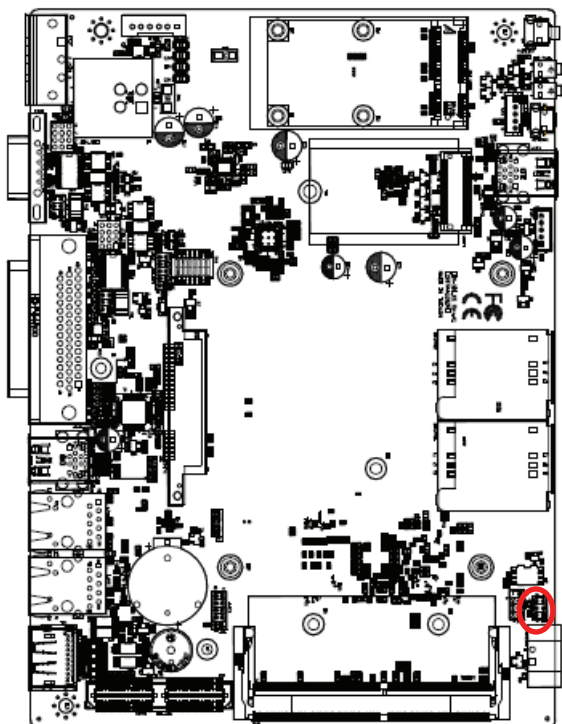
* Default

2.4.3 Serial port 1/2 RS-232/422/485 mode select (JCOM_SEL1/2)

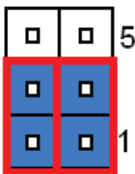


*Default

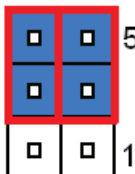
2.4.4 Clear CMOS (JCMOS1)



Normal*

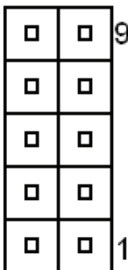
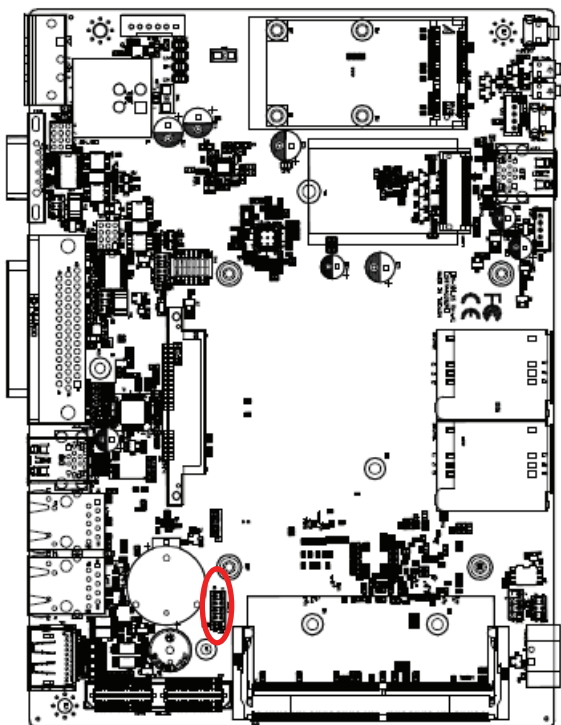


Clear CMOS



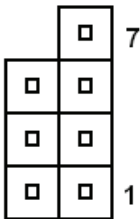
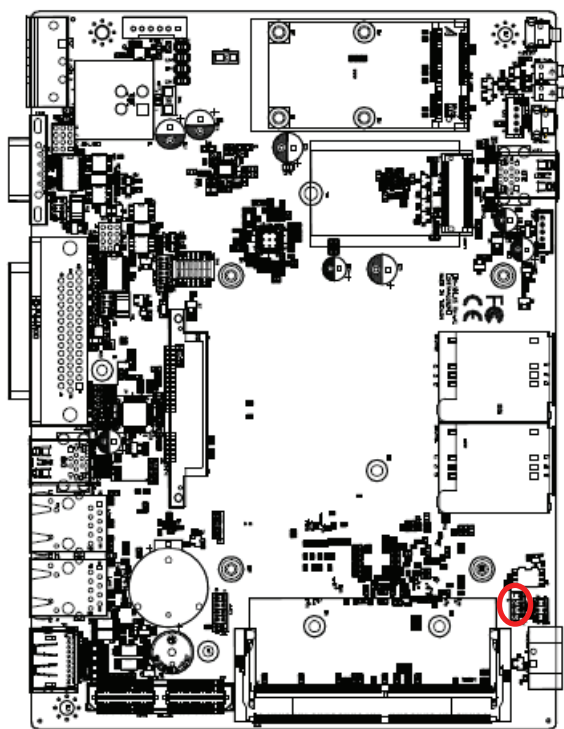
*Default

2.4.5 LPC port connector (JLPC1)



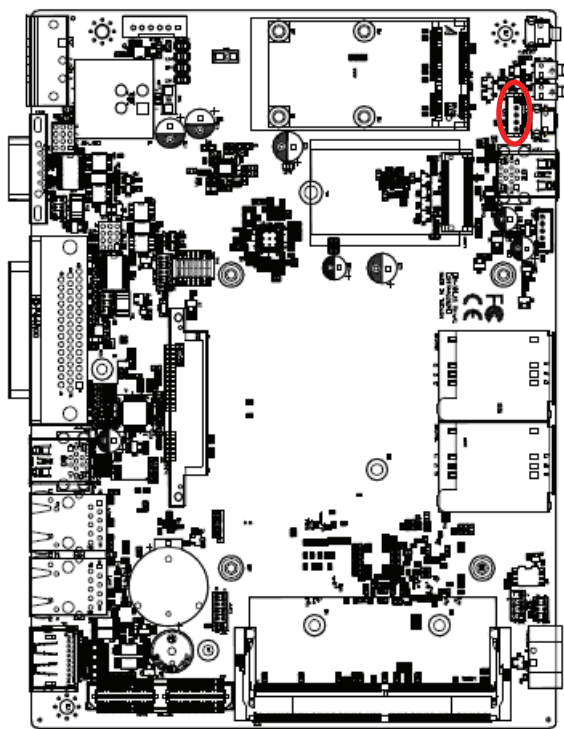
Signal	PIN	PIN	Signal
GND	10	9	LPC_SERIRQ
CLK_24M_PORT80	8	7	LPC_AD3
LPC_LFRAME#	6	5	LPC_AD2
RST_PORT80#	4	3	LPC_AD1
+3.3V	2	1	LPC_AD0

2.4.6 SPI connector (JSPI1)



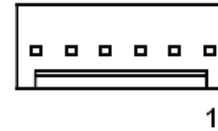
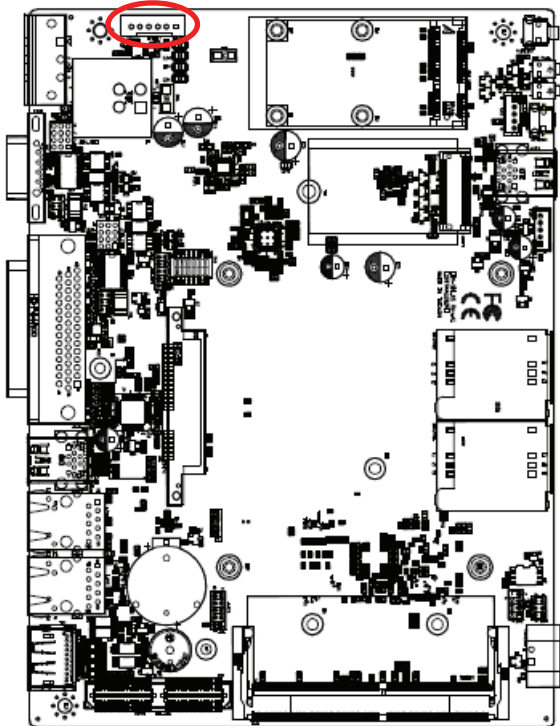
Signal	PIN	PIN	Signal
		7	HOLD#
SPI_SI	6	5	SPI_SO
SPI_CLK	4	3	SPI0_CS0#
GND	2	1	+3.3VSB

2.4.7 Front Panel Connector (CN5)



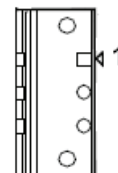
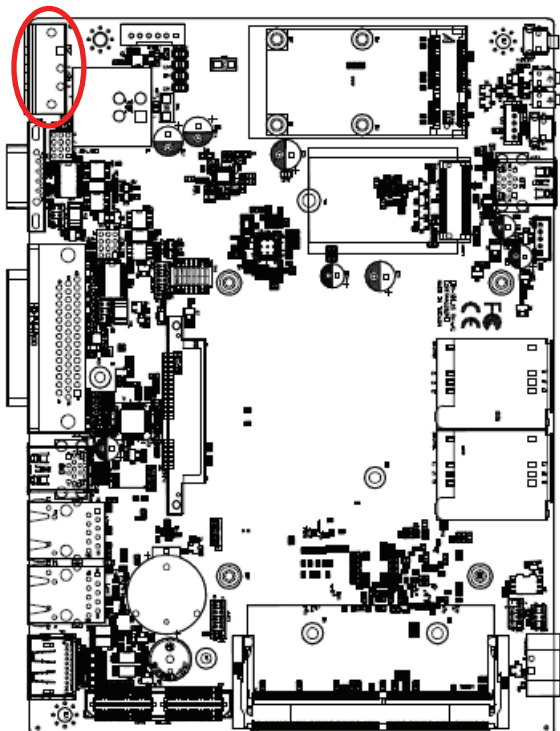
Signal	PIN
PWRBTN_TO_EC#	1
PM_SYSRST#	2
GND	3
+5VSB	4
PWR_LED-	5

2.4.8 DC Output connector (DCOUT1)



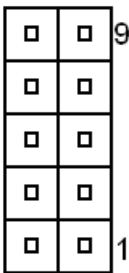
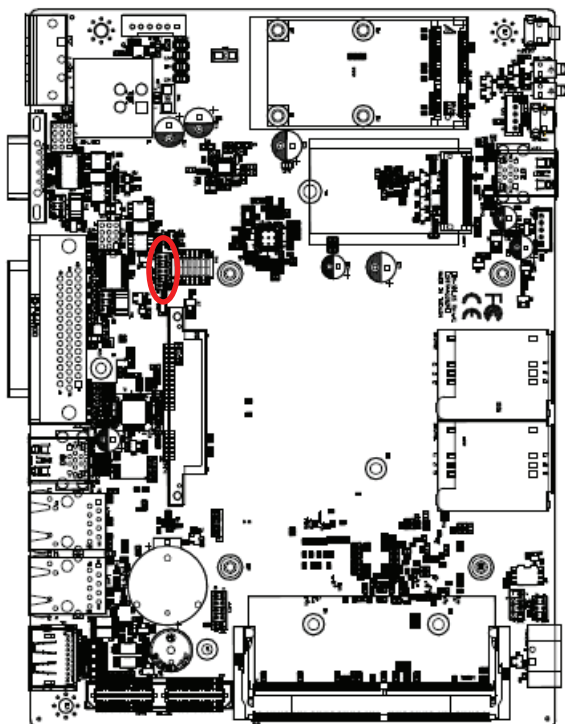
Signal	PIN
+VIN	1
+VIN	2
+VIN	3
GND	4
GND	5
GND	6

2.4.9 DC Input connector (JVIN1)



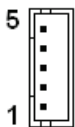
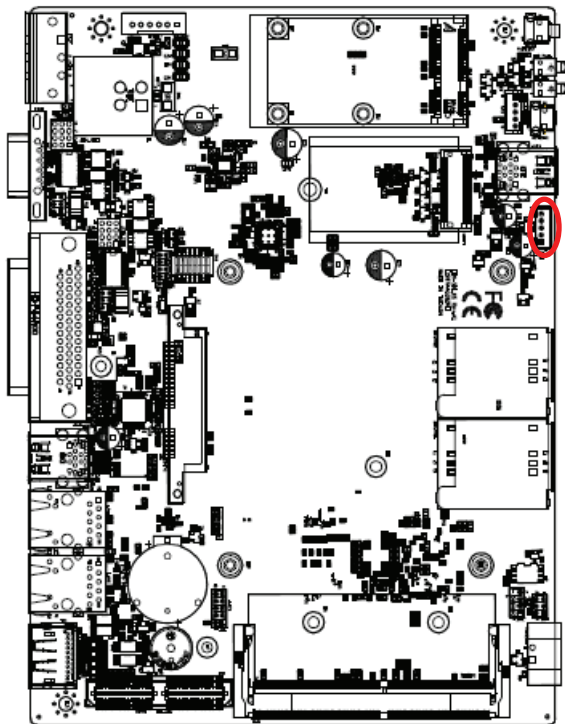
Signal	PIN
+DC_IN	1
CHASSIS_GND	2
GND	3

2.4.10 EC Debug connector (JEC_ROM1)



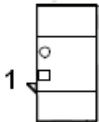
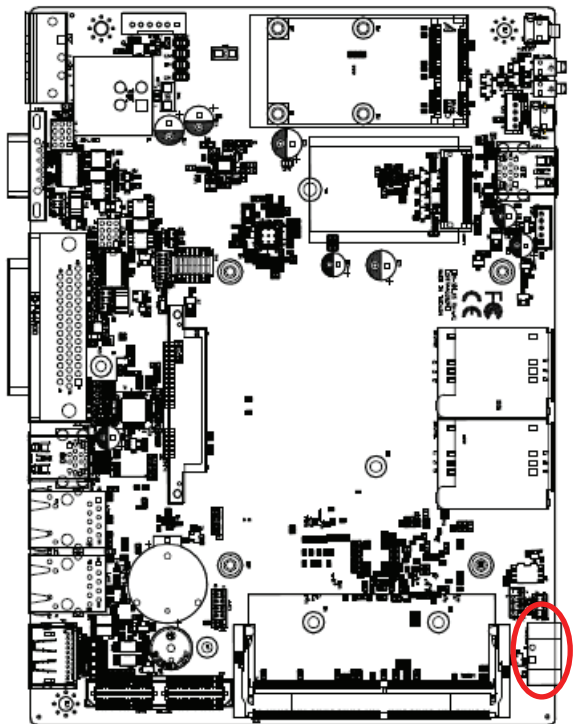
Signal	PIN	PIN	Signal
EC_SMDAT_DE BUG	10	9	EC_SMCLK_DE BUG
NC	8	7	EC_HOLD#
EC_FMOSI	6	5	EC_FMISO
EC_FSCK	4	3	EC_FSCE#
GND	2	1	+VSPI_EC

2.4.11 On-board header for USB2.0 (USB2)



Signal	PIN
GND	5
GND	4
USB_z_PP2	3
USB_z_PN2	2
+5VSB	1

2.4.12 Power ON/OFF connector (PWRBTN1)



Signal	PIN
GND	2
PWRBTN#_R	1

NOTES

2.5 AUX-M01, AUX-M02, AUX-M03, AUX-M04, AUX-M07, EBM-BYTS DB-A Jumper & Connector list

2.5.1 AUX-M01

Jumpers

Label	Function	Note
JRI3/4/5/6	COM 3/4/5/6 pin 9 signal select	3 x 2 header, pitch 2.00mm

Connectors

Label	Function	Note
USB1~2	USB connector 1~2	
USB3	USB connector 3	5 x 1 wafer, pitch 2.00mm
JUSB3	USB connector 3	5 x 1 header, pitch 2.00mm
COM3~6	Serial port connector 3~6	

2.5.2 AUX-M02

Connectors

Label	Function	Note
USB2~3	USB connector 2~3	
LAN2~5	LAN connector 2~5	
JLANLED	LAN ACT/LNK/SPD LED	8 x 2 wafer, pitch 2.00mm
JLANMODE	Normal/Bypass mode LED	6 x 2 wafer, pitch 2.00mm

2.5.3 AUX-M03

Connectors

Label	Function	Note
WRSTBTN1	Reset button	
WJPRT1	LPT Port	13 x 2 header, pitch 2.00mm
WCN1	System reset	2 x 1 wafer, pitch 2.50mm
WUSB_REAR	USB connector	
COM3_7	Serial port connector 3 & 7	
COM4_8	Serial port connector 4 & 8	
COM5_9	Serial port connector 5 & 9	
COM6_10	Serial port connector 6 & 10	
WMIOE_IO	IET Expansion slot	

2.5.4 AUX-M04

Jumpers

Label	Function	Note
ZJP1	Operating Modes select	3 x 2 header, pitch 2.00mm

Connectors

Label	Function	Note
ZUSB1~2	USB connector 1~2	
LAN2~5	LAN connector 2~5	
ZPWR1	Power connector	6 x 1 wafer, pitch 2.00mm
Z_JLANLED	LAN ACT/LNK/SPD LED	8 x 2 wafer, pitch 2.00mm

2.5.5 AUX-M07

Connectors

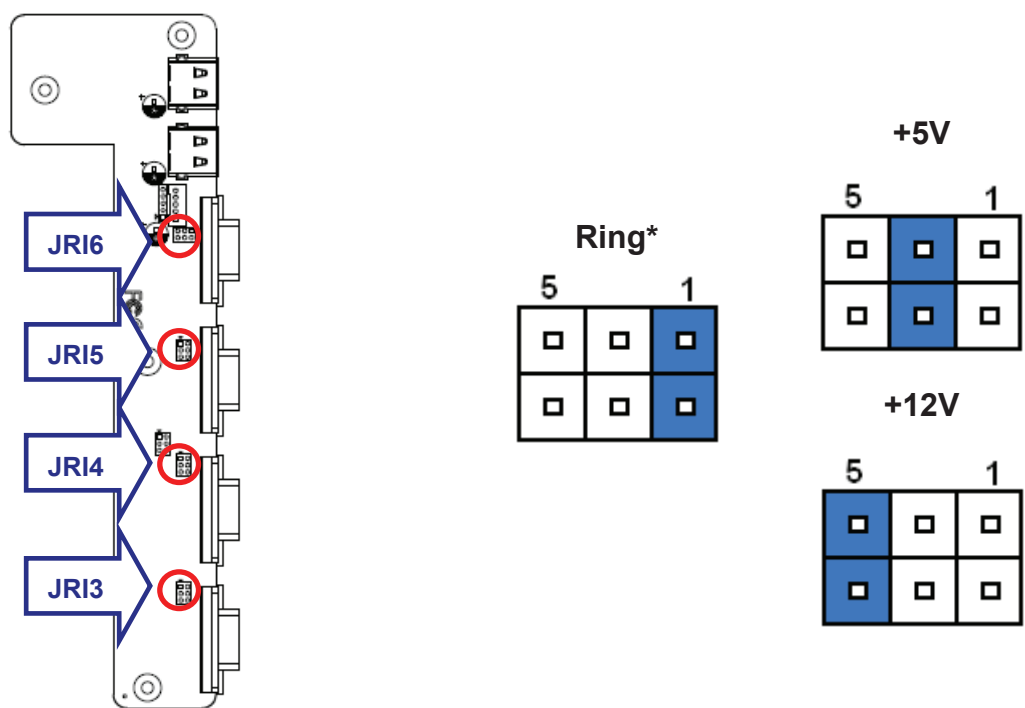
Label	Function	Note
USB1~2	USB connector 1~2	
COM3~6	Serial port connector 3~6	

2.5.6 FRONT PANEL

PWRBTN	Power button	
LED_PWR	LED Power	
LED_HDD	LED HDD	
CN1	Front Panel connector 1	5 x 1 wafer, pitch 2.00 mm
DVI1	DVI connector	

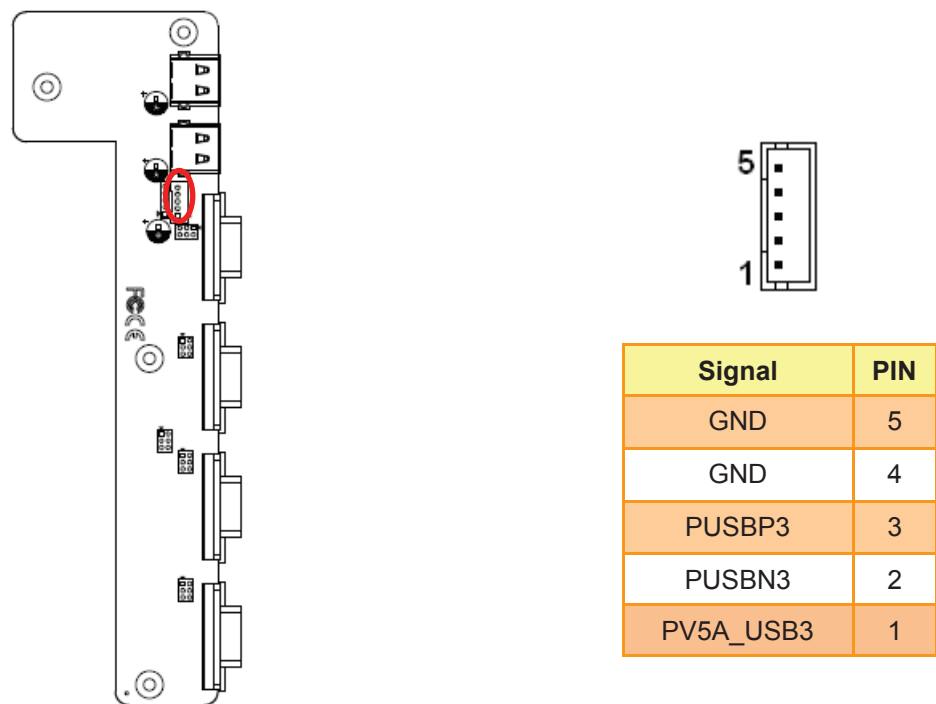
2.6 AUX-M01 Jumpers & Connectors settings

2.6.1 COM 3/4/5/6 pin 9 signal select (JRI3/4/5/6)

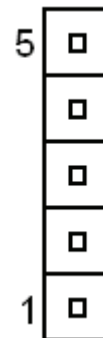
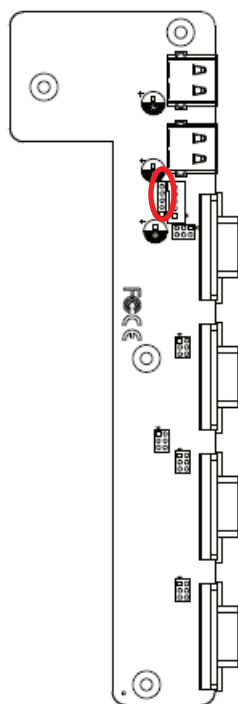


* Default

2.6.2 USB connector (USB3)

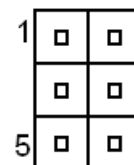
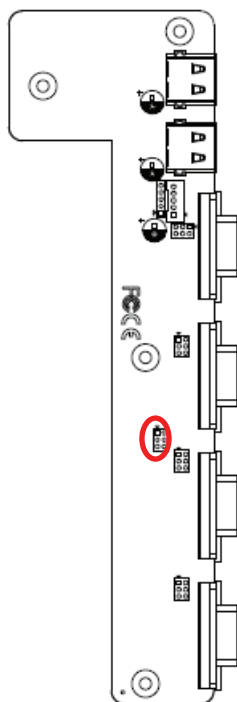


2.6.3 USB connector (JUSB3)



Signal	PIN
GND	5
GND	4
PUSBP3	3
PUSBN3	2
PV5A_USB3	1

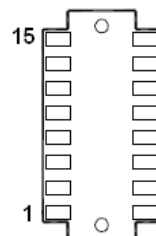
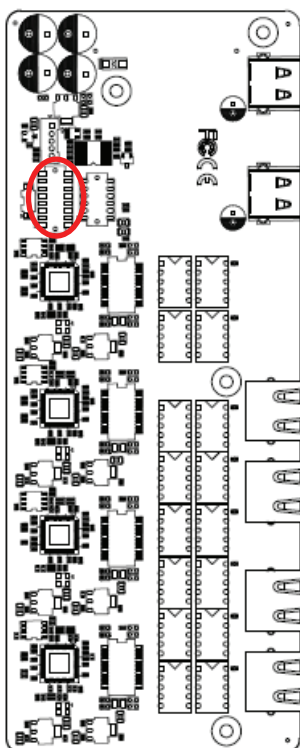
2.6.4 SMBUS of TCA9555 address setting (PJP1)



Signal	PIN	PIN	Signal
GND	1	2	MC_9555A0
GND	3	4	MC_9555A1
GND	5	6	MC_9555A2

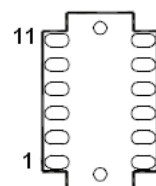
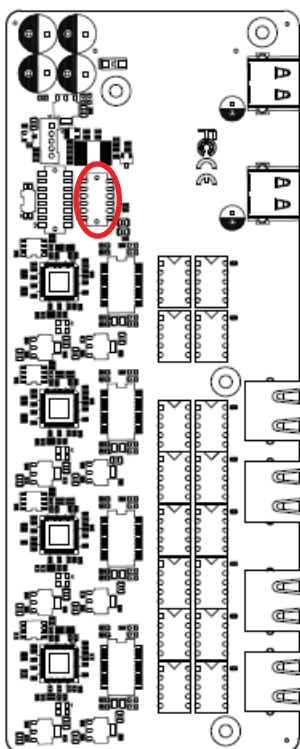
2.7 AUX-M02 Connectors settings

2.7.1 LAN ACT/LNK/SPD LED (JLANLED)



Signal	PIN	PIN	Signal
Z_LAN_LED_1000#_3	15	16	Z_LAN_LED_1000#_1
Z_LAN_LED_100#_3	13	14	Z_LAN_LED_100#_1
Z_LAN_LED_ACT_3	11	12	Z_LAN_LED_ACT_1
+3.3VSB	9	10	+3.3VSB
Z_LAN_LED_1000#_4	7	8	Z_LAN_LED_1000#_2
Z_LAN_LED_100#_4	5	6	Z_LAN_LED_100#_2
Z_LAN_LED_ACT_4	3	4	Z_LAN_LED_ACT_2
+3.3VSB	1	2	+3.3VSB

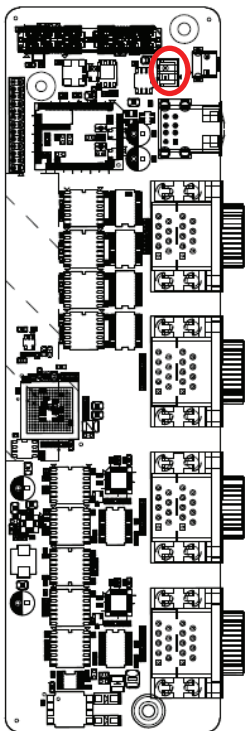
2.7.2 Normal/Bypass mode LED (JLANMODE)



Signal	PIN	PIN	Signal
Z_RC5_LAN23-STA	11	12	Z_RC7_LAN45-STA
Z_+VLED	9	10	Z_+VLED
Z_RA4_LAN23-BYP	7	8	Z_RA1_LAN45-BYP
Z_+VLED	5	6	Z_+VLED
Z_RC6_LAN23-NOR	3	4	Z_RC4_LAN45-NOR
Z_+VLED	1	2	Z_+VLED

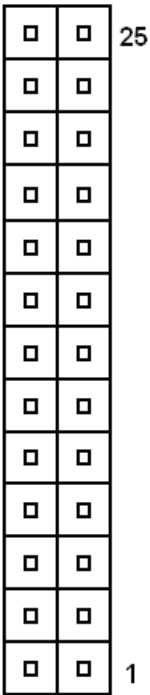
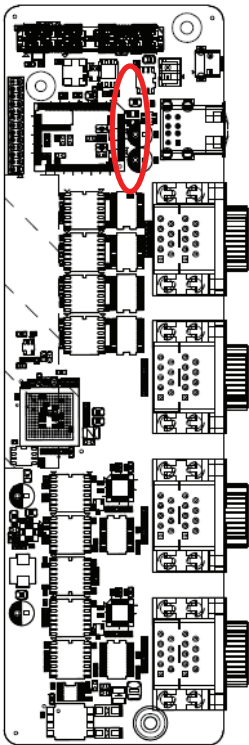
2.8 AUX-M03 Connectors settings

2.8.1 System reset (WCN1)



Signal	PIN
GND	2
WSYSRST#	1

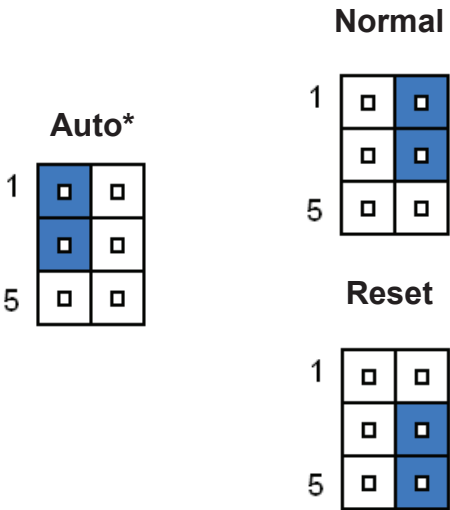
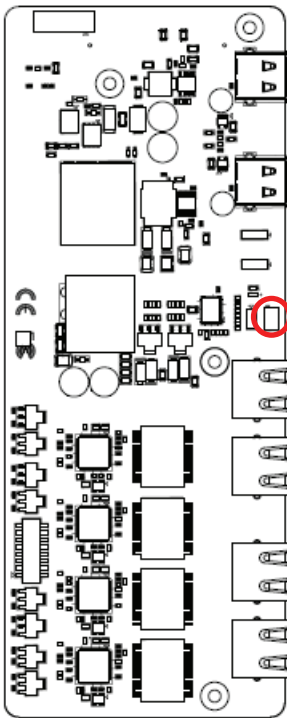
2.8.2 LPT Port (WJPRT1)



Signal	PIN	PIN	Signal
GND	26	25	LPT_SLCT
GND	24	23	LPT_[E
GND	22	21	LPT_BUSY
GND	20	19	LPT_ACK#
GND	18	17	PD7
GND	16	15	PD6
GND	14	13	PD5
GND	12	11	PD4
GND	10	9	PD3
LPT_SLIN#	8	7	PD2
LPT_INIT#	6	5	PD1
LPT_ERR#	4	3	PD0
LPT_AFD#	2	1	STB-

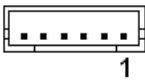
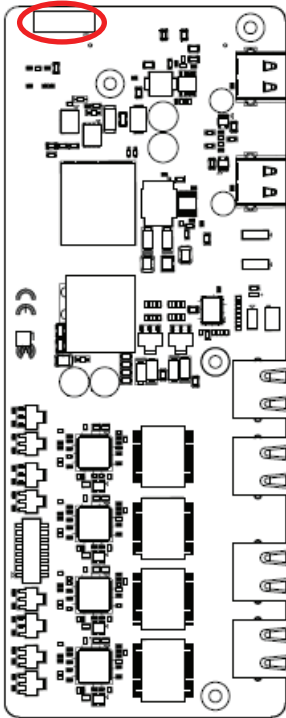
2.9 AUX-M04 Jumpers & Connectors settings

2.9.1 Operating Modes select (ZJP1)



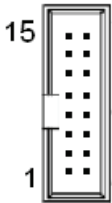
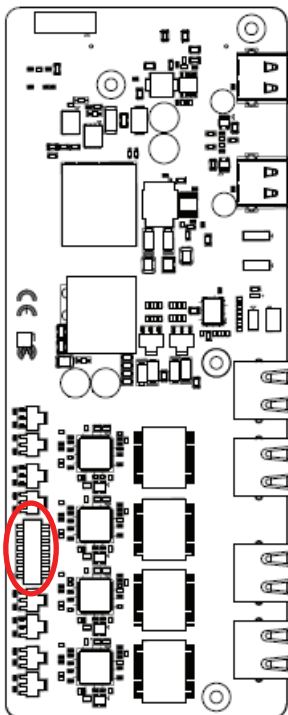
* Default

2.9.2 Power connector (ZPWR1)



Signal	PIN
+V12-28V	1
+V12-28V	2
+V12-28V	3
GND	4
GND	5
GND	6

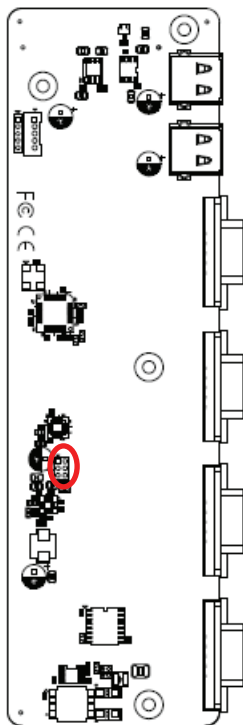
2.9.3 LAN ACT/LNK/SPD LED (Z_JLANLED)



Signal	PIN	PIN	Signal
Z_LAN_LED_1000#_3	15	16	Z_LAN_LED_1000#_1
Z_LAN_LED_100#_3	13	14	Z_LAN_LED_100#_1
Z_LAN_LED_ACT_3	11	12	Z_LAN_LED_ACT_1
+3.3VSB	9	10	+3.3VSB
Z_LAN_LED_1000#_4	7	8	Z_LAN_LED_1000#_2
Z_LAN_LED_100#_4	5	6	Z_LAN_LED_100#_2
Z_LAN_LED_ACT_4	3	4	Z_LAN_LED_ACT_2
+3.3VSB	1	2	+3.3VSB

2.10 AUX-M07 Connector settings

2.10.1 SMBUS of TCA9555 address setting (SJP2)

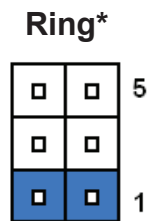
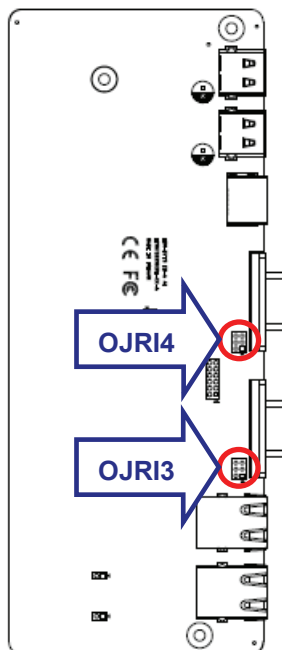


1	□	□
	□	□
5	□	□

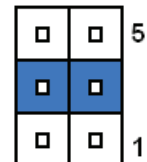
Signal	PIN	PIN	Signal
GND	1	2	SMC_9555A0
GND	3	4	SMC_9555A1
GND	5	6	SMC_9555A2

2.11 EBM-BYTS DB-A Jumpers & Connectors settings

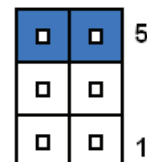
2.11.1 COM 3/4 pin 9 signal select (OJRI3/4)



+5V

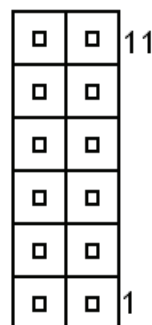
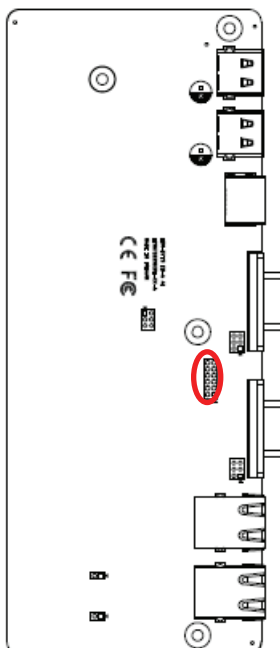


+12V



* Default

2.11.2 Serial port 1/ 2 – RS485 mode select (OJP485)



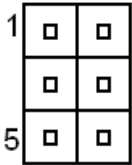
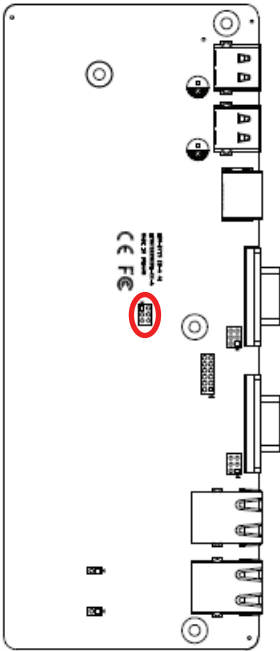
In Serial Port 1 mode

PIN	ON	NC
1-2	Auto Direction	RTS# Control*
3-4	485TXP external biasing resistor	OPEN*
5-6	485TXN external biasing resistor	OPEN*

In Serial Port 2 mode

	ON	NC
7-8	Auto Direction	RTS# Control*
9-10	485TXP external biasing resistor	OPEN*
11-12	485TXN external biasing resistor	OPEN*

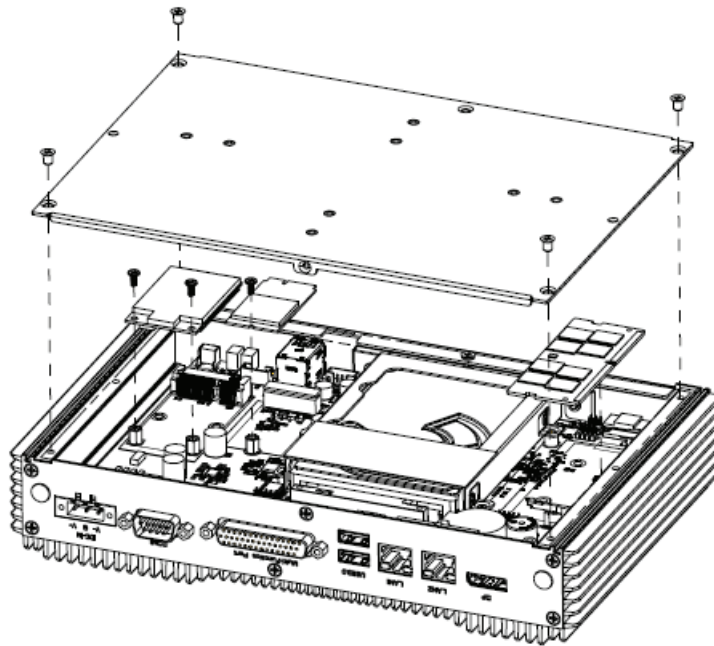
2.11.3 SMBUS of TCA9555 address setting (OJP1)



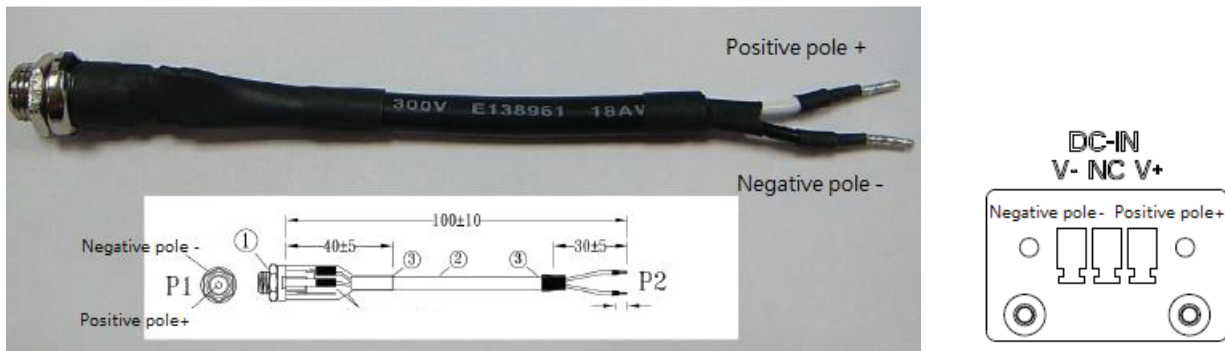
Signal	PIN	PIN	Signal
GND	1	2	MC_9555A0
GND	3	4	MC_9555A1
GND	5	6	MC_9555A2

NOTES

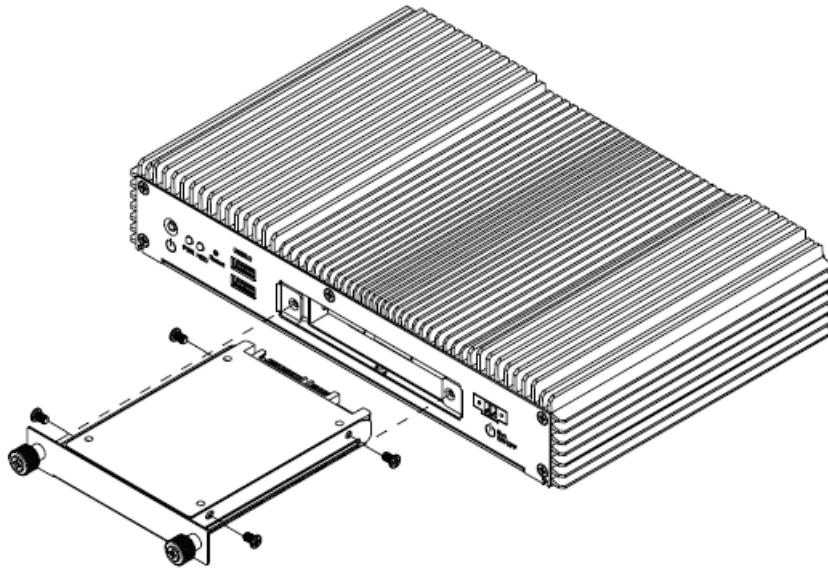
2.12 Installing Hard Disk & Memory, PCI devices



- Step 1.** Remove 4 screws from the bottom of your system and take it off.
- Step 2.** Slide the DDR4 SODIMM into the memory socket and press it down until properly seated.
- Step 3.** Insert MPCIE card into designated locations and fasten with 2 screws to complete MPCIE installation.
- Step 4.** Insert M.2 B-Key card into designated locations and fasten with a screw to complete installation.



WARNING: Please target the right pole when you are setting it. The black wire is corresponding to the negative pole and another one is positive pole.



Step 1. Unfasten 2 screws from the HDD bracket and take it off.

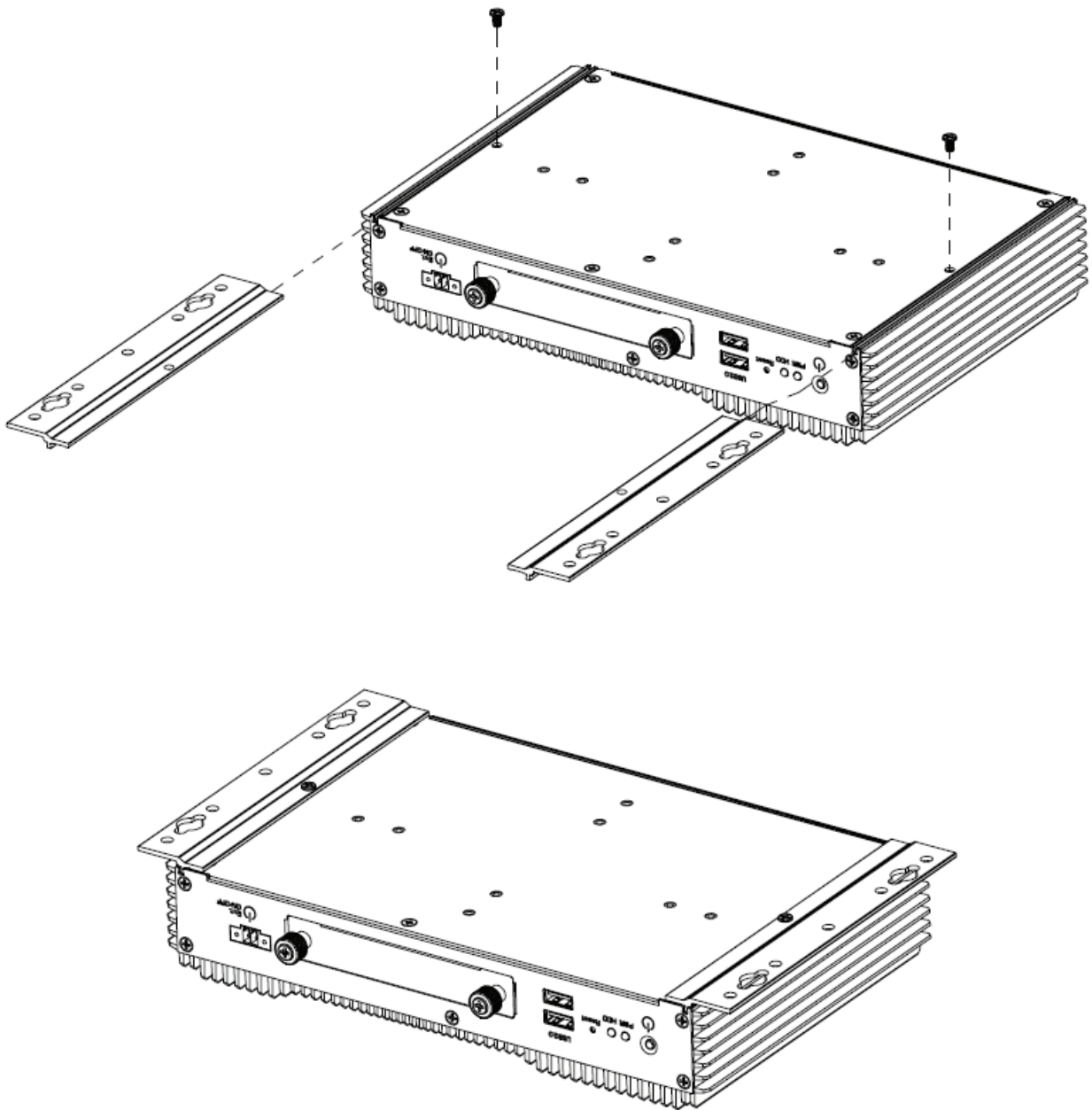
Step 2. Remove 4 screws to release the HDD bracket.

Step 3. Slide HDD into its bracket until properly seated.

Step 4. Secure HDD by means of 4 screws.

Step 5. Insert HDD bracket into designated locations and fasten with 2 screws to complete HDD installation.

2.13 Installing Mounting Brackets



Step 1. Position brackets on both sides, matching the holes on the system.

Step 2. Insert and fasten screw on each side of the system to secure Mounting brackets.

NOTES

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 to the 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.

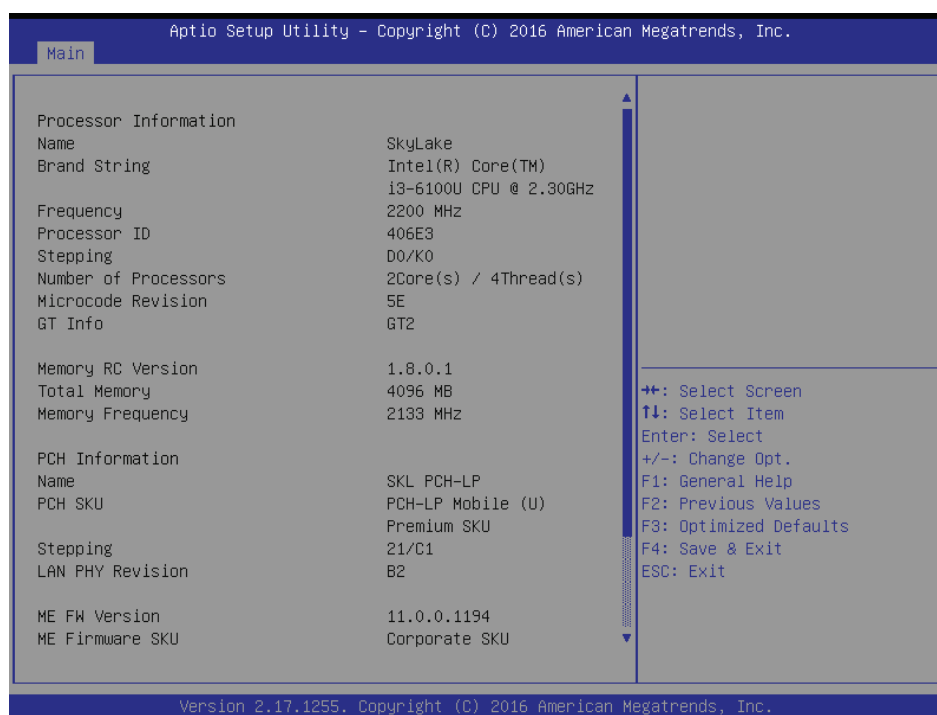
The best advice is to only alter settings which you thoroughly understand. To this end, we strongly recommend that you avoid making any changes to the chipset defaults. These defaults have been carefully chosen by both BIOS Vendor and your systems manufacturer to provide the absolute maximum performance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

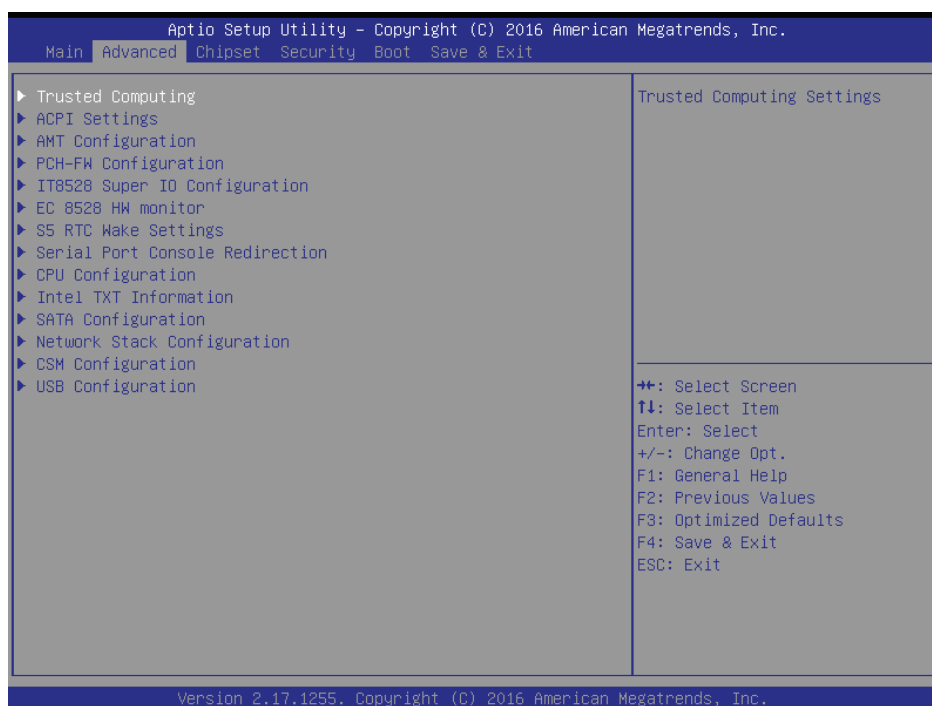
Use the system time option to set the system time. Manually enter the hours, minutes and seconds.



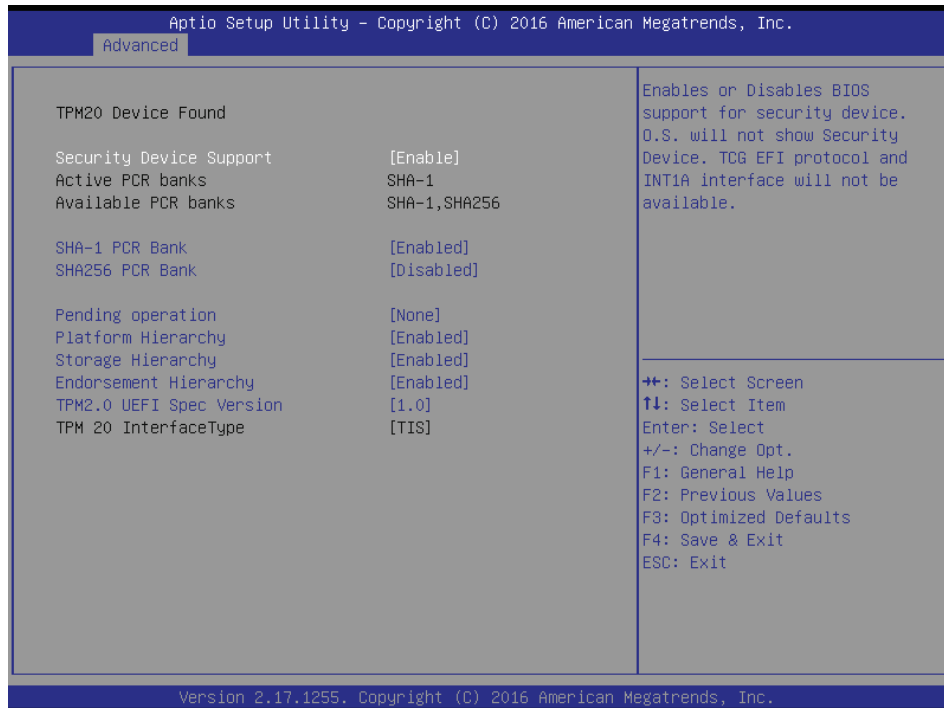
Note: The BIOS setup screens shown in this chapter are for reference purposes only, and may not exactly match what you see on your screen.

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.

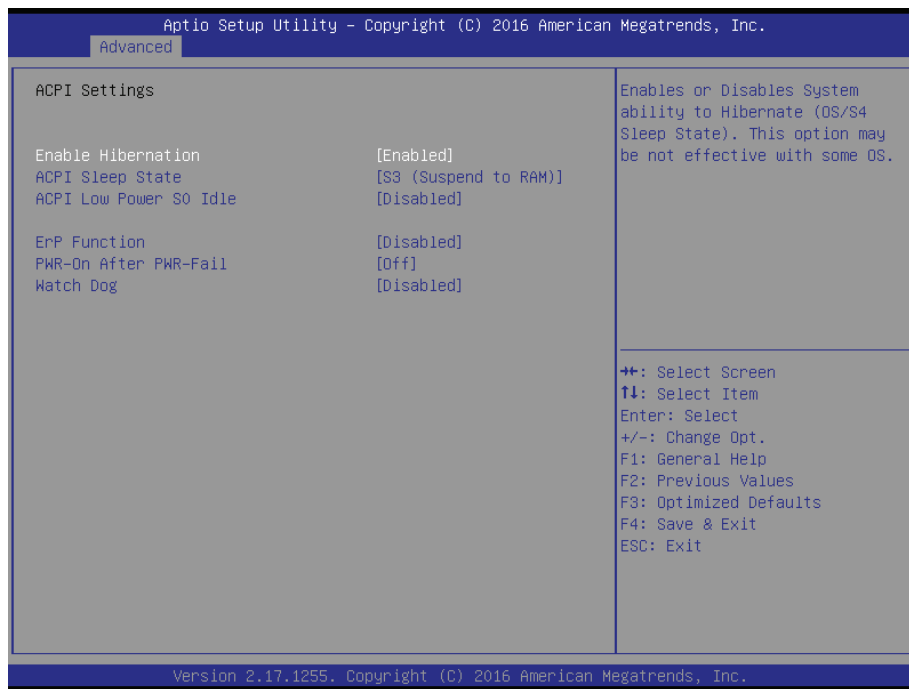


3.6.2.1 Trusted Computing



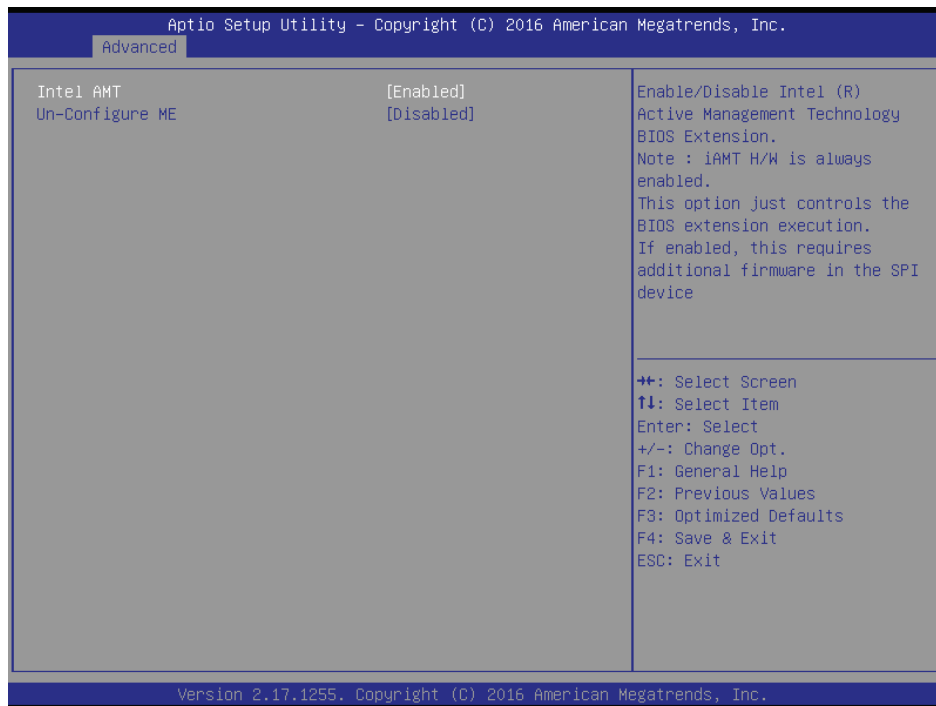
Item	Options	Description
Security Device Support	Disable, Enable [Default]	Enables or Disables BIOS support for security device. O.S. will not show Security Device. TCG EFI protocol and INT1A interface will not be available.
SHA-1 PCR Bank	Disabled Enabled [Default] ,	Enables or Disables SHA-1 PCR Bank.
SHA256 PCR Bank	Disabled [Default] Enabled,	Enables or Disables SHA256 PCR Bank.
Pending operation	None [Default] , TPM Clear	Schedule an Operation for the Security Device. NOTE: Your Computer will reboot during restart in order to change State of Security Device.
Platform Hierarchy	Disabled Enabled [Default] ,	Enable or Disable Platform Hierarchy.
Storage Hierarchy	Disabled Enabled [Default] ,	Enable or Disable Storage Hierarchy.
Endorsement Hierarchy	Disabled Enabled [Default] ,	Enable or Disable Endorsement Hierarchy.
TPM2.0 UEFI Spec Version	1.0 [Default] , 1.x	Select the TCG2 Spec Version Support. 1.0: the Compatible mode for Win8/Win10, 1.x: For TCG2 newer spec for Win10.

3.6.2.2 ACPI Settings



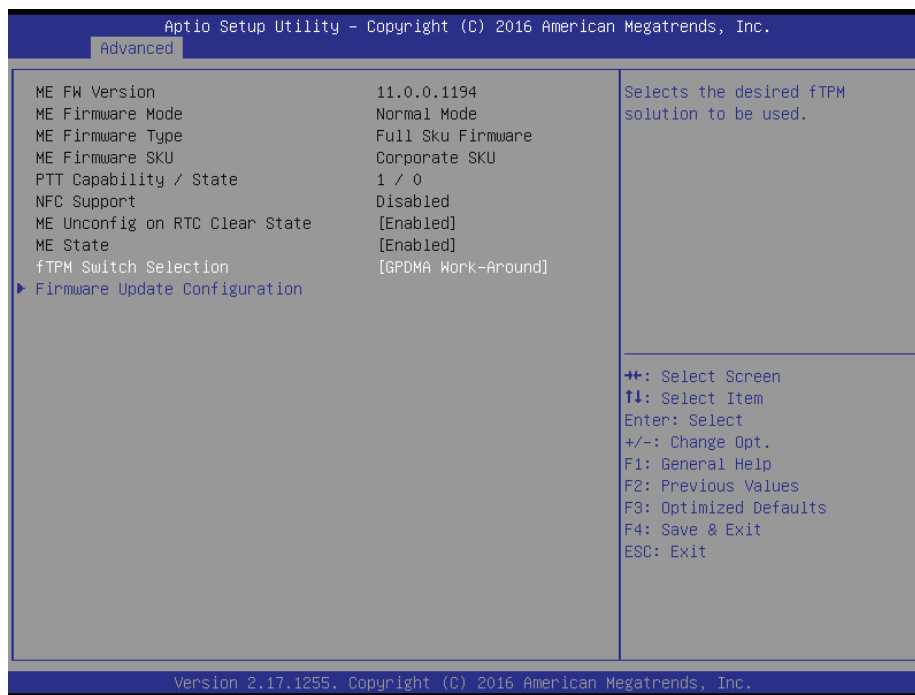
Item	Options	Description
Enable Hibernation	Disabled Enabled [Default] ,	Enables or Disables System ability to Hibernate (OS/S4 Sleep State). This option may be not effective with some OS.
ACPI Sleep State	Suspend Disabled, S3 (Suspend to RAM) [Default]	Select the highest ACPI sleep state the system will enter when the SUSPEND button is pressed.
ACPI Low Power S0 Idle	Disabled [Default] , Enabled	Enable or Disable ACPI Low Power S0 Idle Support.
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.

3.6.2.3 AMT Configuration



Item	Options	Description
Intel AMT	Disabled Enabled[Default],	Enable/Disable Intel® Active Management Technology BIOS Extension. Note: iAMT H/W is always enabled. This option just controls the BIOS extension execution. If enabled, this requires additional firmware in the SPI device.
Un-Configure ME	Disabled[Default] Enabled,	OEMFlag Bit 15: Un-Configure ME without password.

3.6.2.4 PCH-FW Configuration



Item	Options	Description
fTPM Switch Selection	GPDMA Work-Around [Default] , MSFT QFE Solution	Select the desired fTPM solution to be used.

3.6.2.4.1 Firmware Update Configuration



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

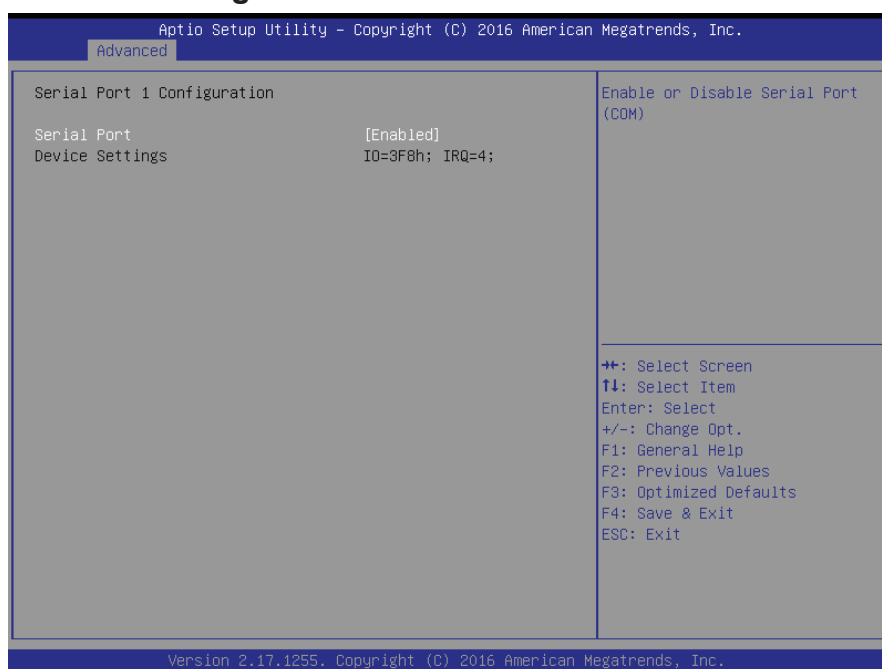
3.6.2.5 IT8528 Super IO Configuration

You can use this item to set up or change the IT8528 Super IO configuration for serial ports. Please refer to 3.6.2.5.1~ 3.6.2.5.2 for more information.



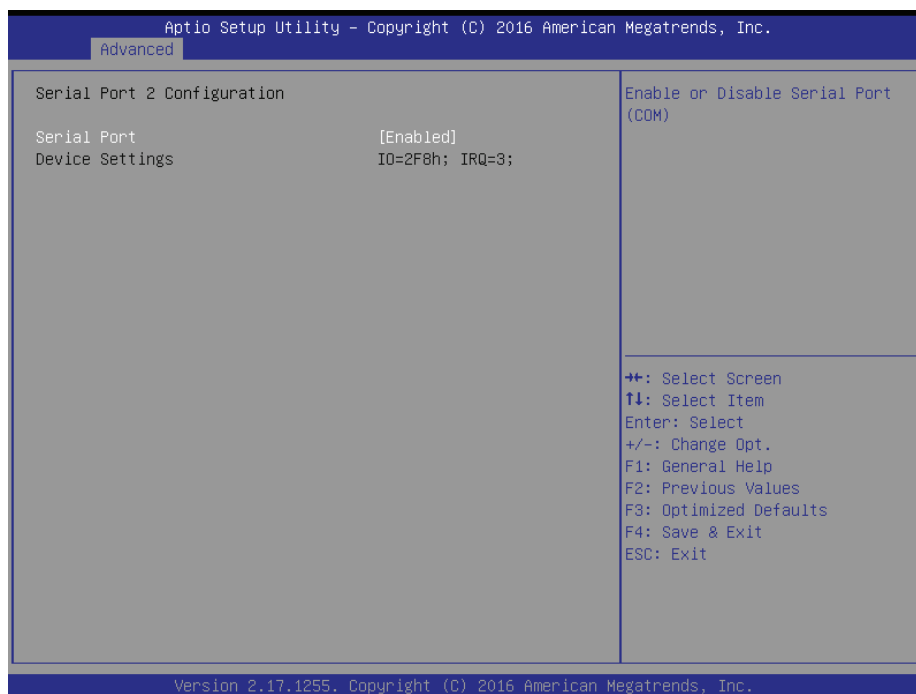
Item	Description
Serial Port 1 Configuration	Set Parameters of Serial Port 1 (COMA).
Serial Port 2 Configuration	Set Parameters of Serial Port 2 (COMB).

3.6.2.5.1 Serial Port 1 Configuration



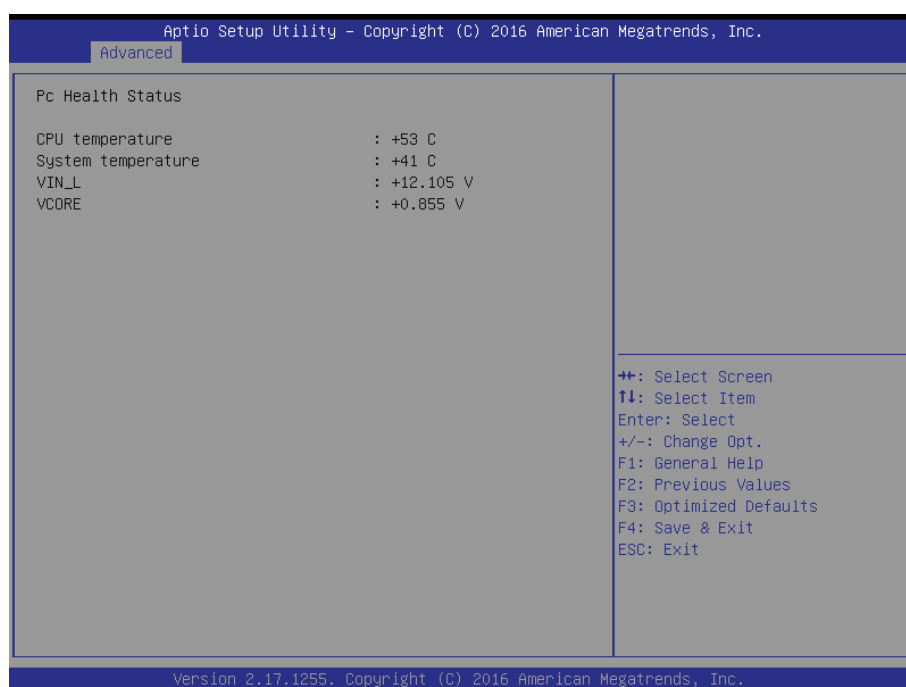
Item	Option	Description
Serial Port	Enabled[Default], Disabled	Enable or Disable Serial Port (COM).

3.6.2.5.2 Serial Port 2 Configuration



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

3.6.2.6 EC 8528 H/W Monitor

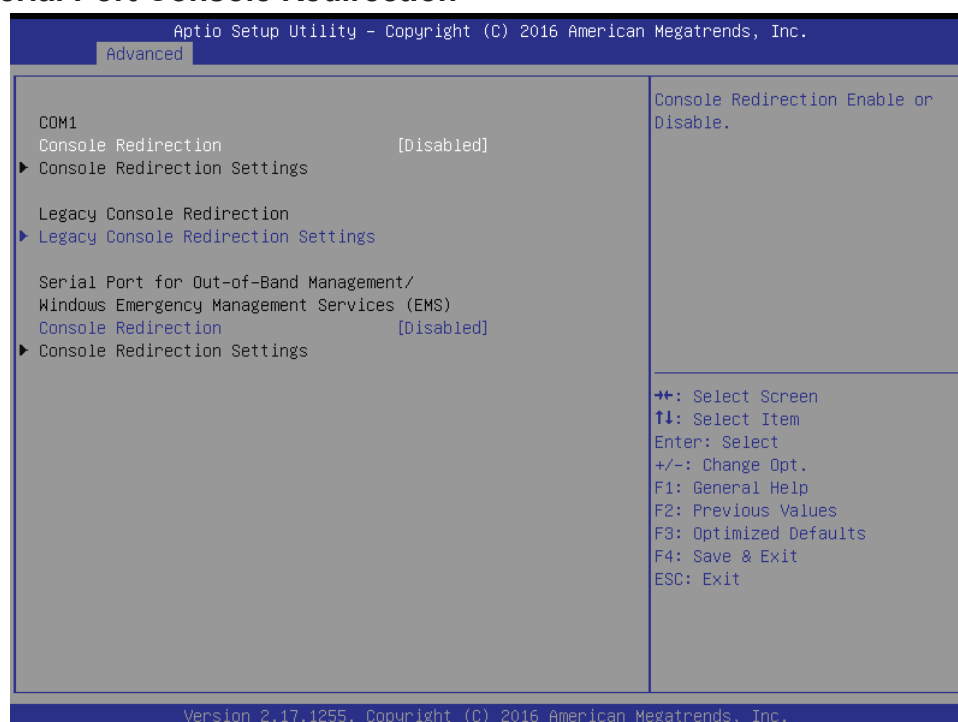


3.6.2.7 S5 RTC Wake Settings



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

3.6.2.8 Serial Port Console Redirection



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

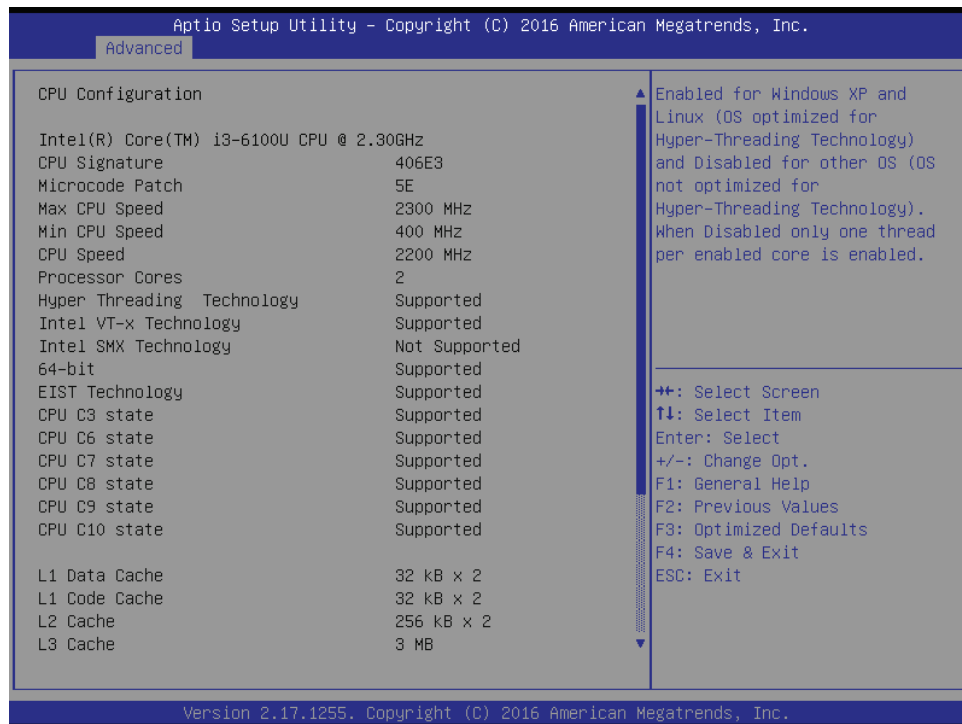
3.6.2.8.1 Legacy Console Redirection Settings



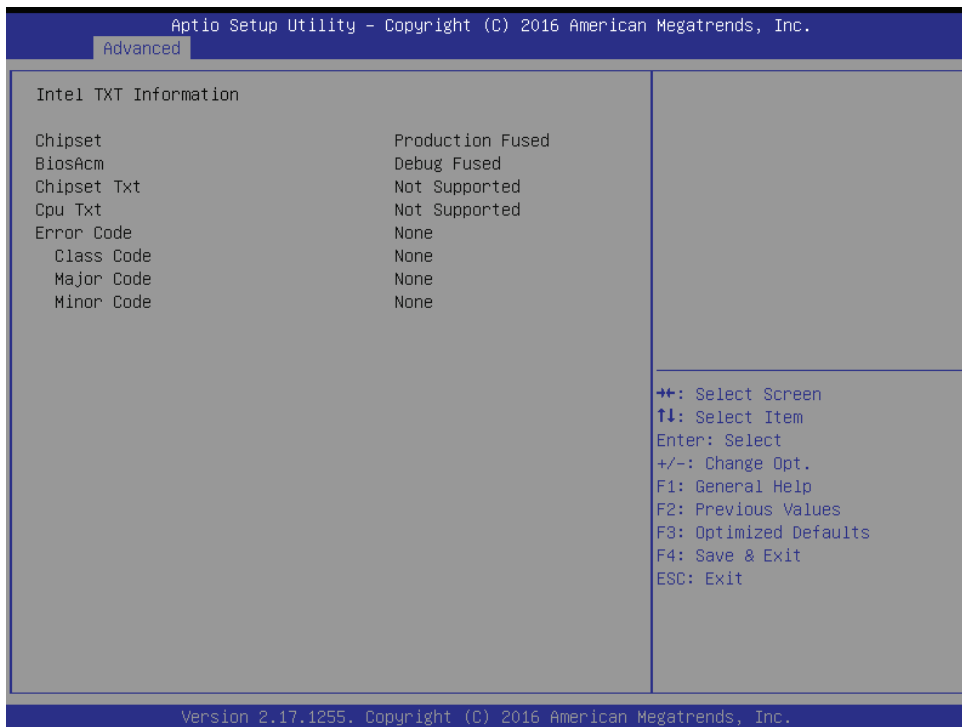
Item	Option	Description
Legacy Serial Redirection Port	COM1 [Default] ,	Select a COM port to display redirection of Legacy OS and Legacy OPRM Messages.

3.6.2.9 CPU Configuration

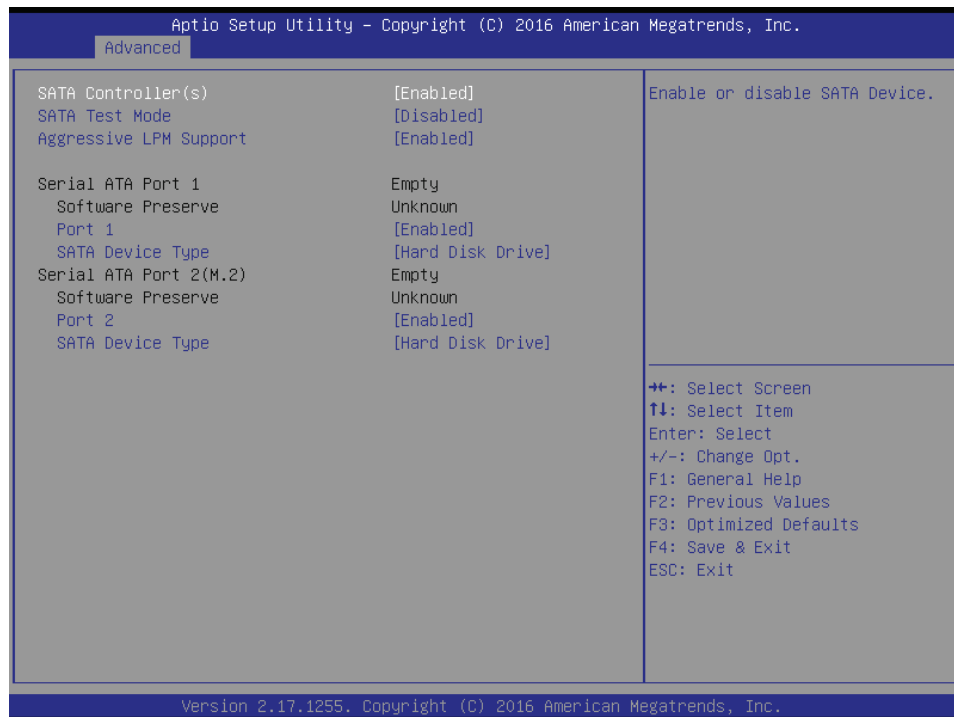
Use the CPU configuration menu to view detailed CPU specification and configure the CPU.



3.6.2.10 Intel TXT Information



3.6.2.11 SATA Configuration



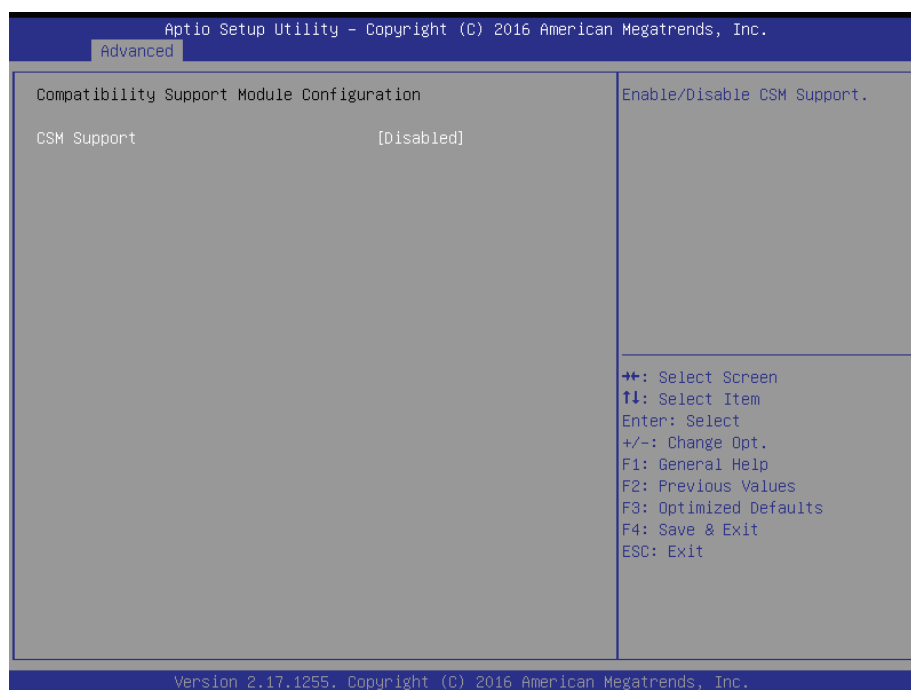
Item	Options	Description
SATA Controller(s)	Enabled[Default] Disabled,	Enable or disable SATA Device.
SATA Test Mode	Enabled Disabled[Default],	Test Mode Enable/Disable (Loop Back).
Aggressive LPM Support	Enabled[Default] Disabled	Enable PCH to aggressively enter link power state.
Port 1/2	Enabled[Default] Disabled,	Enable or Disable SATA Port.
SATA Device Type	Hard Disk Drive [Default] Solid State Drive	Identify the SATA port is connected to Solid State Drive or Hard Disk Drive.

3.6.2.12 Network Stack Configuration



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

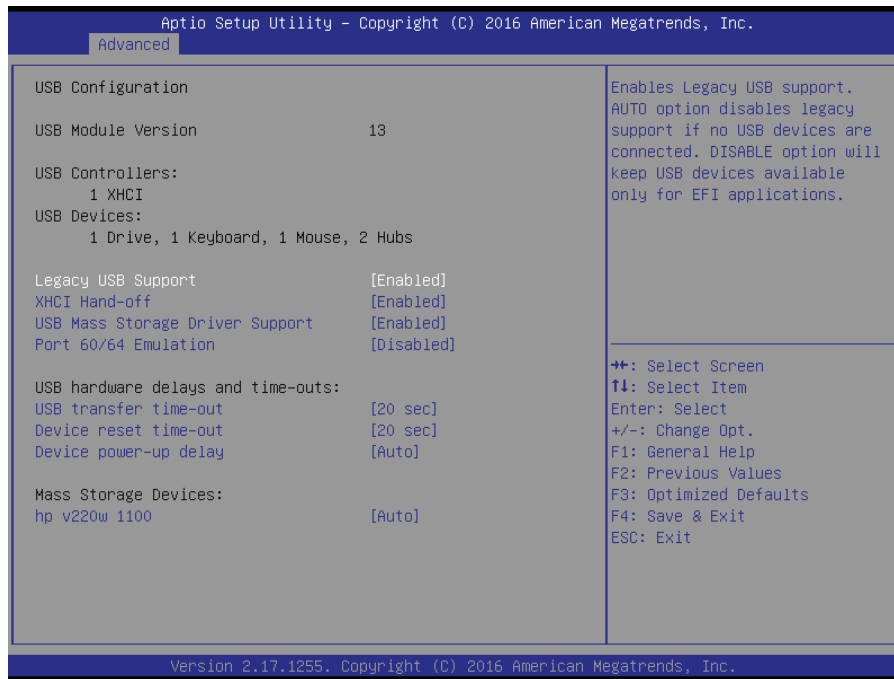
3.6.2.13 CSM Configuration



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

3.6.2.14 USB Configuration

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



Item	Options	Description
Legacy USB Support	Enabled [Default] Disabled Auto	Enables Legacy USB support. AUTO option disables legacy support if no USB devices are connected. DISABLE option will keep USB devices available only for EFI applications.
XHCI Hand-off	Enabled [Default] Disabled	This is a workaround for OSes without XHCI hand-off support. The XHCI ownership change should be claimed by XHCI driver.
USB Mass Storage Driver Support	Enabled [Default] Disabled	Enable/Disable USB Mass Storage Driver Support.
Port 60/64 Emulation	Disabled [Default] Enabled	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.

Hp v220w 1100	Auto[Default] Floppy Forced FDD Hard Disk CD-ROM	Mass storage device emulation type. 'AUTO' enumerates devices according to their media format. Optical drives are emulated as 'CDROM', drives with no media will be emulated according to d drive type.
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3.6.3 Chipset

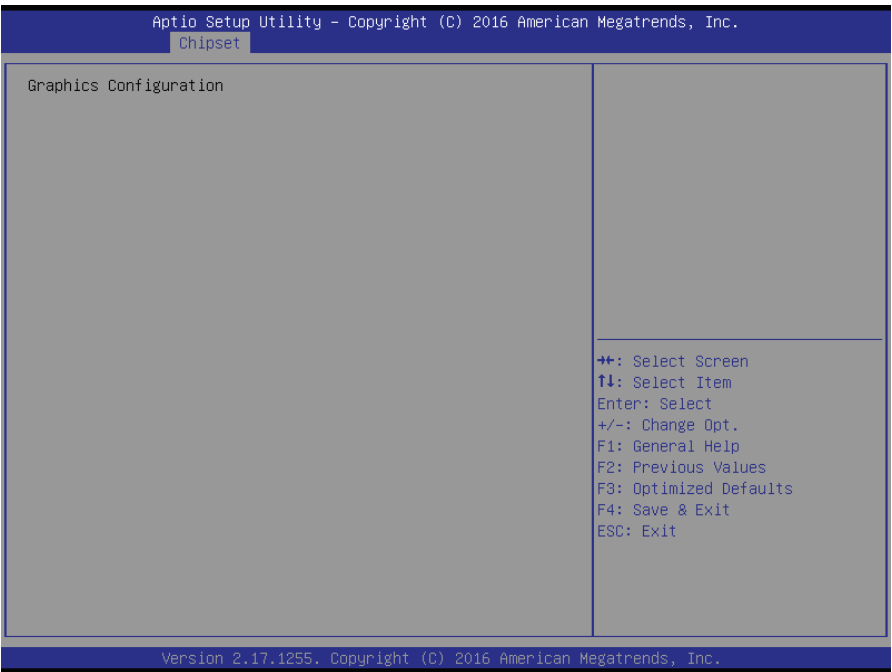


3.6.3.1 System Agent (SA) Configuration



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

3.6.3.1.1 Graphics Configuration

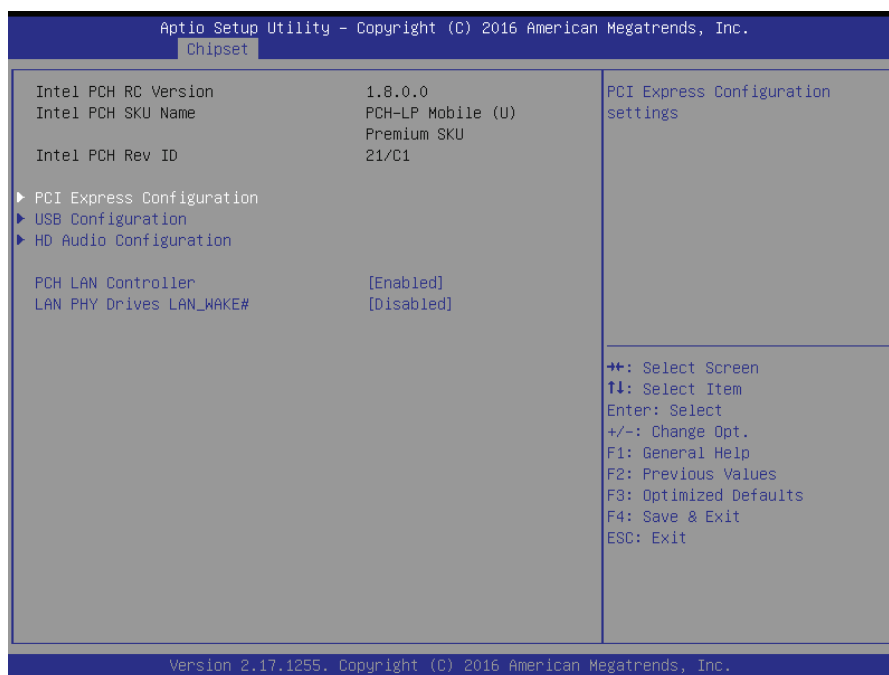


3.6.3.1.2 Memory Configuration



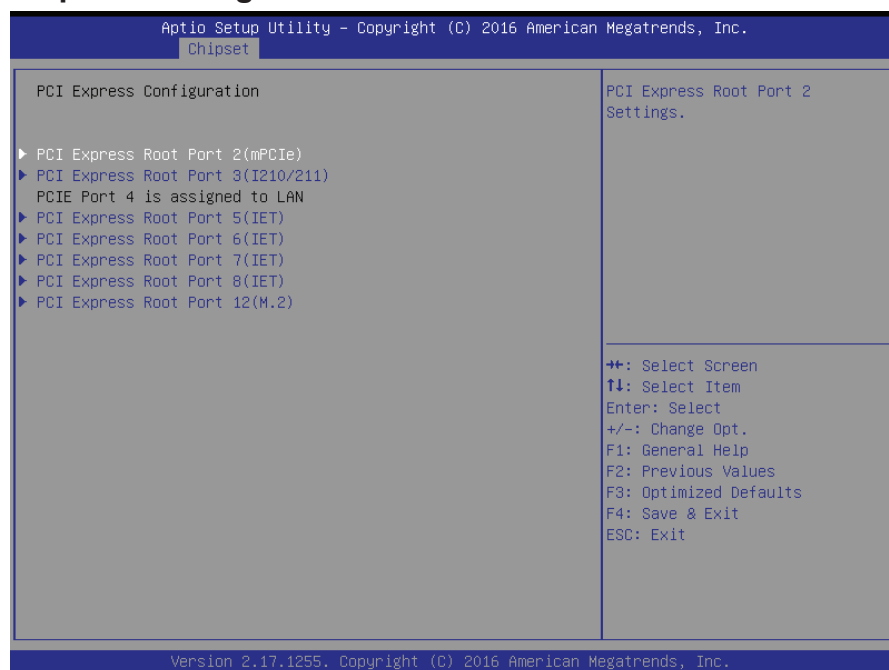
Item	Option	Description
Max TOLUD	Dynamic [Default] 1GB/1.25GB/1.5GB/1.75GB /2GB/2.25GB/2.5GB/2.75GB /3GB/3.25GB	Maximum Value of TOLUD. Dynamic assignment would adjust TOLUD automatically based on largest MMIO length of installed graphic controller.

3.6.3.2 PCH-IO Configuration

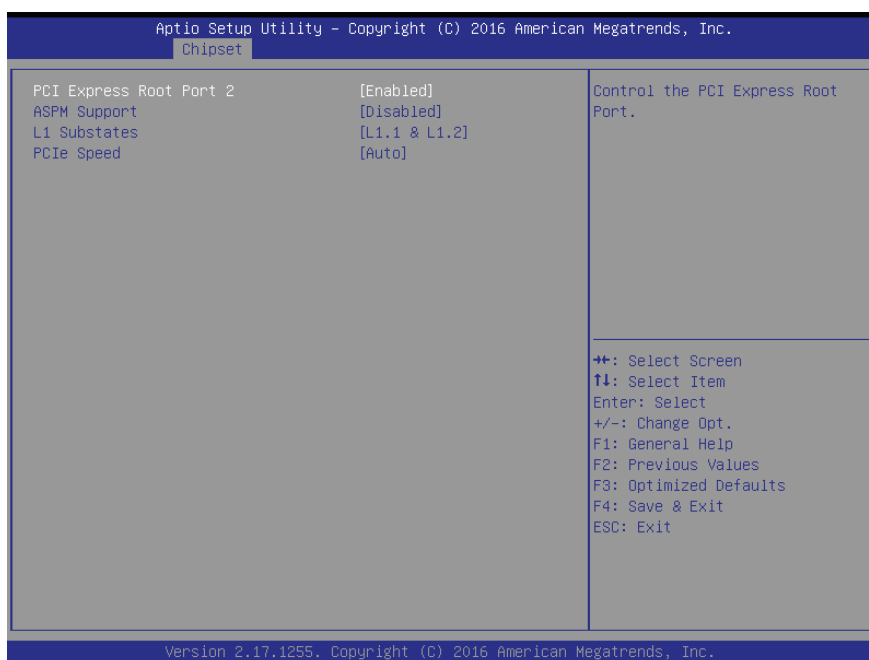


Item	Option	Description
PCH LAN Controller	Disabled Enabled[Default]	Enable or disable onboard NIC.
LAN PHY Drives LAN_WAKE#	Disabled[Default] Enabled	Enable/Disable LAN Phy driving LAN_WAKE# else platform drives LAN_WAKE#.

3.6.3.2.1 PCI Express Configuration

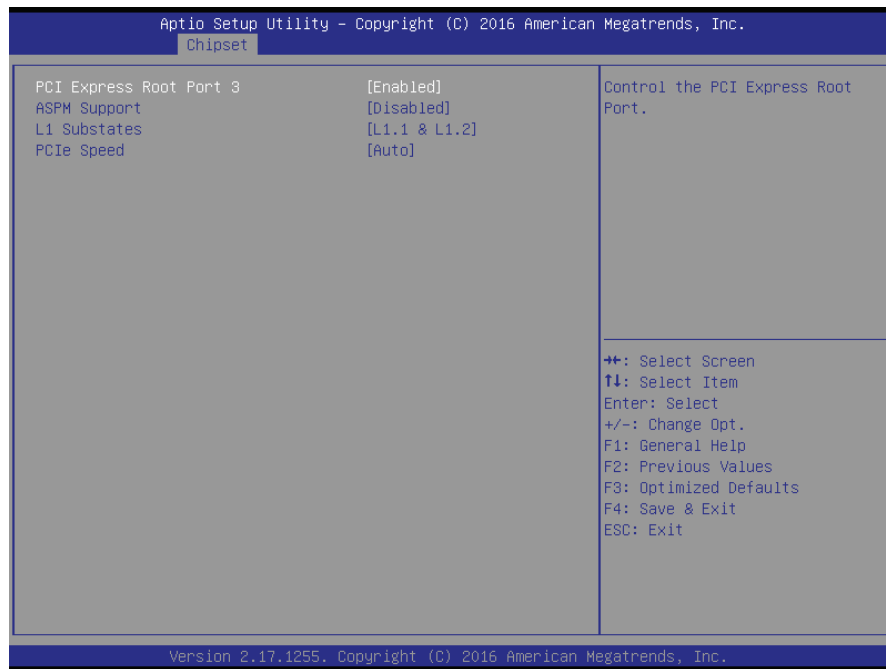


3.6.3.2.1.1 PCI Express Root Port2 (mPCIe)



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

3.6.3.2.1.2 PCI Express Root Port3 (I210/211)



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

3.6.3.2.1.3 PCI Express Root Port5 (IET)



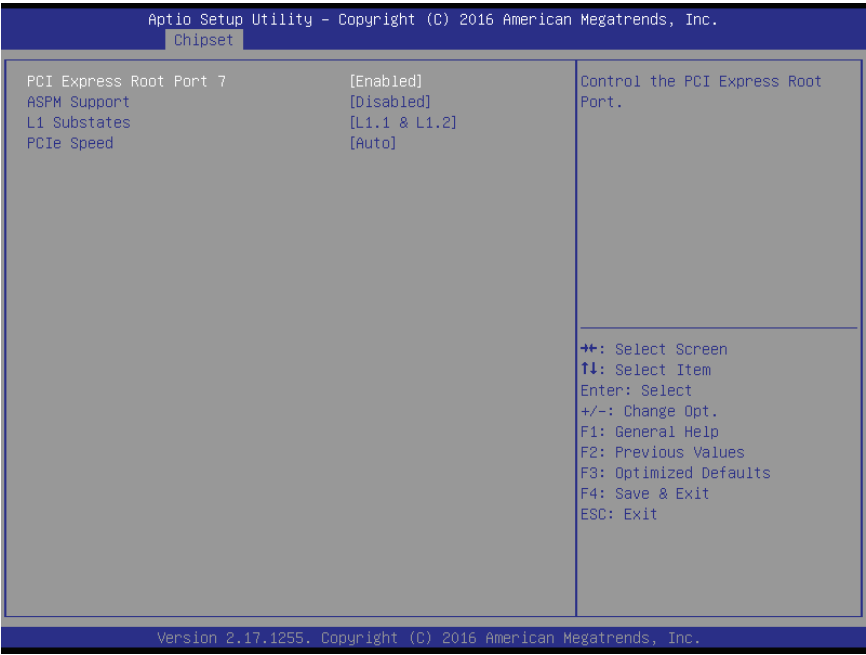
Item	Option	Description
PCI Express Root Port 5	Enabled[Default], Disabled	Control the PCI Express Root Port.
ASPM Support	Disabled [Default], L0s L1 L0sL1 Auto	Set the ASPM Level: Force L0s – Force all links to L0s State AUTO – BIOS auto configure DISABLE – Disables ASPM.
L1 Substates	Disabled L1.1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

3.6.3.2.1.4 PCI Express Root Port6 (IET)



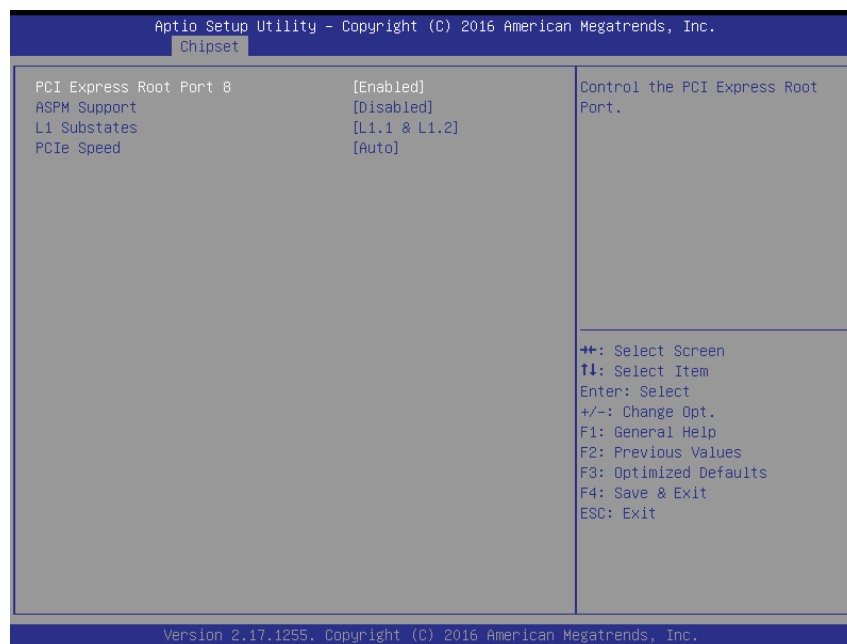
Item	Option	Description
PCI Express Root Port 6	Enabled[Default], Disabled	Control the PCI Express Root Port.
ASPM Support	Disabled [Default], L0s L1 L0sL1 Auto	Set the ASPM Level: Force L0s – Force all links to L0s State AUTO – BIOS auto configure DISABLE – Disables ASPM.
L1 Substates	Disabled L1.1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

3.6.3.2.1.5 PCI Express Root Port7 (IET)



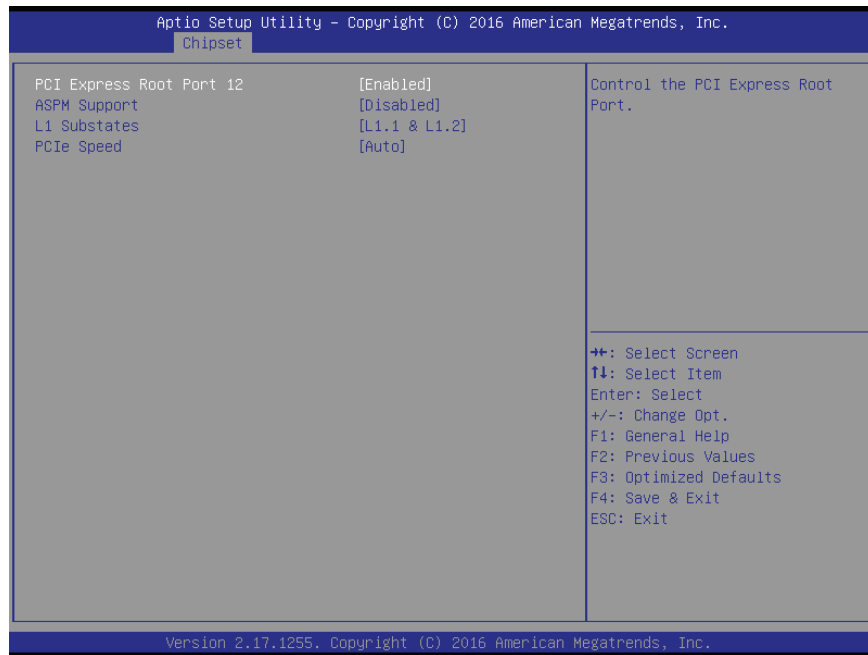
Item	Option	Description
PCI Express Root Port 7	Enabled[Default], Disabled	Control the PCI Express Root Port.
ASPM Support	Disabled [Default], L0s L1 L0sL1 Auto	Set the ASPM Level: Force L0s – Force all links to L0s State AUTO – BIOS auto configure DISABLE – Disables ASPM.
L1 Substates	Disabled L1.1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

3.6.3.2.1.6 PCI Express Root Port8 (IET)



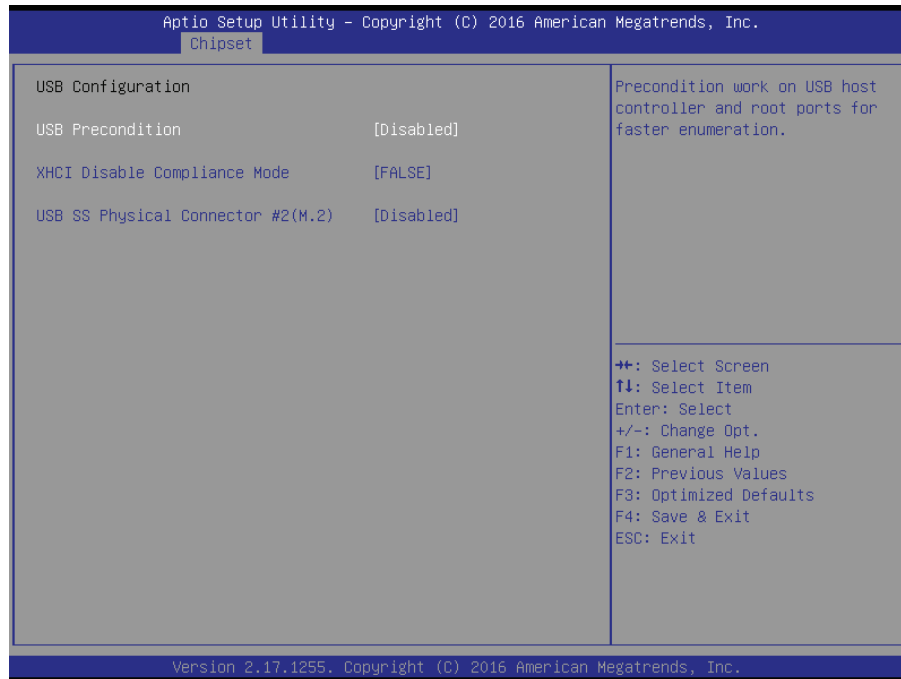
Item	Option	Description
PCI Express Root Port 8	Enabled[Default], Disabled	Control the PCI Express Root Port.
ASPM Support	Disabled [Default], L0s L1 L0sL1 Auto	Set the ASPM Level: Force L0s – Force all links to L0s State AUTO – BIOS auto configure DISABLE – Disables ASPM.
L1 Substates	Disabled L1.1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

3.6.3.2.1.7 PCI Express Root Port12 (M.2)



Item	Option	Description
PCI Express Root Port 12	Enabled[Default], Disabled	Control the PCI Express Root Port.
ASPM Support	Disabled [Default], L0s L1 L0sL1 Auto	Set the ASPM Level: Force L0s – Force all links to L0s State AUTO – BIOS auto configure DISABLE – Disables ASPM.
L1 Substates	Disabled L1.1 L1.2 L1.1 & L1.2[Default],	PCI Express L1 Substates settings.
PCIe Speed	Auto[Default] Gen1 Gen2 Gen3	Select PCI Express port speed.

3.6.3.2.2 USB Configuration



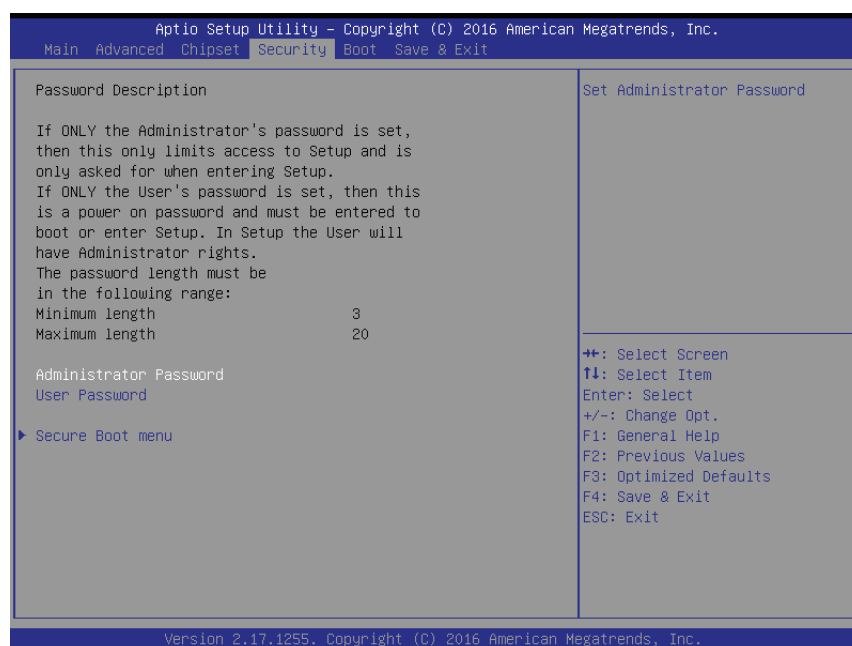
Item	Option	Description
USB Precondition	Enabled Disabled [Default]	Precondition work on USB host controller and root ports for faster enumeration.
XHCI Disable Compliance Mode	FALSE [Default] , TRUE	Option to disable Compliance Mode. Default is FALSE to not disable Compliance Mode. Set TRUE to disable Compliance Mode.
USB SS Physical Connector #2(M.2)	Disabled [Default] Enabled	Enable/Disable USB port.

3.6.3.2.3 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.

3.6.4 Security



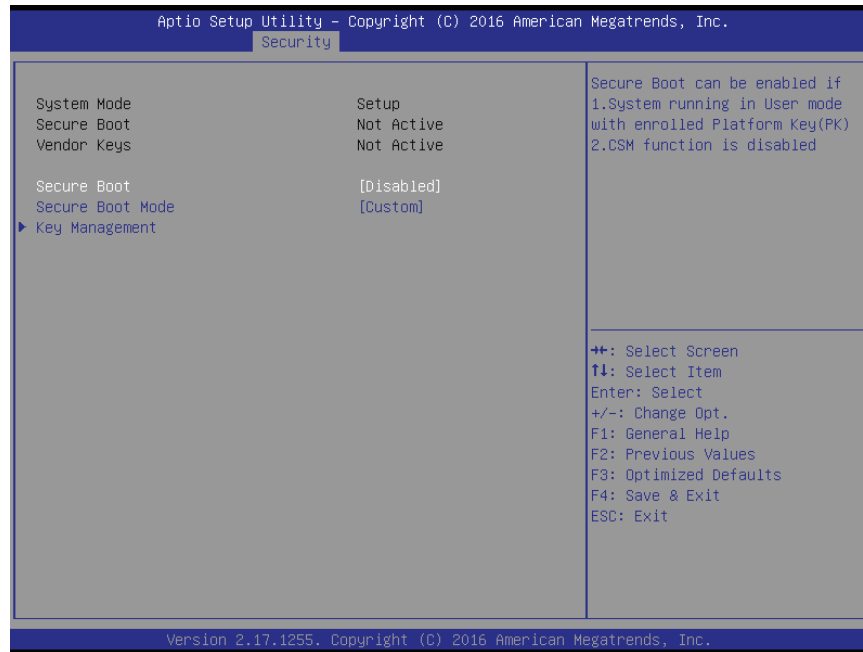
* **Administrator Password**

Set setup Administrator Password

* **User Password**

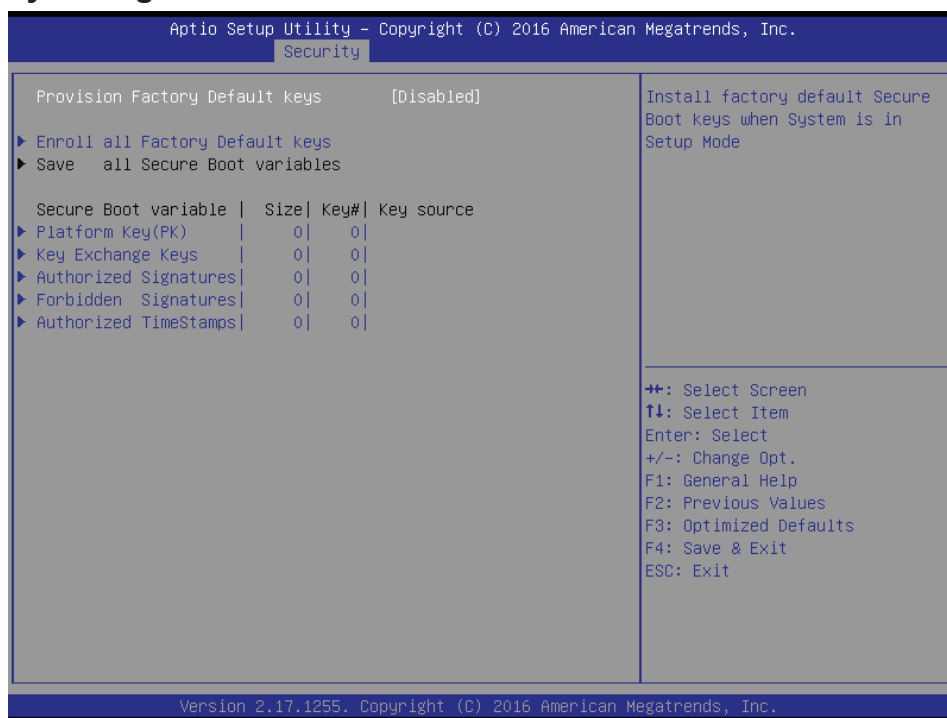
Set User Password

3.6.4.1 Secure Boot menu



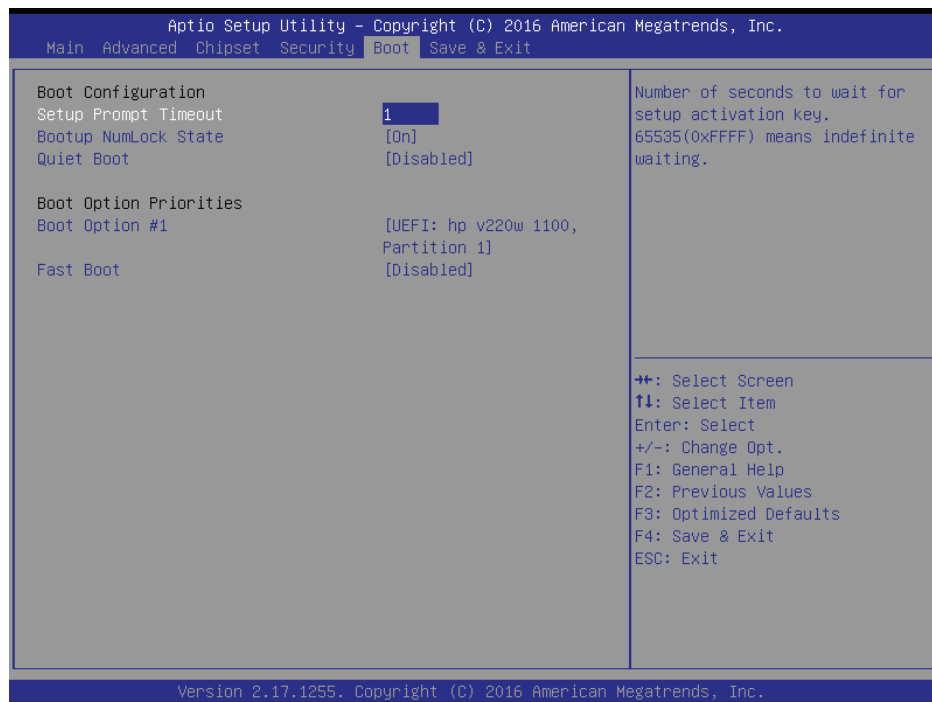
Item	Option	Description
Secure Boot	Disabled[Default] Enabled	Secure Boot can be enabled if 1.System running in User mode with enrolled Platform Key(PK) 2.CSM function is disabled.
Secure Boot Mode	Standard Custom[Default]	Secure Boot mode selector. 'Custom' Mode enables users to change Image Execution policy and manage Secure Boot Keys.

3.6.4.1.1 Key Management



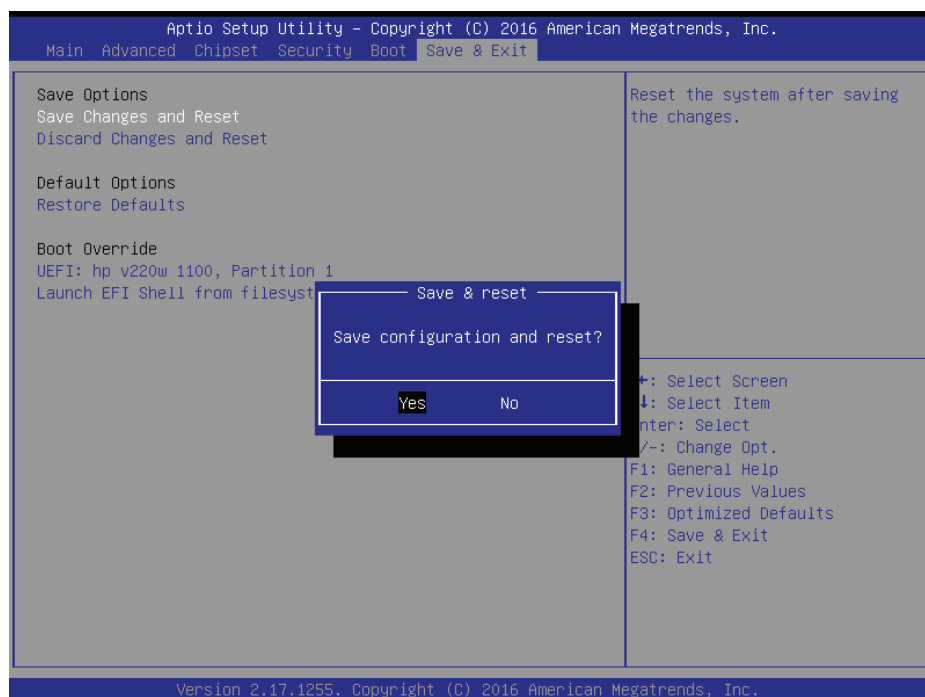
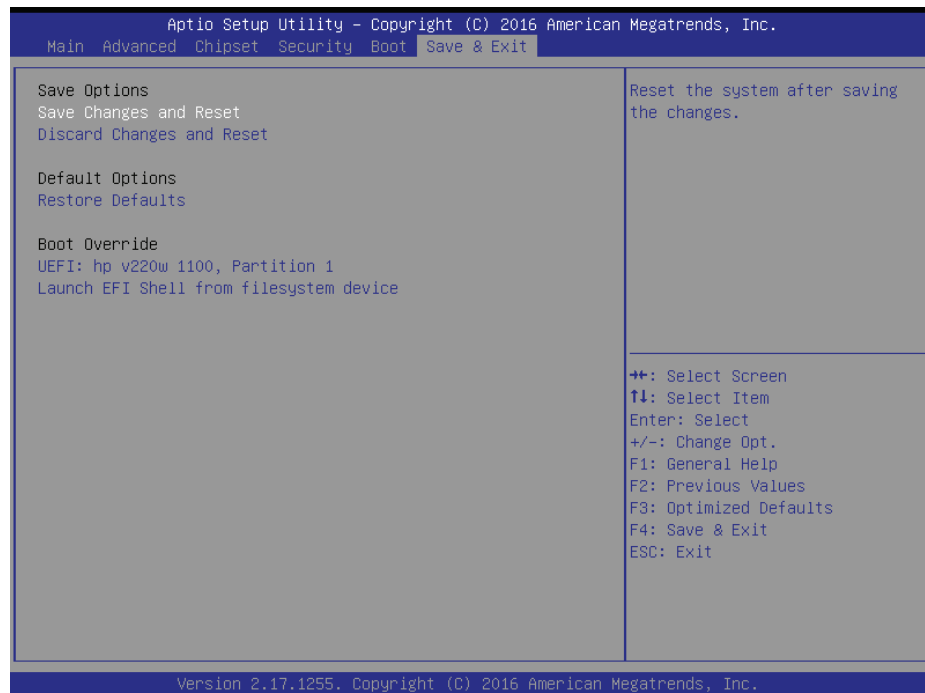
Item	Option	Description
Provision Factory Default keys	Enabled, Disabled [Default]	Install factory default Secure Boot Keys when System is in Setup Mode.

3.6.5 Boot



Item	Option	Description
Setup Prompt Timeout	1~ 65535	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
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.
Boot Option #1/2	Set the system boot order.	

3.6.6 Save and exit



3.6.6.1 *Save Changes and Reset*

Reset the system after saving the changes.

3.6.6.2 *Discard Changes and Reset*

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.

NOTES

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.

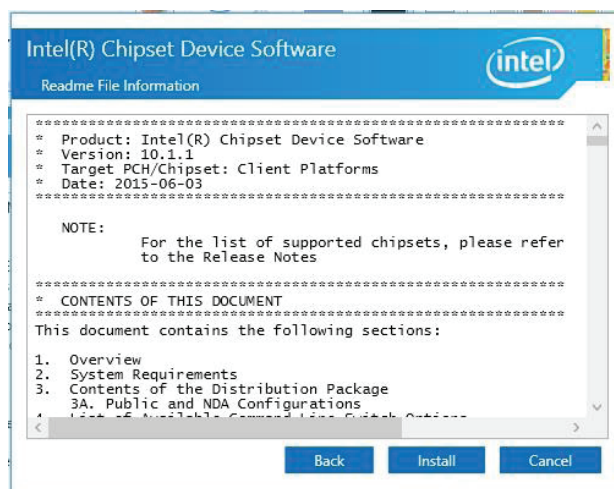
4.1 Install Chipset Driver

Insert the Supporting DVD-ROM to DVD-ROM drive, and link to:

\\Driver_Chipset\\Intel\\EMS-SKLU.



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.



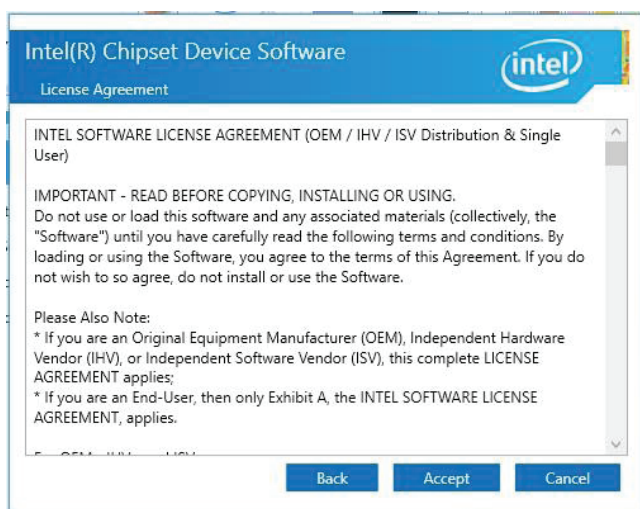
Step 3. Click Install.



Step1. Click Next.



Step 4. Click Restart Now/Restart Later to complete setup.



Step 2. Click Accept.

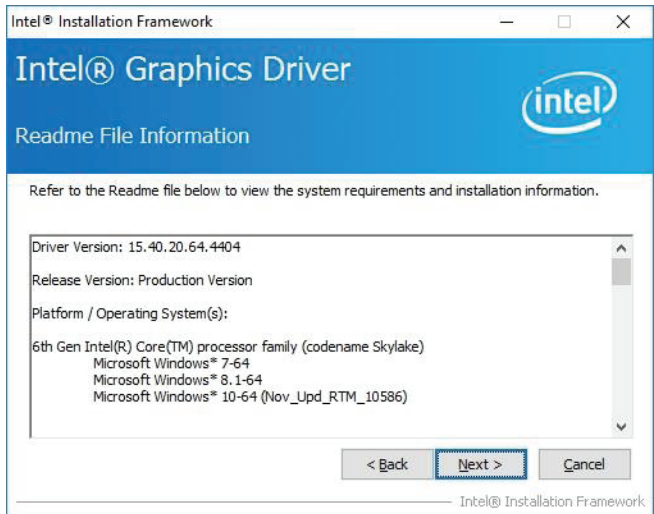
4.3 Install VGA Driver

Insert the Supporting DVD-ROM to DVD-ROM drive, and find the following file:

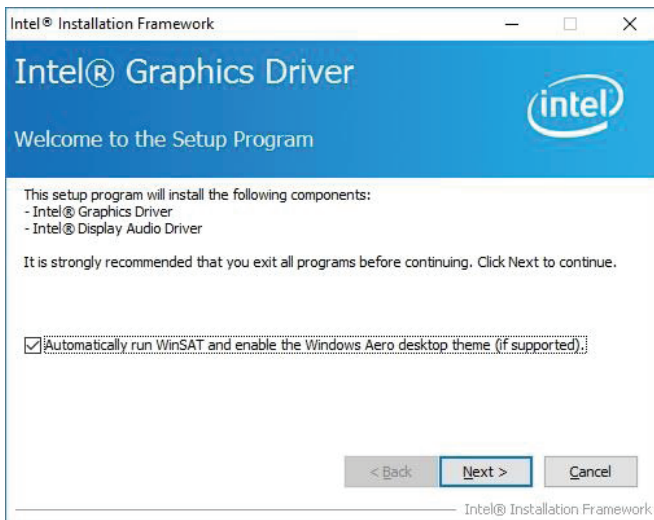
\\VGA\EMS-SKLU.



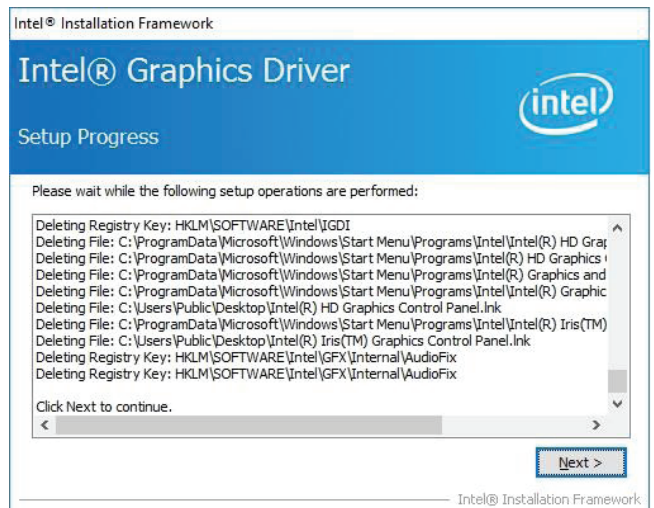
Note: The installation procedures and screen shots in this section are based on Windows 10 operation system.



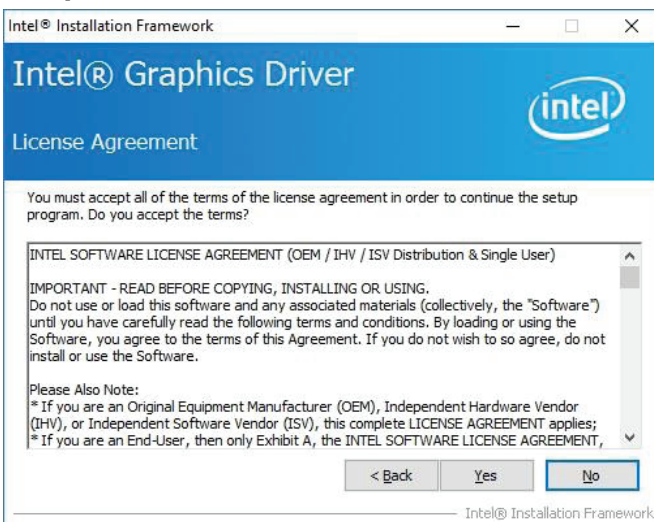
Step 3. Click Next.



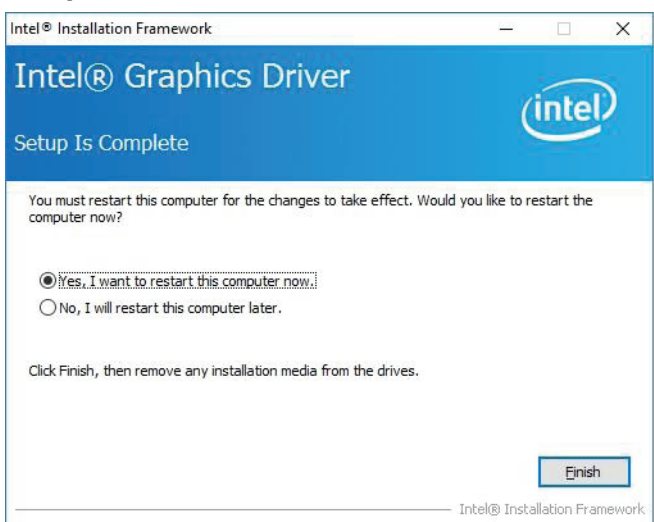
Step 1. Click Next to continue installation.



Step 4. Click Next.



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



Step 5. Click Finish to complete setup.

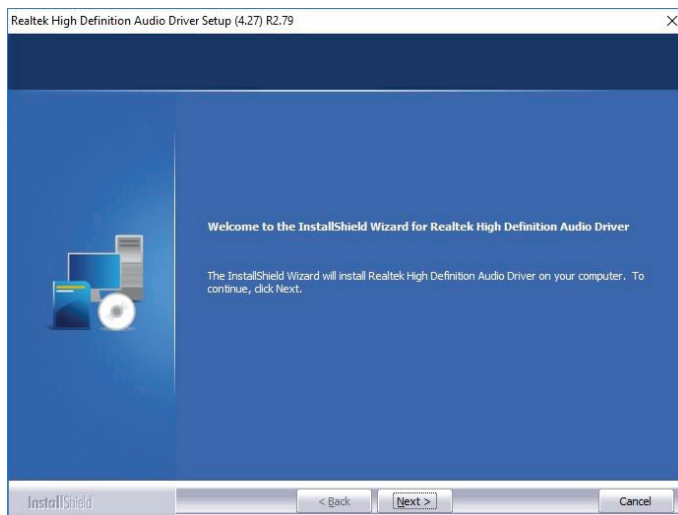
4.4 Install Audio Driver (For Realtek ALC892)

Insert the Supporting CD-ROM to CD-ROM drive,
and select the following file:

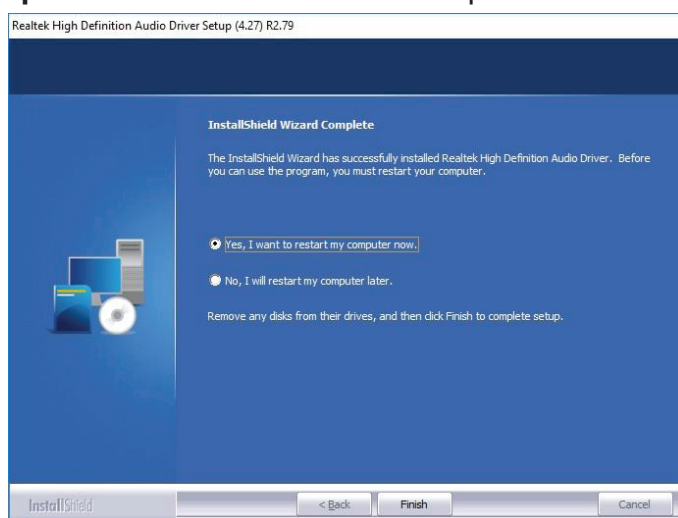
\Driver_Audio\Realtek\ALC892\EMS-SKLU_Audio.



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



Step 1. Click Next to continue setup.



Step 2. Click Finish to complete the setup.

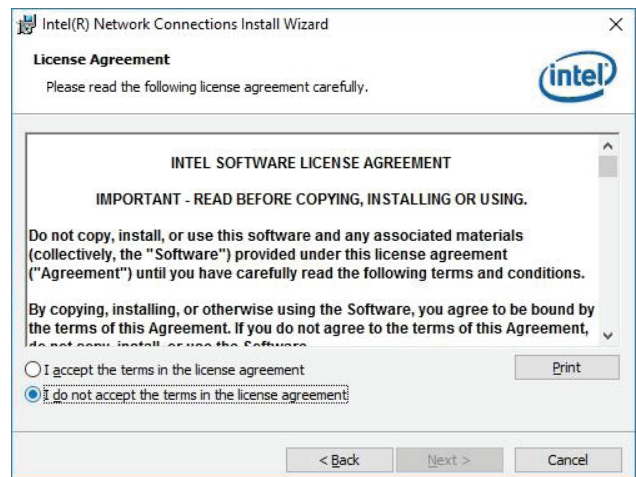
4.5 Install Ethernet Driver

Insert the Supporting DVD-ROM to DVD-ROM drive. Select the following file:

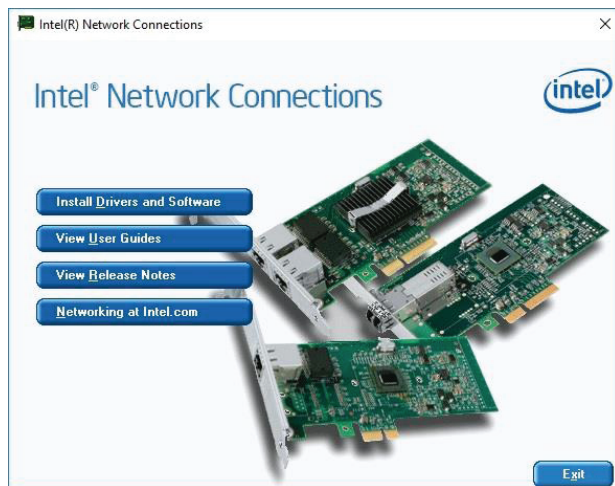
`\\Driver_Gigabit\\Intel\\I219LM\\EMS-SKLU_LAN.`



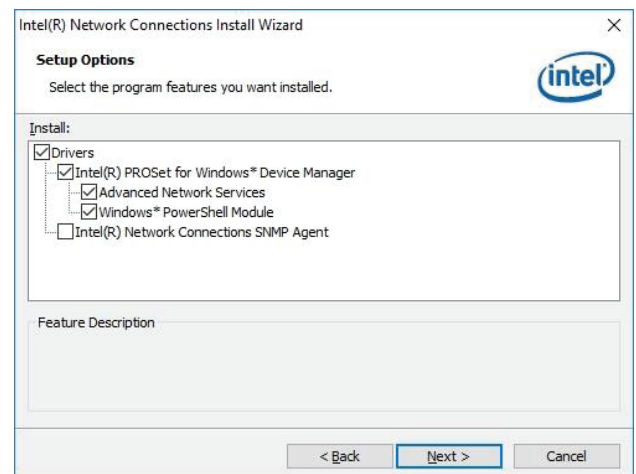
Note: The installation procedures and screen shots in this section are based on Windows 10 operation system.



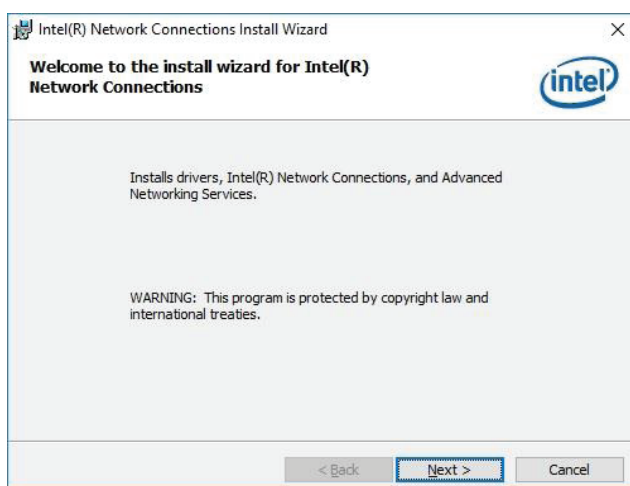
Step 3. Click Next.



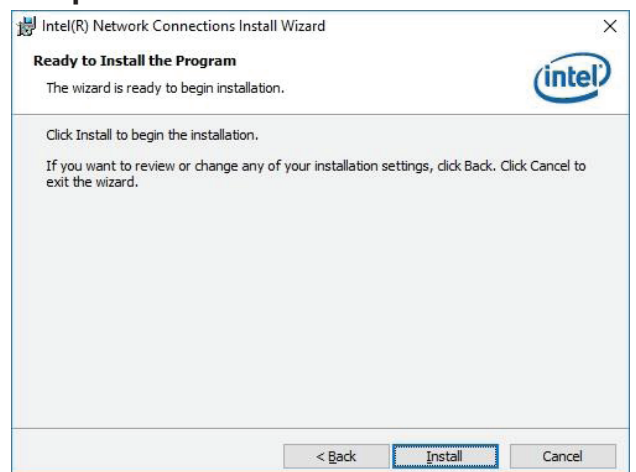
Step 1. Click Install Drivers and Software.



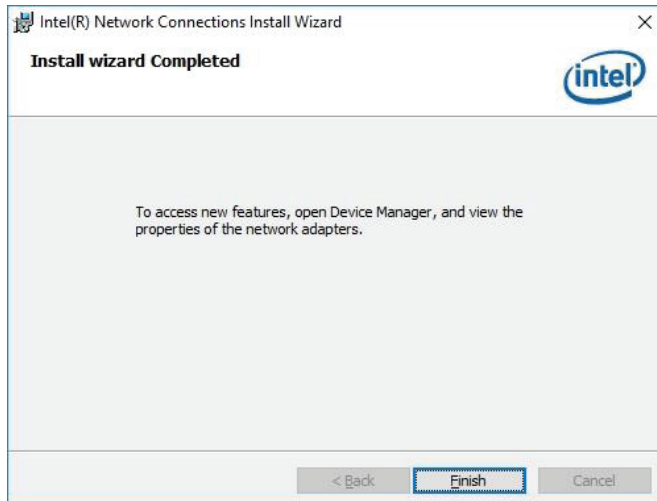
Step 4. Click Next.



Step 2. Click Next.



Step 5. Click Install.



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

NOTES

