ARC-21W34

21.5”with Full-HD PCAP Multi-touch Intel® Core™ i5-7300U Rugged Touch Panel PC with IET Expansion

Quick Reference Guide

1st Ed – 07 December 2020

Part No. E2017A134A0R

FCC Statement

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

(1) THIS DEVICE MAY NOT CAUSE HARMFUL INTERFERENCE.

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

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

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

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

A Message to the Customer

Avalue Customer Services

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

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

Technical Support

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

To receive the latest version of the user's manual; please visit our Web site at:
http://www.avalue.com.tw/

Content

1. Getting Started

1.1 Safety Precautions

Warning!

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

Caution!

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

1.2 Packing List

- 1 x ARC-21W34 Panel PC
- 1 x Power Adapter
- 4 x screws for VESA
- 4 x screws for HDD
- 12 x screws for Wall Mount
- 12 x brackets for Wall Mount
- 12 x plastics spacer for Wall Mount

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

1.3 System Specifications

Component	
Mother Board	ARC-KBLU
CPU	7th Gen Intel® Core™ i5-7300U, 2-Core, 2.6GHz processor
CPU Cooler(Type)	Fanless Heatsink
Memory	One 260-pin SODIMM Socket Up to 16GB DDR4 2133 SDRAM
Power Supply	DC in
Adapter	60W power adaptor (ACC-ADP-060N-08R)
Speaker	2 W*2
Wireless LAN	Optional USB or MPCIe module
Bluetooth	Optional
Operating System	Ubuntu, Windows 10
Expansion Card	Compatible to all ARC-BYT DB modules (BIOS auto adjusted) Expandable interface (1 x DP, 1 x PCIex1, 4 x USB, 1 x LPC, 1 x Audio (line in, line out, mic in)
Storage	
Hard Disk Drive	1 x 2.5” Drive Bay
Solid State Drive	1 x 2.5” Drive Bay
Other Storage Device	1 x mSATA supports on the 1st Mini PCIe slot, Auto switch for mSATA or Mini PCIe
Panel	
LCD Panel	21.5”, 1920x1080 (E9689421501R, INNOLUX , M215HJJ-L30)
B/L Inverter/Converter	LED Driving BD
Touch Screen	P-cap (E968X000198R /Young Fast H8593H)
Touch Controller	EETI EXC84H5680
External I/O	
Serial Port	1 x DB-9 COM1 (RS-232/422/485, selectable by BIOS & JUPMER, RS-485 supports Auto Flow, Pin-9 selected by Ring/+5V/+12V) 1 x DB-9 COM2 (RS-232, Pin-9 selected by Ring/+5V/+12V)
USB Port	4 x USB3.0 (2 x Double deck)
DIO Port	1 x 16-bit GPIO (by ARC-BYT DB-E)
Video Port	1 x HDMI (by ARC-BYT DB-C)
Audio Port	Realtek ALC892 HD codec
LAN Port	1 x I219LM PHY, 1 x Intel I211AT GbE controller
Wireless LAN Antenna	3 x Antenna
Indicator Light	HDD LED, Power LED (Green for Power, Yellow for HDD)
Expansion Slots	1* mini PCIe full size (support half size)

	1 x mSATA supports on the 1st Mini PCIe slot, Auto switch for mSATA or Mini PCIe
Internal I/O	1 x SATA connector & 1 x 2-pin wafer SATA power connector 1 x 2 x 20-pin Hirose connector for 2 x 24-bit LVDS (Optional eDP connector on bottom edge side for 4 lane to 4K by E1672520110H, Hirose DF19G-20P-1H) 1 x 5-pin lockable connector for inverter backlight control with dimming (PWM/DC mode & backlight brightness selected by BIOS as standard) 2 x 3-pin header for LCD backlight brightness adjustment (dimming) (as ECM-BYT2 w/ light/dark, VR, DC/PWM) 1 x 3-pin header for CMOS (protect*Clear) 1 x 2 x 3-pin header for COM1/ 2 pin 9 signal selection (+5, +12, Ring, selected by jumper) 1 x 2 x 7-pin header for LPC (for test) 1 x 2 x 3-Pin header for SPI 1 x 2 x 6-pin wafer for front panel 1 x 2-pin DIP Switch for Power mode (AT/ATX) 1 x Buzzer 2 x 2-pin wafer for speaker out (as ARC-KBLU) 1 x 5-pin 90 degree pin header for touch connector 1 x 1 x 5 pin wafer for 1 USB 2.0 (For USB WiFi) 2 x 6 pin wafer for SM bus (Reserved for smart battery)and 8bit GPIO **1 x 80-pin board to board connector for Expansion board** (Hirose FX18-80P-0.8SH & FX18-80S-0.8SH)
Mechanical	
Power Type	AT/ATX
Power Requirement	DC +12V ~ +26V, wide voltage single power input TVS component for surge protection Reverse current/voltage protection
ACPI	Single power ATX Support S0, S3, S4, S5 and ACPI 3.0 Compliant
Power Connector Type	2.5mm Lockable DC Jack, co-lay with phoenix connector
Dimension	538.05 x 341.05 x 60.5mm
Weight	7.1 Kgs
Color	Front: Die-Casting with Cover lens; Rear: Black Casting-Aluminum
Fanless	Yes
OS Support	Linux, Ubuntu, Windows 10
Reliability	
EMI Test	CE/ FCC class B

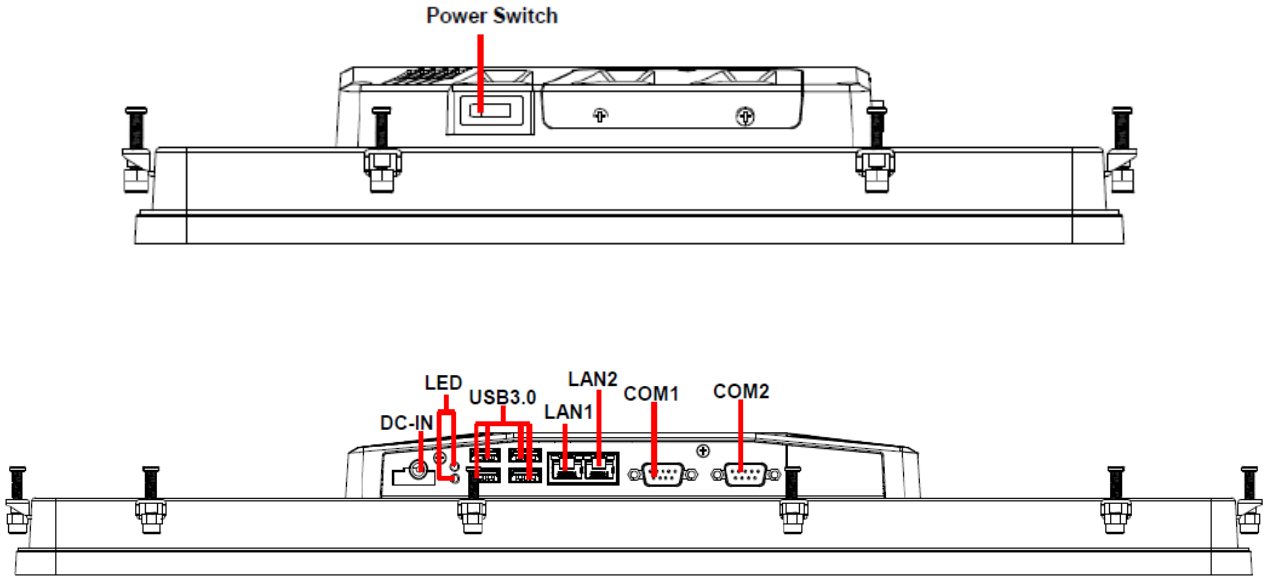
Dust and Rain Test	Front Panel IP65, Rear IP41 except I/O
Vibration Test	Random Vibration Operation: 1. PSD: 0.00454G²/Hz , 1.5 Grms 2. operation mode 3. Test Frequency : 5-500Hz 4. Test Axis : X,Y and Z axis 5. 30 minutes per each axis 6. IEC 60068-2-64 Test:Fh 7. Storage : CF or SSD Sine Vibration test (Non-operation) 1 Test Acceleration : 2G 2 Test frequency : 5~500 Hz 3 Sweep：1 Oct/ per one minute. (logarithmic) 4 Test Axis : X,Y and Z axis 5 Test time :30 min. each axis 6 System condition : Non-Operating mode 7. Reference IEC 60068-2-6 Testing procedures Package vibration test 1. PSD: 0.026G²/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 6. IEC 60068-2-64 Test:Fh
Mechanical Shock Test	1. Wave form：Half Sine wave 2. Acceleration Rate：20g for operation mode 3. Duration Time：11ms 4. No. of Shock：+/- X,Y,Z axis 3 times 5. Test Axis: +/- X,Y,Z axis 6. Operation mode 7. Reference IEC 60068-2-27 Testing procedures Test Eb : Shock Test
Drop Test	Package drop test 1 One corner , three edges, six faces 2 ISTA 2A, IEC-60068-2-32 Test:Ed
Operating Temperature	-10~+50 degree C SSD 0~40 degree C HDD
Operating Humidity	40°C @ 95% Relative Humidity, Non-condensing
Storage Temperature	-20 ~ 60 degree

Compliant with following Flexible Expansion Modules	
ARC-BYT DB-A	4 x USB3.0 module
ARC-BYT DB-B	3 x Audio Jack (Line in/Line out/Mic in)+HDMI
ARC-BYT DB-C	HDMI + Mini PCIe (w/ SIM slot)
ARC-BYT DB-D	2 x COM Isolation module
ARC-BYT DB-E	12-bit GPIO+CAN Bus
ARC-BYT DB-F	CAN Bus for OBDII
ARC-BYT DB-G	3 x COM (w/o isolation, RS-232 only)
ARC-BYT DB-H	2COM (RS-232) + 1USB 2.0
ARC-BYT DB-K	2COM (RS-232) + 1LAN

Note: Specifications are subject to change without notice.

1.4 System Overview

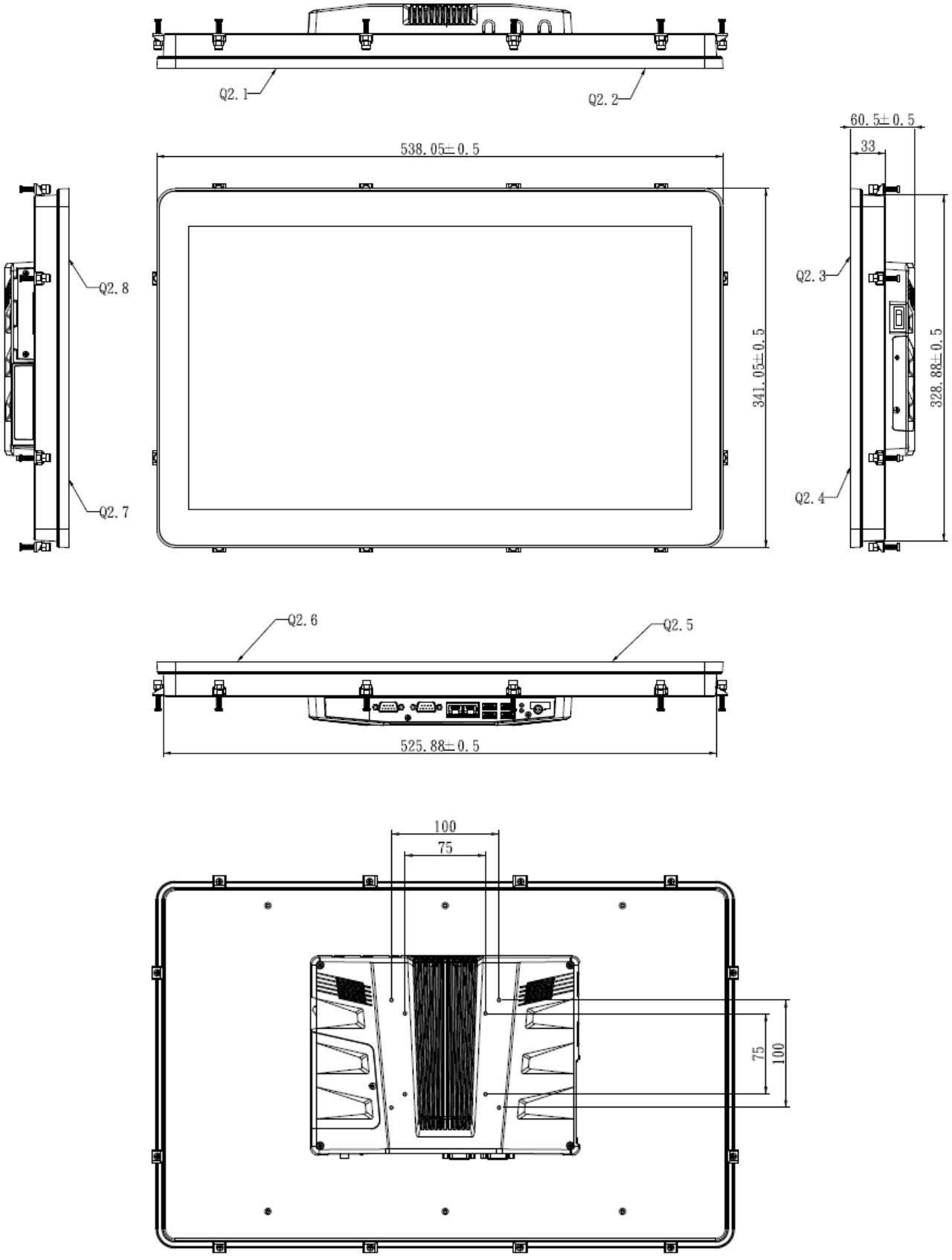
1.4.1 I/O View



Connectors

Label	Function	Note
DC-IN	DC Power-in connector	Default: Lockable DC Jack Option: Phoenix Connector(MOQ apply)
COM1/2	Serial port 1/2 connector	DB-9 male connector
USB	4 x USB 3.0 connector	
LAN1/2	RJ-45 Ethernet 1/2	
LED	HDD/Power LED indicator	
Power Switch	Power on button	

1.5 System Dimensions



(Unit: mm)

2. Hardware Configuration

For advanced information, please refer to:

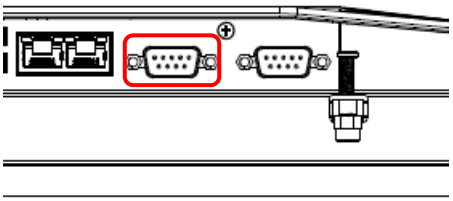
1- ARC-KBLU, ARC-BYT DB-A/B/C/D/E/F/G/H/K included in this manual.

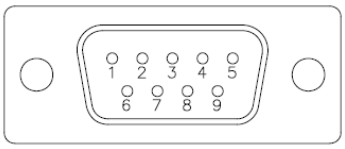
Note: If you need more information, please visit our website:

http://www.avalue.com.tw

2.1 ARC-21W34 connector mapping

2.1.1 Serial port 1 connector (COM1)





RS-485

Signal	PIN	PIN	Signal
DATA-	1	6	NC
DATA+	2	7	NC
NC	3	8	NC
NC	4	9	NC
GND	5		

Please set BIOS & JCOM1_SEL1

RS-232

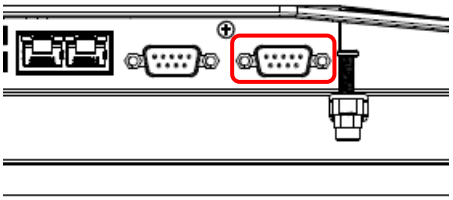
Signal	PIN	PIN	Signal
NDCDA#	1	6	NDSRA#
NRXDA	2	7	NRTSA#
NTXDA	3	8	NCTSA#
NDTRA#	4	9	NRIA#
GND	5		

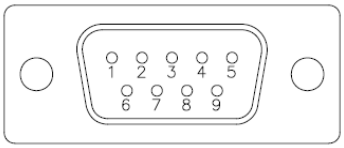
RS-422

Signal	PIN	PIN	Signal
TxD-	1	6	NC
TxD+	2	7	NC
RxD+	3	8	NC
RxD-	4	9	NC
GND	5		

Please set BIOS & JCOM1_SEL1

2.1.2 Serial port 2 connector (COM2)





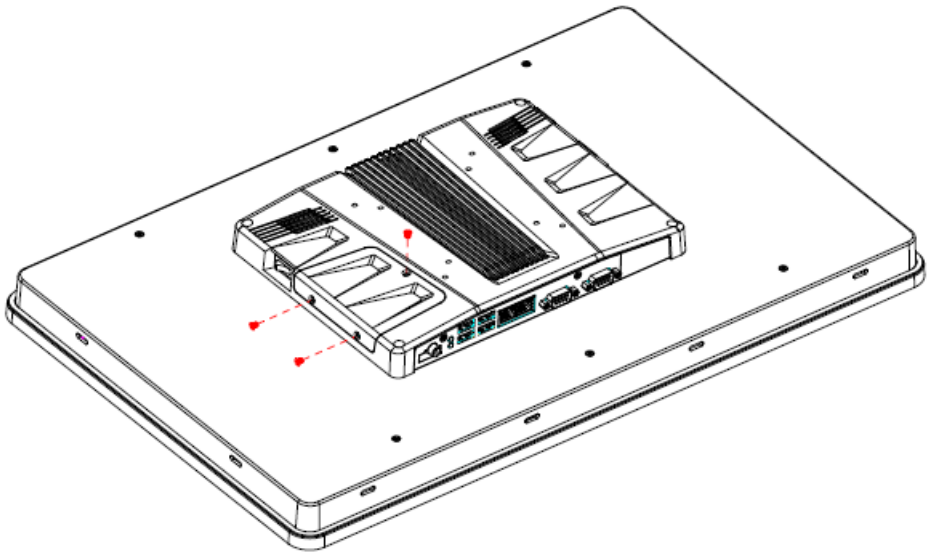
Signal	PIN	PIN	Signal
NDCDB#	1	6	NDSRB#
NRXDB	2	7	NRTSB#
NTXDB	3	8	NCTSB#
NDTRB#	4	9	NRIB#
GND	5		

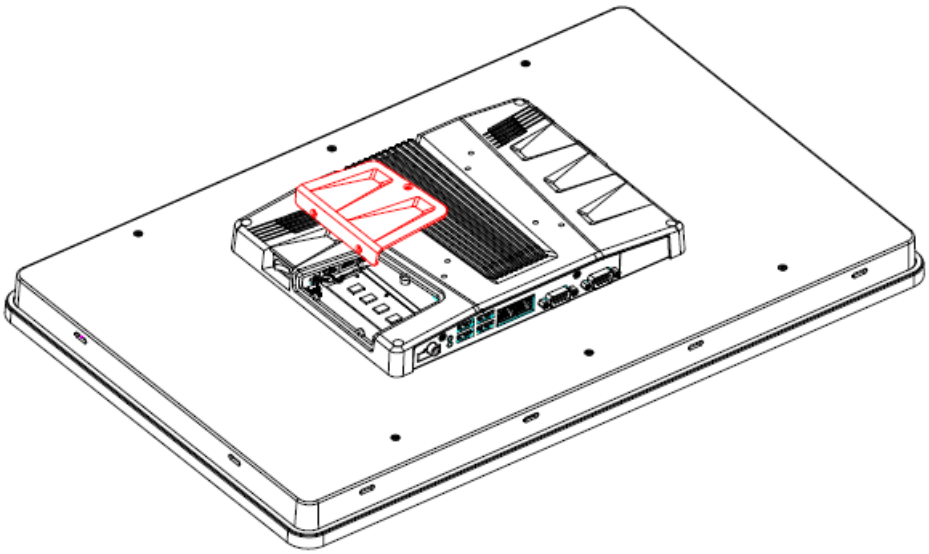
2.2 Installing Hard Disk & Memory

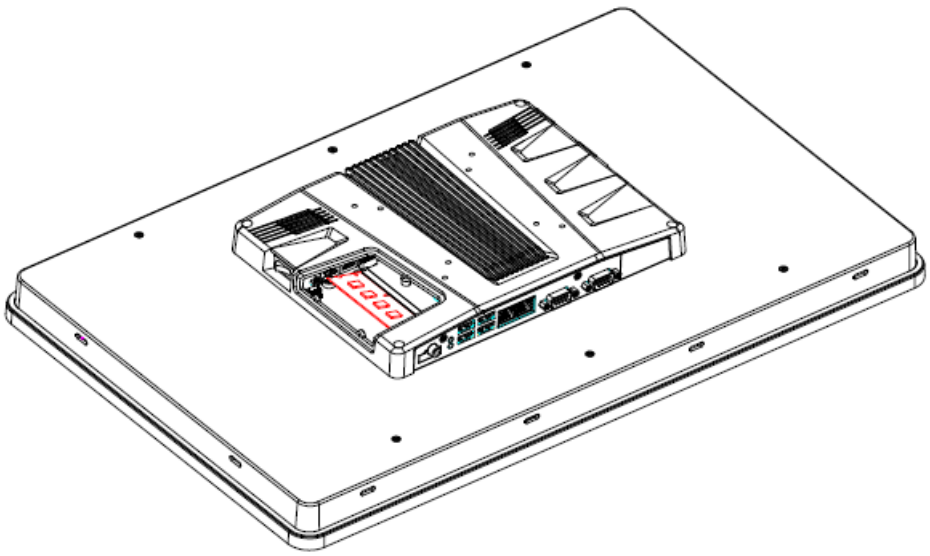
Step 1. Memory Installation: Remove 3 screws to release the chassis cover, and remove it.

Step 2.1 Insert the SODIMM into the memory socket.

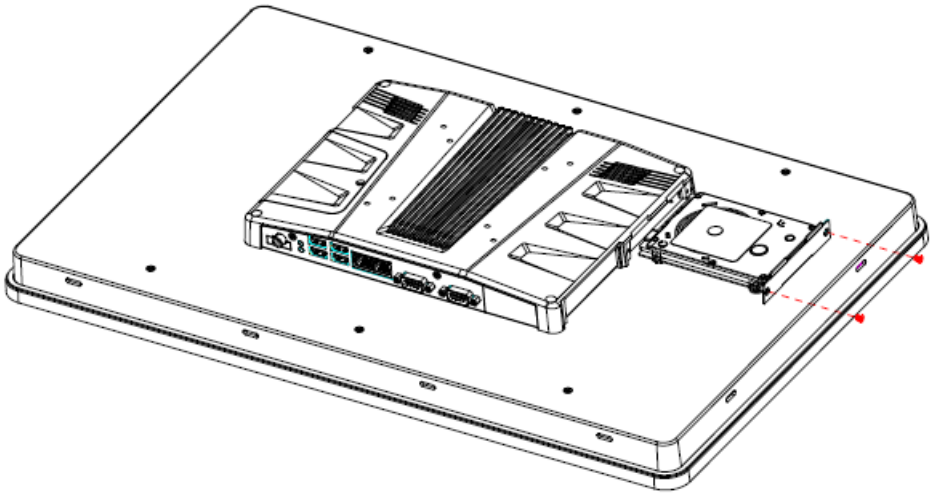
Step 2.2 Re-assemble your system back through previous steps to complete the installation.





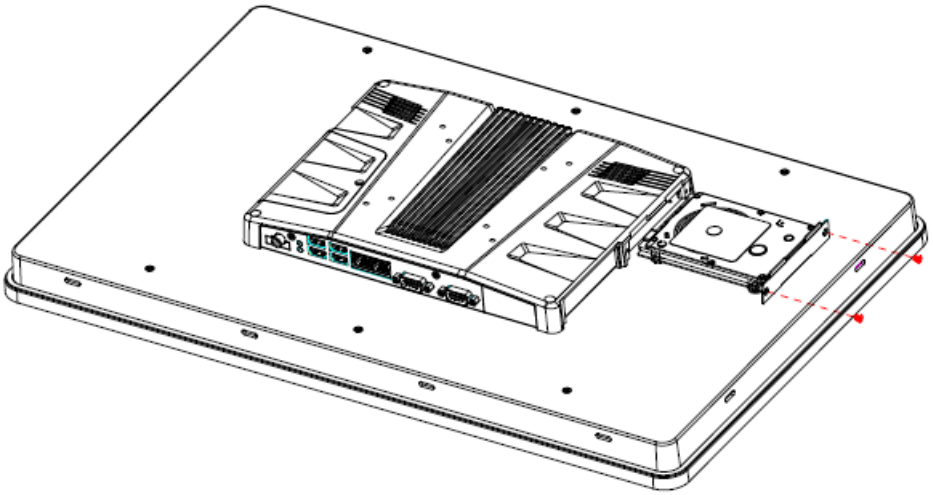


Step 3. HDD Installation: Insert the HDD into the Drive Bay and fasten 2 screws.

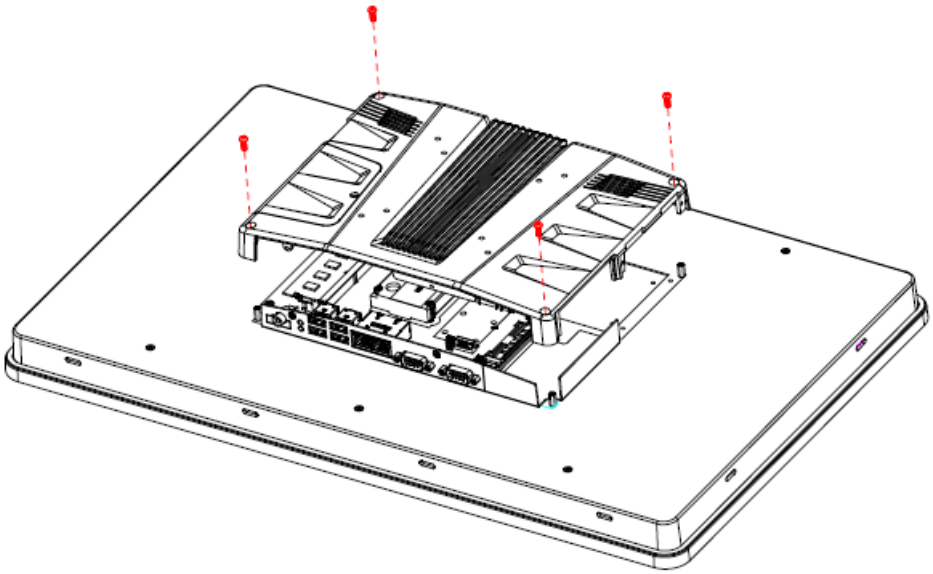


2.3 Installing ARC-BYT DB

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

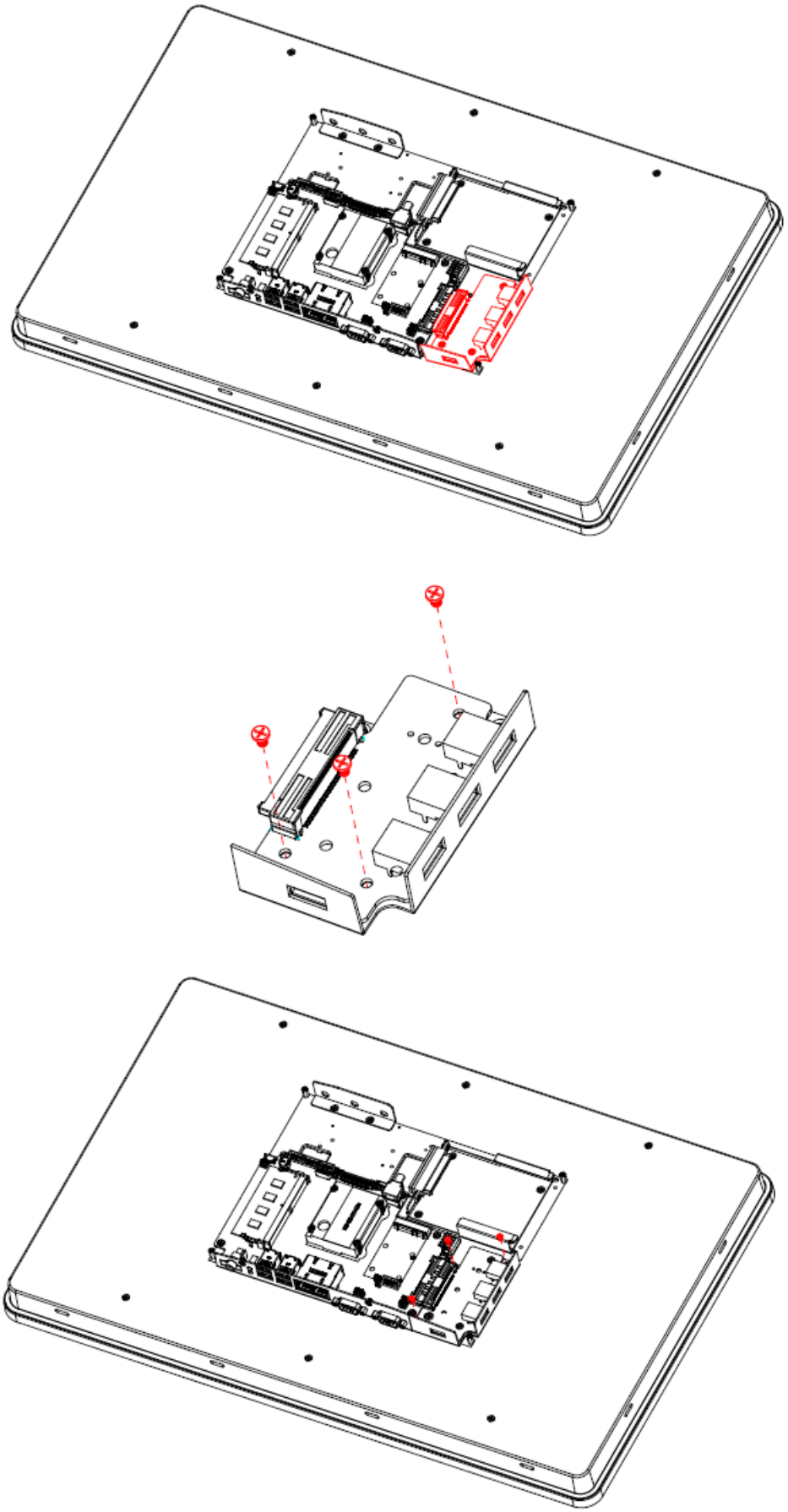


Step 2. Remove 4 screws to release the chassis cover, and remove it.

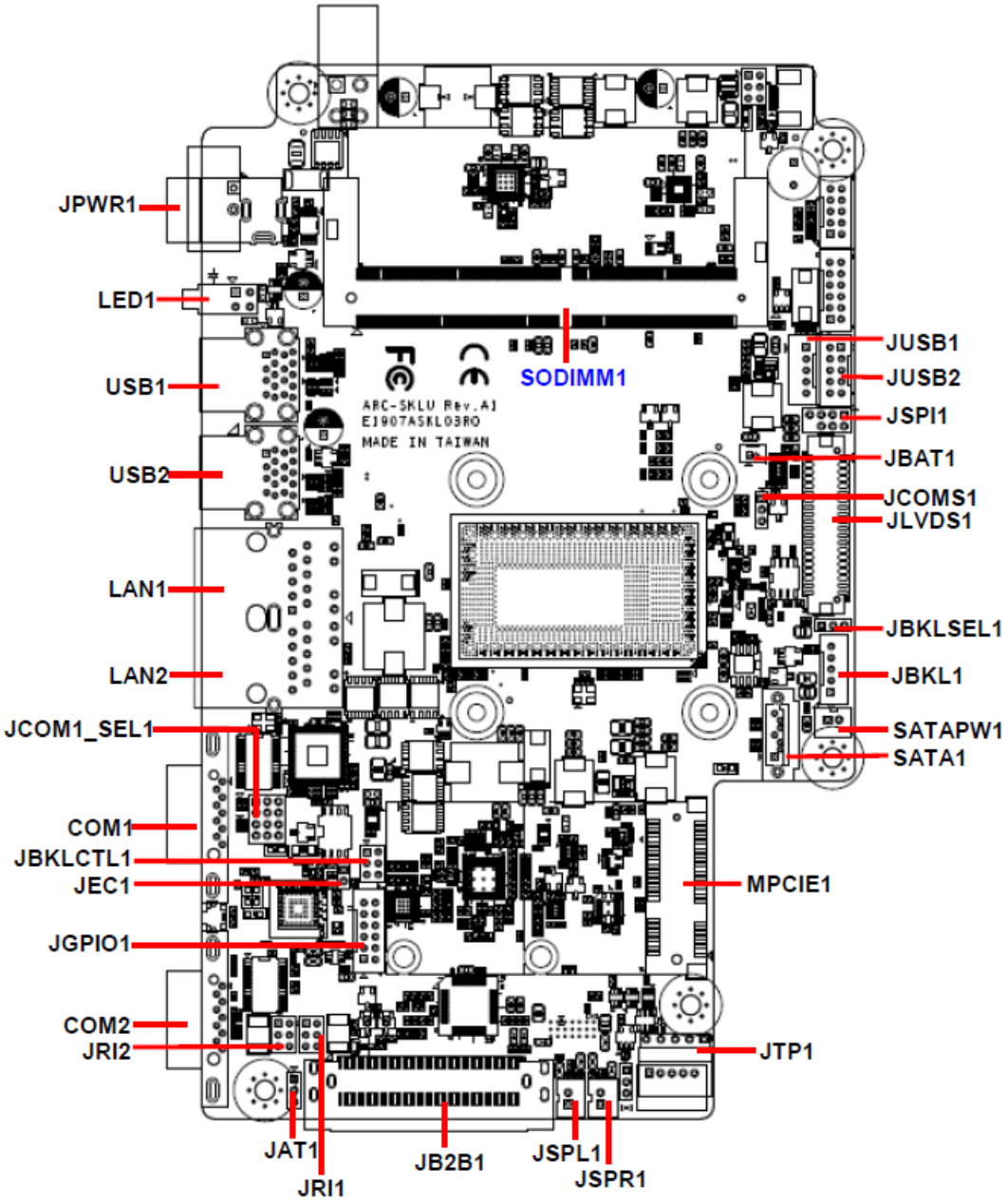


Step 2.1 Insert the ARC-BYT DB into the socket and fasten 3 screws.

Step 2.2 Re-assemble your system back through previous steps to complete the installation



2.4 ARC-KBLU Overviews



2.5 ARC-KBLU Jumper and Connector list

Jumper

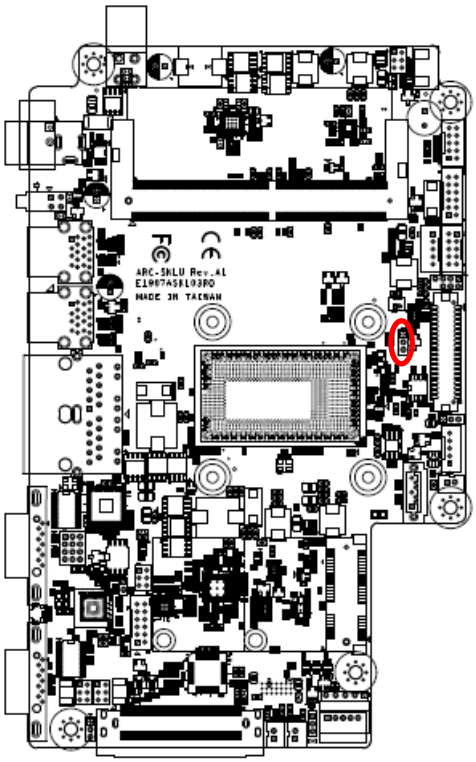
Label	Function	Note
JCOMS1	Clear CMOS	3 x 1 header, pitch 2.00mm
JRI1/2	Serial port 1/2 pin9 signal select	3 x 2 header, pitch 2.00mm
JCOM1_SEL1	Serial port 1 in RS-232/422/485 mode	4 x 3 header, pitch 2.00mm
JBKLSEL1	LCD backlight brightness adjustment	3 x 1 header, pitch 2.00mm
JAT1	AT/ATX Input power select	3 x 1 header, pitch 2.00mm

Connectors

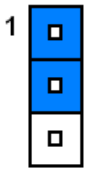
Label	Function	Note
SODIMM1	1 x 260-Pin DDR4 2133MHz SO-DIMM	
JBKL1	LCD Inverter connector	5 x 1 wafer, pitch 2.00mm
COM1/2	Serial Port 1/2 connector	D-sub 9 pin, male
JSPR1	AMPLIFIER_R	2 x 1 wafer, pitch 2.00mm
JSPL1	AMPLIFIER_L	2 x 1 wafer, pitch 2.00mm
JB2B1	B2B connector	40 x 2 wafer, pitch 0.80mm
JBKLCTL1	LCD backlight brightness adjustment	3 x 2 header, pitch 2.00mm
LED1	HDD/Power LED indicator	
JLVDS1	LVDS connector	DIN 40-pin wafer, pitch 1.25mm
USB1/2	USB connector 1/2	
JUSB1	On-board header for USB2.0	5 x 1 wafer, pitch 2.00mm
JUSB2	On-board header for USB2.0	5 x 2 wafer, pitch 2.00mm
JTP1	Touch panel connector	5 x 1 wafer, pitch 2.54mm
LAN1/2	RJ-45 Ethernet 1/2	
MPCIE1	Mini-PCIe connector	
JBAT1	Battery connector	2 x 1 wafer, pitch 1.25mm
JGPIO1	General purpose I/O connector	6 x 2 wafer, pitch 2.00mm
JPWR1	Power connector	
JSPI1	SPI connector	4 x 2 header, pitch 2.00mm
JEC1	EC Debug connector	2 x 1 header, pitch 2.00 mm
SATA1	Serial ATA connector	
SATAPW1	SATA Power connector	2 x 1 wafer, pitch 2.00mm

2.6 ARC-KBLU Jumpers & Connectors settings

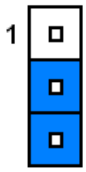
2.6.1 Clear CMOS (JCOMS1)



Protect*

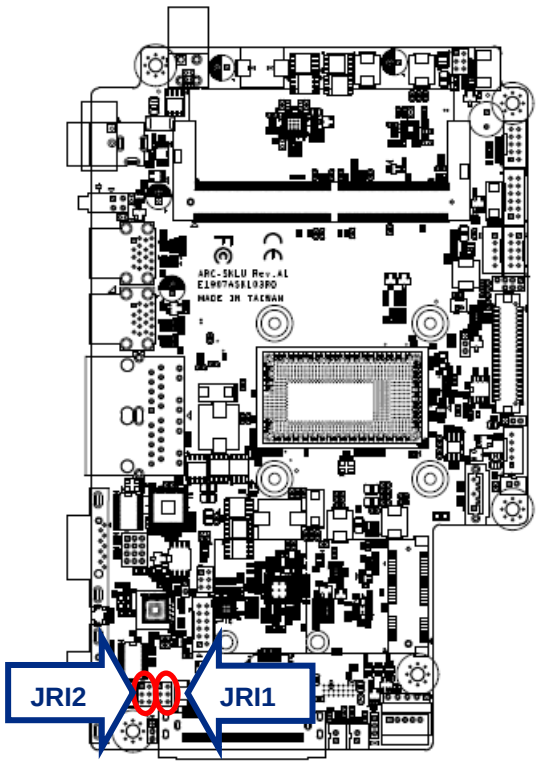


Clear CMOS

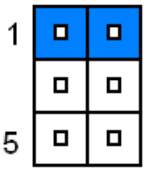


*Default

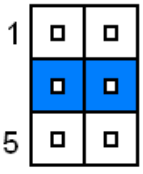
2.6.2 Serial port 1/2 pin9 signal select (JRI1/JRI2)



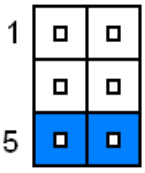
Ring*



+5V

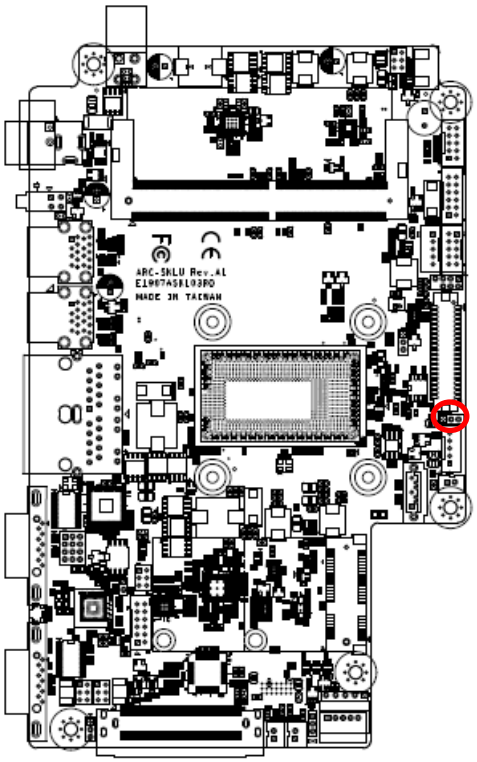


+12V

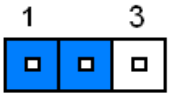


* Default

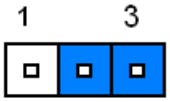
2.6.3 LCD backlight brightness adjustment (JBKLSEL1)



PWM Mode*

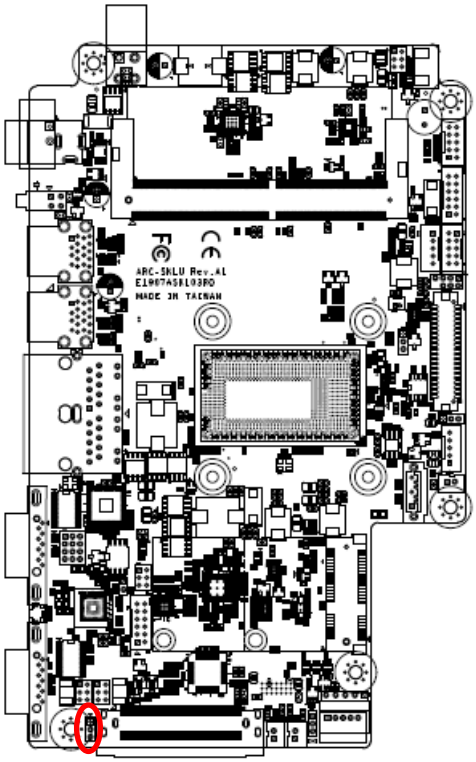


DC Mode

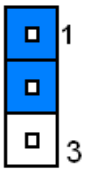


*** Default**

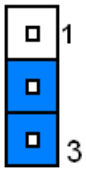
2.6.4 AT/ATX Input power select (JAT1)



ATX*

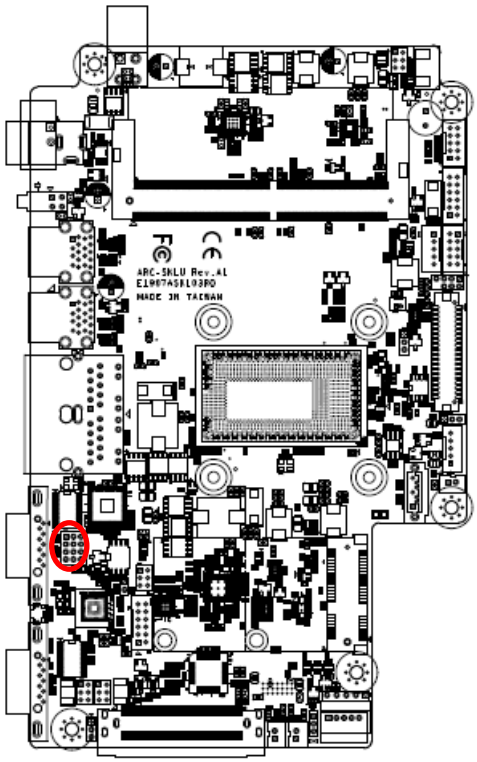


AT

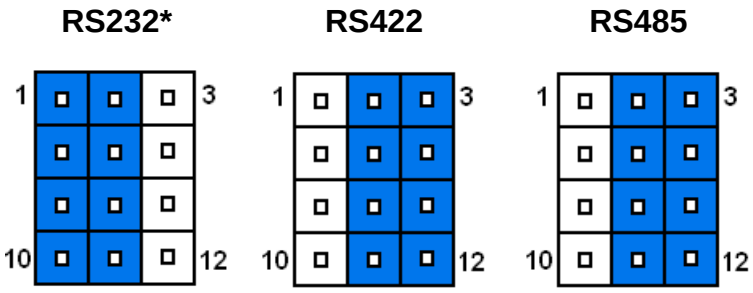


*** Default**

2.6.5 Serial port 1 in RS-232/422/485 mode (JCOM1_SEL1)



*** Default**

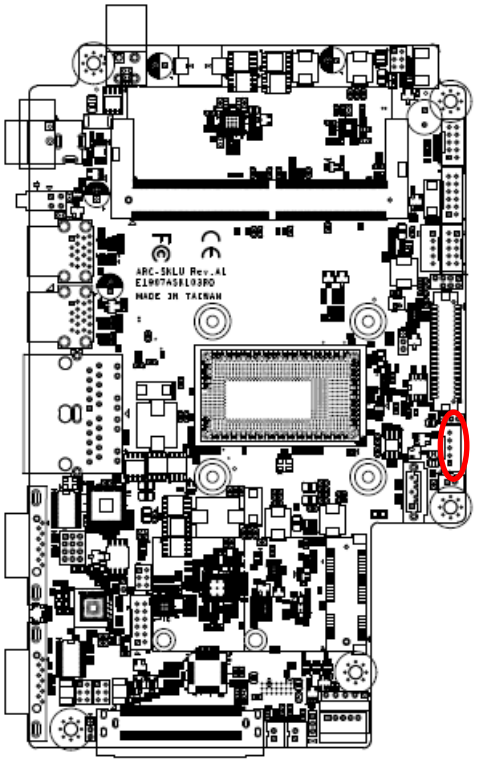


PIN	Signal	PIN	Signal	PIN	Signal
12	422RX1-	11	COM1-4	10	NDTRA#
9	485_422TX1+	8	COM1-2	7	NRXDA
6	422RX1+	5	COM1-3	4	NTXDA
3	485_422TX1-	2	COM1-1	1	NDCDA#

Note:

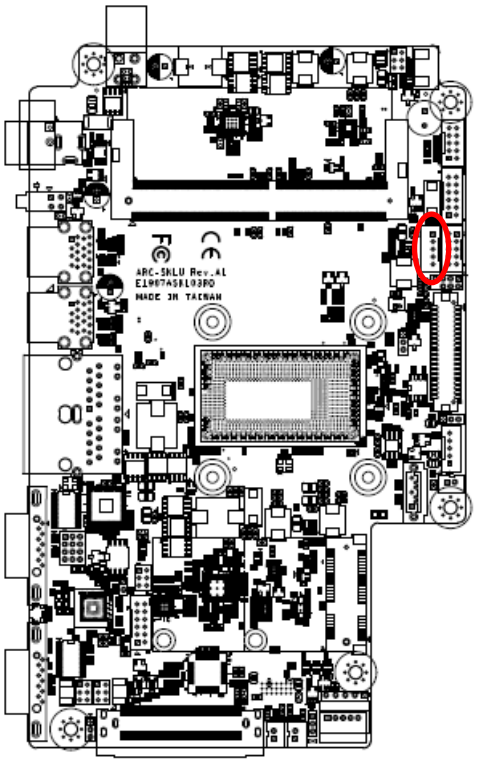
This connector is available after modify the mode of COM1 in BIOS setting.

2.6.6 LCD Inverter connector (JBKL1)



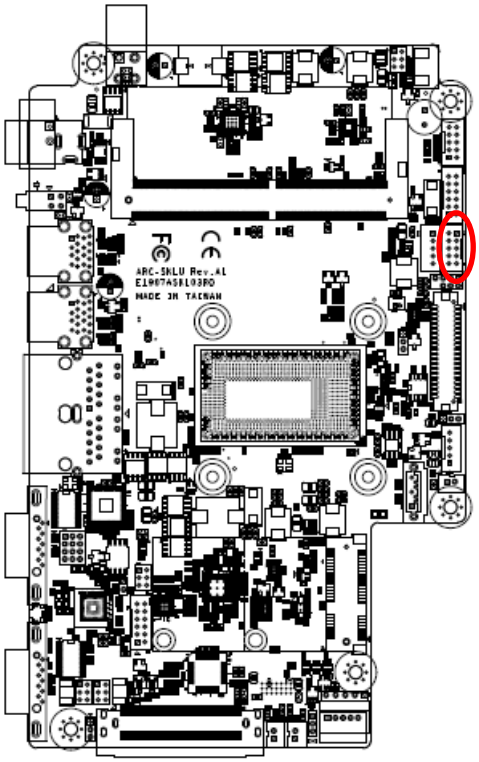
Signal	PIN
+5V	5
LVDS_BKLT_CTL	4
LVDS_BKLT_EN	3
GND	2
+12V	1

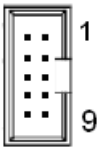
2.6.7 On-board header for USB2.0 (JUSB1)



Signal	PIN
+5VSB	1
USB_z_PN10	2
USB_z_PP10	3
GND	4
GND	5

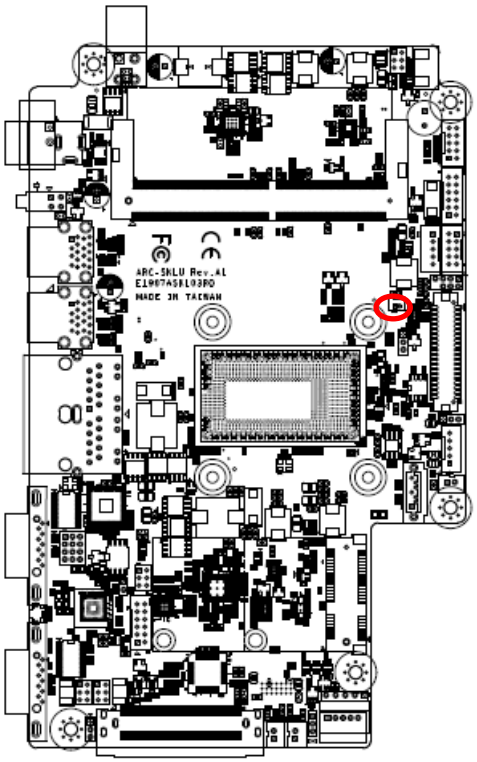
2.6.8 On-board header for USB2.0 (JUSB2)

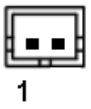




Signal	PIN	PIN	Signal
+5VSB	2	1	+5VSB
USB_z_PN6	4	3	USB_z_PN5
USB_z_PP6	6	5	USB_z_PP5
GND	8	7	GND
GND	10	9	GND

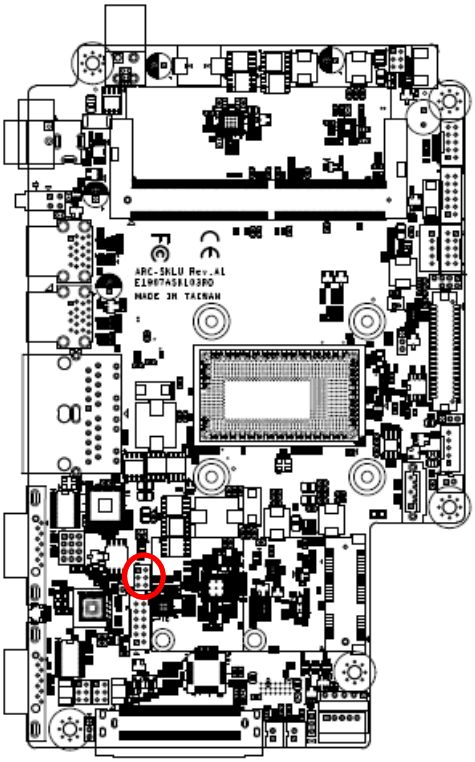
2.6.9 Battery connector (JBAT1)

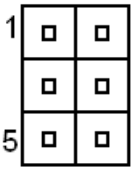




Signal	PIN
+RTCBAT	1
GND	2

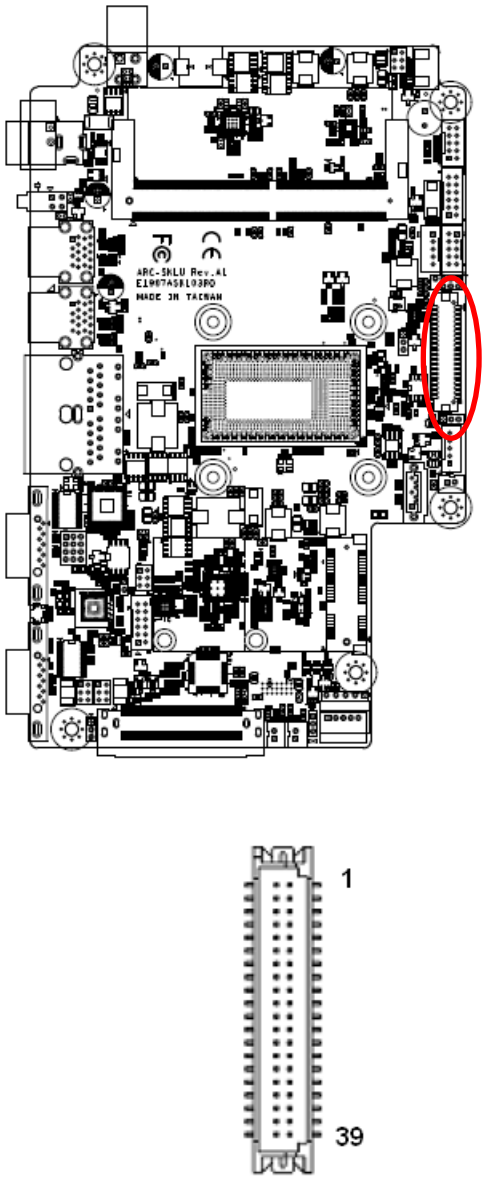
2.6.10 LCD backlight brightness adjustment (JBLK_CTRL1)





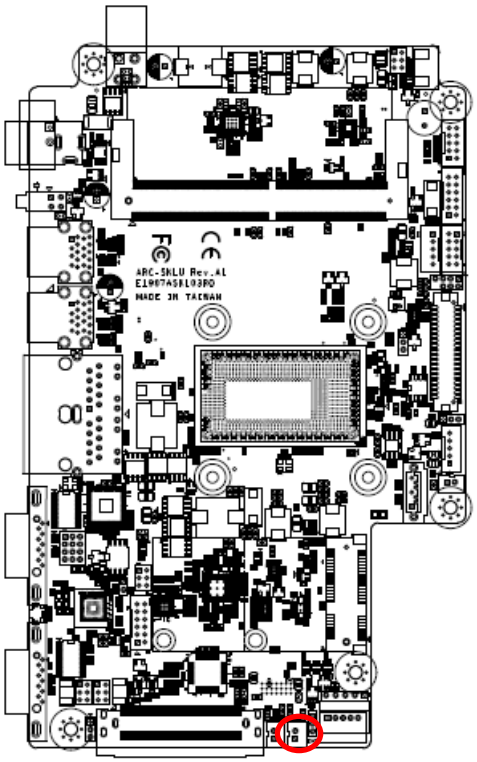
PIN	Signal	Note
1-2	BLK_VR_MOD	VR must select 10K/1%
3-4	BLK_BRI_UP	Low pulse button for backlight brighter
5-6	BLK_BRI_DN	Low pulse button for backlight dim

2.6.11 LVDS connector (JLVDS1)



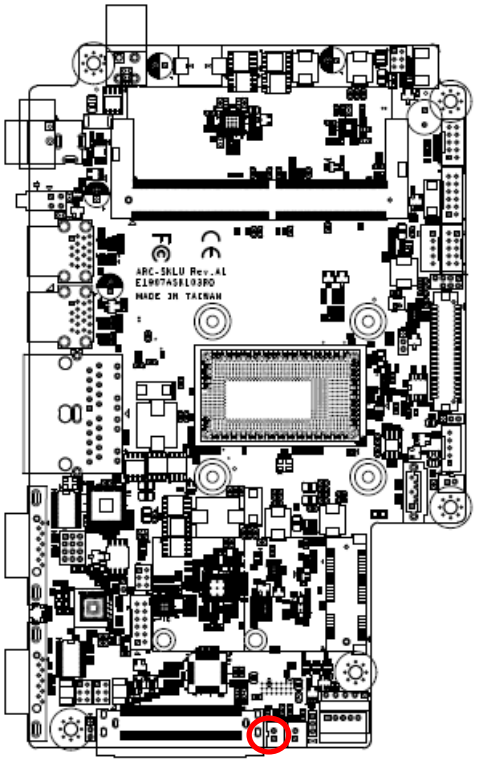
Signal	PIN	PIN	Signal
+5V	2	1	+3.3V
+5V	4	3	+3.3V
NC	6	5	NC
GND	8	7	GND
LVDS_DATA0_P	10	9	LVDS_DATA1_P
LVDS_DATA0_N	12	11	LVDS_DATA1_N
GND	14	13	GND
LVDS_DATA2_P	16	15	LVDS_DATA3_P
LVDS_DATA2_N	18	17	LVDS_DATA3_N
GND	20	19	GND
LVDS_DATA4_P	22	21	LVDS_DATA5_P
LVDS_DATA4_N	24	23	LVDS_DATA5_N
GND	26	25	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

2.6.12 AMPLIFIER_R (JSPR1)



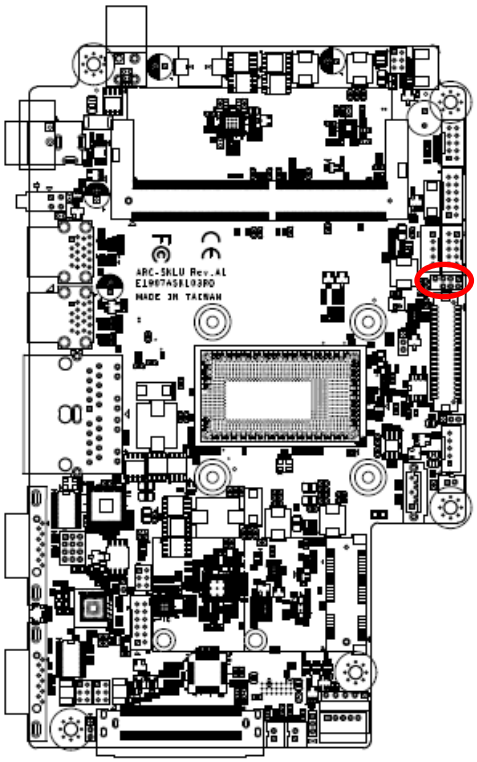
Signal	PIN
SPK_R-	2
SPK_R+	1

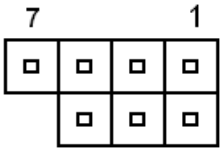
2.6.13 AMPLIFIER_L (JSPL1)



Signal	PIN
SPK_L-	2
SPK_L+	1

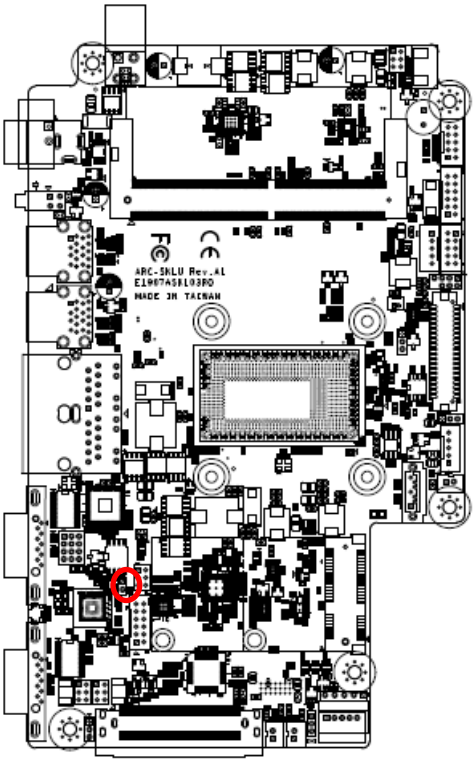
2.6.14 SPI connector (JSPI1)





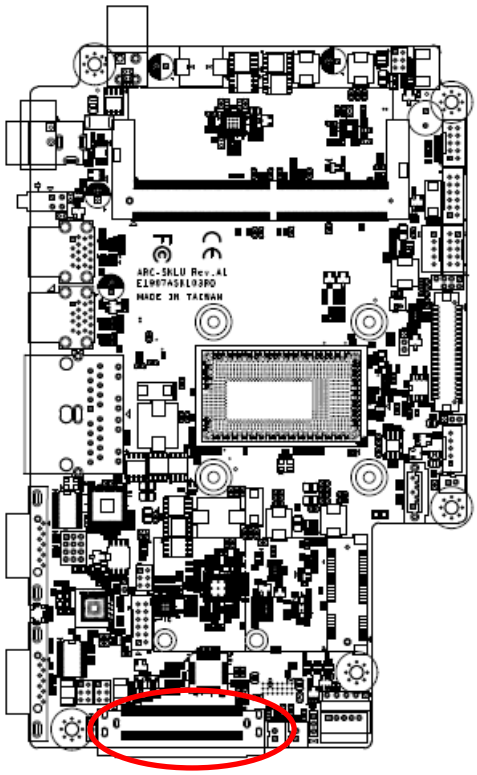
Signal	PIN	PIN	Signal
+3.3VSB	1	2	GND
SPI0_CS0#	3	4	SPI_CLK
SPI_SO	5	6	SPI_SI
HOLD#	7		

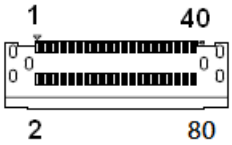
2.6.15 EC Debug connector (JEC1)



Signal	PIN
EC_SMCLK_DEBUG	1
EC_SMDAT_DEBUG	2

2.6.16 B2B connector (JB2B1)

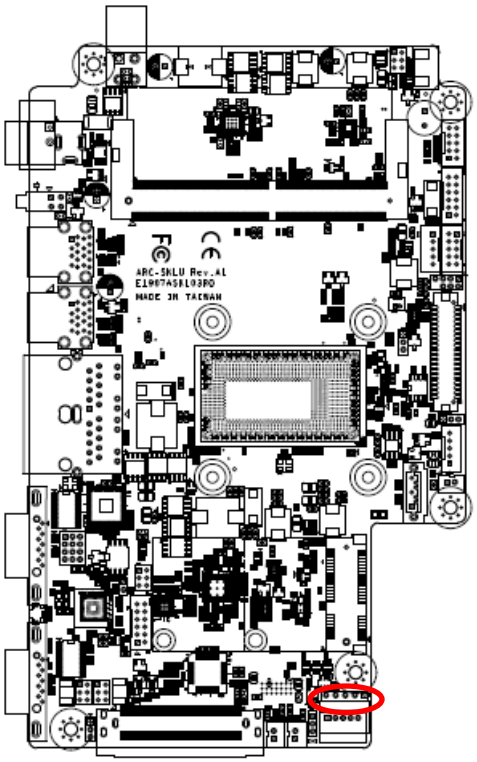




Signal	PIN	PIN	Signal
GND	1	41	GND
GND	2	42	GND
+12V	3	43	GND
+12V	4	44	GND
GND	5	45	GND
LPC_SERIRQ	6	46	+5VSB
LPC_LFRAME#	7	47	+5VSB
CLK3_LPC_B2B	8	48	+5VSB
LPC_AD0	9	49	+5VSB
LPC_AD1	10	50	+5VSB

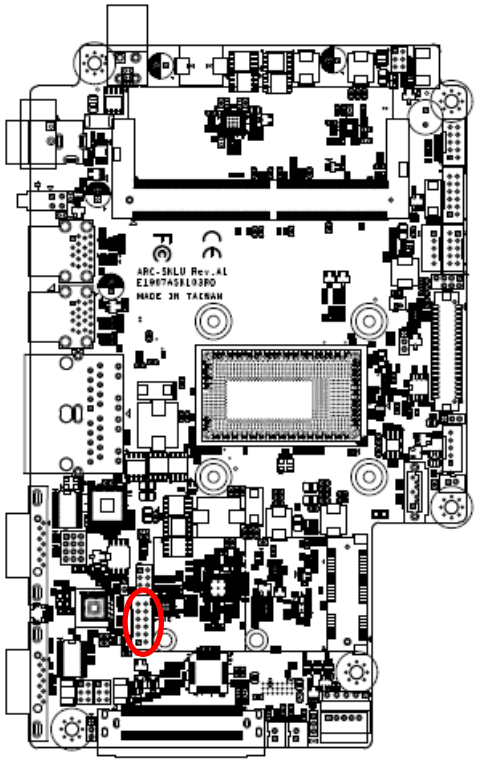
Signal	PIN	PIN	Signal
LPC_AD2	11	51	GND
LPC_AD3	12	52	USB_PP8
PS_ON_B2B	13	53	USB_PN8
PLT_RST#	14	54	GND
PCH_SLP_S3#	15	55	SMBCLK
HDMI_HPD	16	56	SMBDATA
GND	17	57	GND
HDMI1_CTRL_CLK	18	58	BOARD_ID
HDMI1_CTRL_DAT	19	59	PCIEUSB3_PONRSTB
GND	20	60	PCIEUSB3_SMIB_INT#
HDMI1_TXN_2	21	61	B2BPCIE_WAKE#
HDMI1_TXP_2	22	62	RST_B2BPCIE#
GND	23	63	B2BPCIE_CLK_REQ#
HDMI1_TXN_1	24	64	GND
HDMI1_TXP_1	25	65	PCIE_TXN8
GND	26	66	PCIE_TXP8
HDMI1_TXN_0	27	67	GND
HDMI1_TXP_0	28	68	PCIE_RXN8
GND	29	69	PCIE_RXP8
HDMI1_CLKN	30	70	GND
HDMI1_CLKP	31	71	CLK_B2BPCIE_N2
GND	32	72	CLK_B2BPCIE_P2
GND	33	73	GND
MIC_RIN	34	74	GND
MIC_LIN	35	75	MIC1_JD
GND	36	76	GND
LINEOUT1_JD	37	77	LINE1_JD
LINEOUT_R	38	78	LINE1_RIN
LINEOUT_L	39	79	LNE1_LIN
GND	40	80	GND

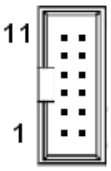
2.6.17 Touch panel connector (JTP1)



Signal	PIN
Y-	1
Y+	2
SENSE	3
X-	4
X+	5

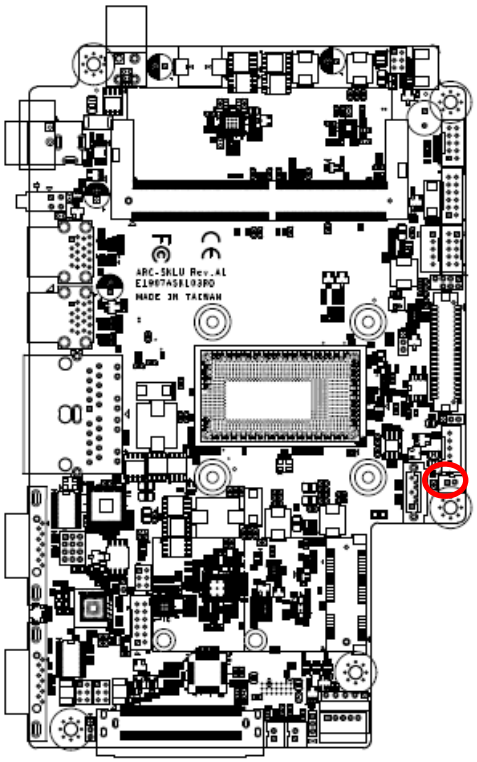
2.6.18 General purpose I/O connector (JGPIO1)

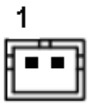




Signal	PIN	PIN	Signal
+3.3V	11	12	GND
SMB_DATA	9	10	SMB_CLK
DIO_GP23	7	8	DIO_GP13
DIO_GP22	5	6	DIO_GP12
DIO_GP21	3	4	DIO_GP11
DIO_GP20	1	2	DIO_GP10

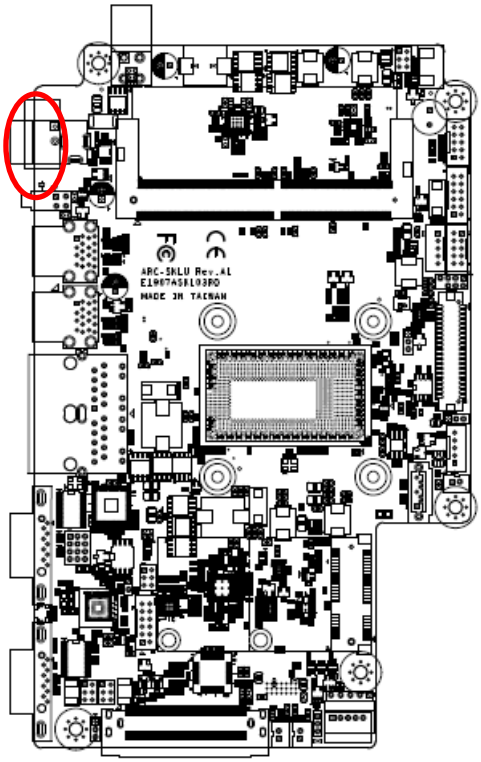
2.6.19 SATA Power connector (SATAPW1)

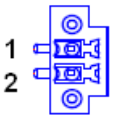




Signal	PIN
GND	1
+5V	2

2.6.20 Power connector (PWR1)



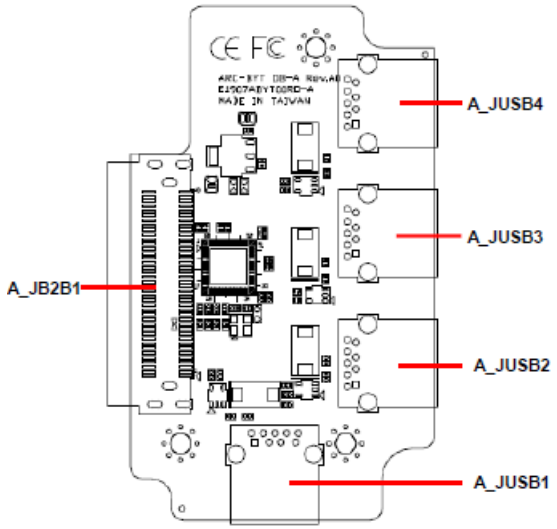


***Option: Phoenix Connector**

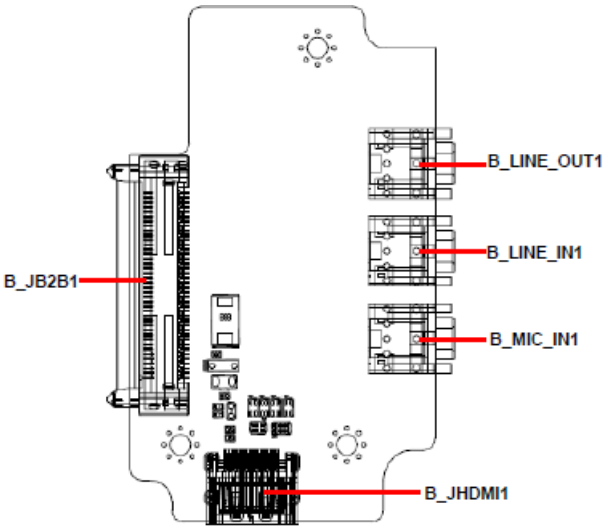
Signal	PIN
+DCIN	1
GND	2

2.7 ARC-BYT DB-A/B/C/D/E/F/G/H/K Overviews

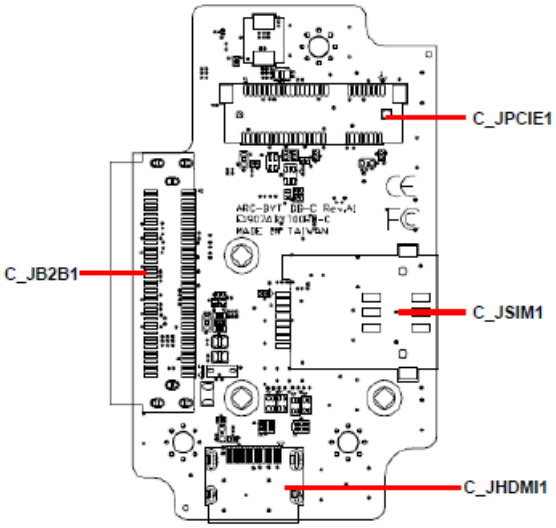
2.7.1 ARC-BYT DB-A



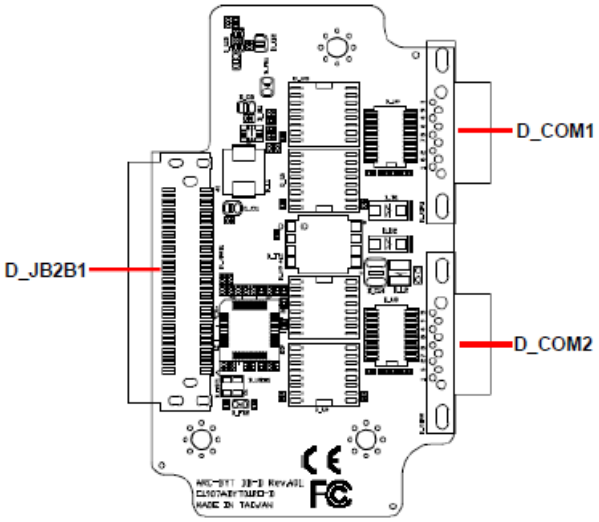
2.7.2 ARC-BYT DB-B



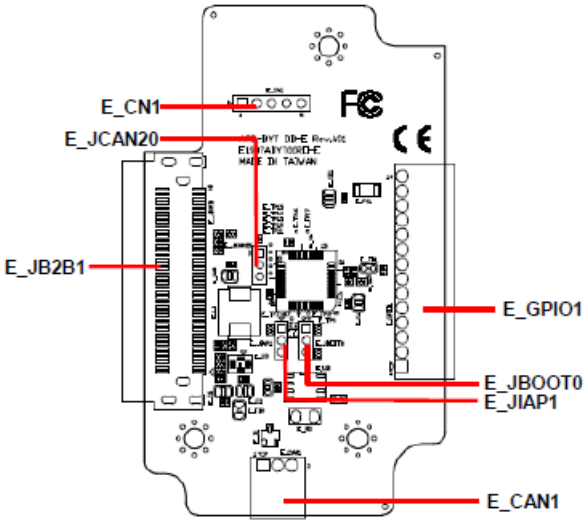
2.7.3 ARC-BYT DB-C



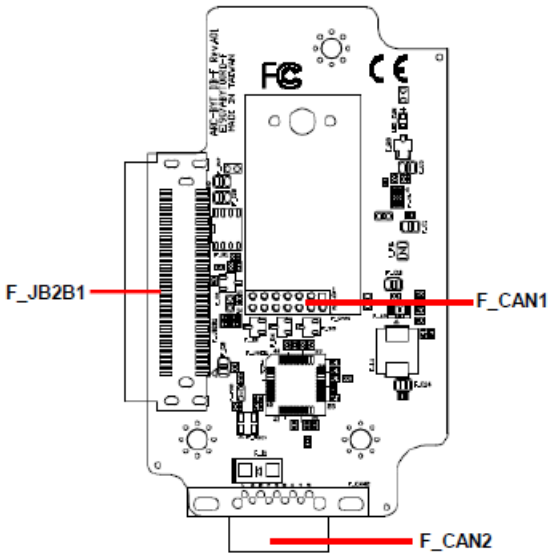
2.7.4 ARC-BYT DB-D



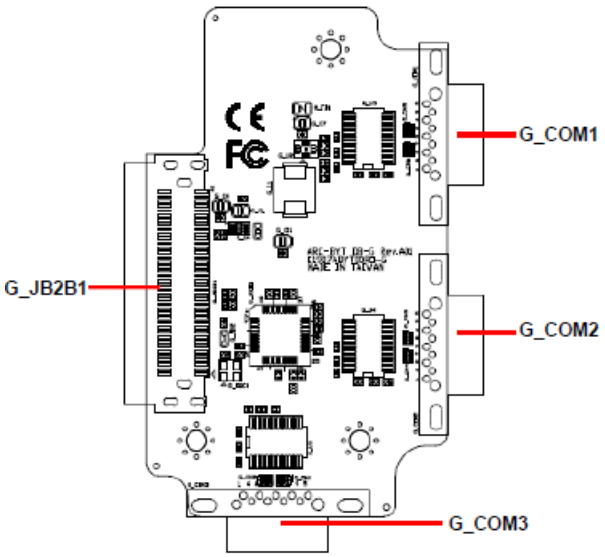
2.7.5 ARC-BYT DB-E



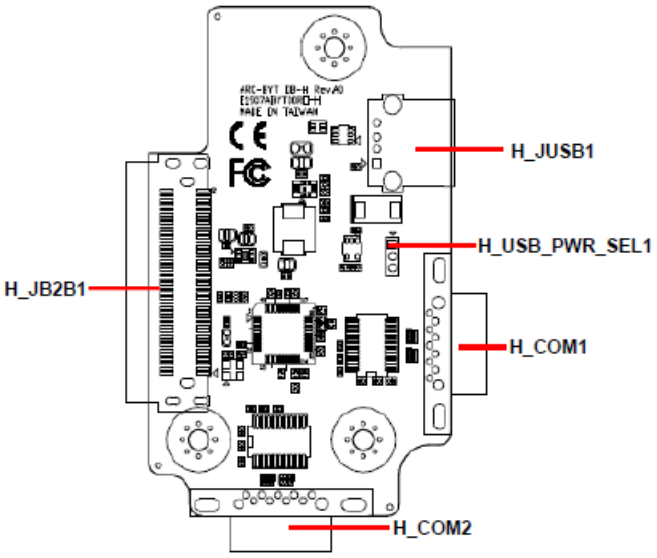
2.7.6 ARC-BYT DB-F



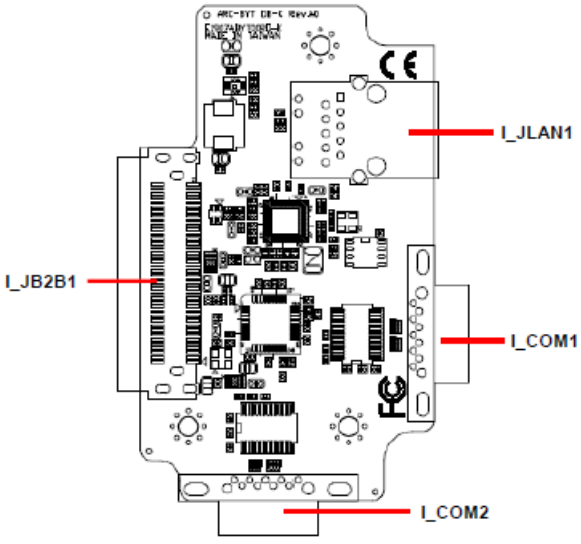
2.7.7 ARC-BYT DB-G



2.7.8 ARC-BYT DB-H



2.7.9 ARC-BYT DB-K



2.8 ARC-BYT DB-A/B/C/D/E/F/G/H/K Connector list

2.8.1 ARC-BYT DB-A

Connectors

Label	Function	Note
A_JUSB1~4	USB3.0 connector 1~4	
A_JB2B1	B2B connector	

2.8.2 ARC-BYT DB-B

Connectors

Label	Function	Note
B_LINE_OUT1	Line-out audio jack	
B_LINE_IN1	Line-in audio jack	
B_MIC_IN1	Mic-in audio jack	
B_JHDMI1	HDMI connector	
B_JB2B1	B2B connector	

2.8.3 ARC-BYT DB-C

Connectors

Label	Function	Note
C_JPCIE1	Mini PCI Express connector	
C_JSIM1	SIM card slot (Push-push)	
C_JHDMI1	HDMI connector	
C_JB2B1	B2B connector	

2.8.4 ARC-BYT DB-D

Connectors

Label	Function	Note
D_COM1/2	Serial Port 1/2 connector	DB-9 male connector
D_JB2B1	B2B connector	

2.8.5 ARC-BYT DB-E

Jumpers

Label	Function	Note
E_JCAN20	CAN2.0 Switch	3 x 1 header, pitch 2.00mm
E_JIAP1	For user update FW	3 x 1 header, pitch 2.00mm

E_JBOOT0	For user update FW	3 x 1 header, pitch 2.00mm

Connectors

Label	Function	Note
E_GPIO1	General purpose I/O connector	14 x 1 terminal, pitch 2.50mm
E_CN1	For user update FW	5 x 1 header, pitch 2.54mm
E_CAN1	CAN Bus connector	3 x 1 terminal, pitch 2.50mm
E_JB2B1	B2B connector	

2.8.6 ARC-BYT DB-F

Connectors

Label	Function	Note
F_CAN1	CAN Bus connector 1	7 x 2 header, pitch 2.00mm
F_CAN2	CAN Bus connector 2	
F_JB2B1	B2B connector	

2.8.7 ARC-BYT DB-G

Connectors

Label	Function	Note
G_COM1/2/3	Serial Port 1/2/3 connector	DB-9 male connector
G_JB2B1	B2B connector	

2.8.8 ARC-BYT DB-H

Jumpers

Label	Function	Note
H_USB_PWR_SEL1	USB Power selector	3 x 1 header, pitch 2.00mm

Connectors

Label	Function	Note
H_JUSB1	USB3.0 connector	
H_COM1/2	Serial Port 1/2 connector	DB-9 male connector
H_JB2B1	B2B connector	

2.8.9 ARC-BYT DB-K

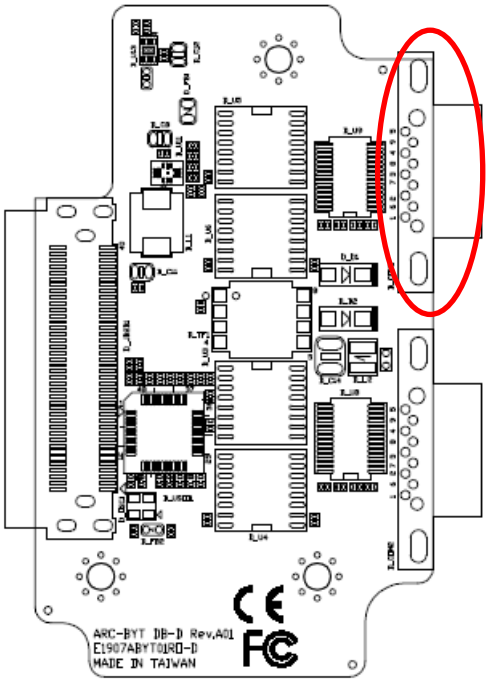
Connectors

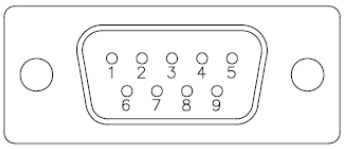
Label	Function	Note

I_JLAN1	RJ-45 Ethernet	
I_COM1/2	Serial Port 1/2 connector	DB-9 male connector
I_JB2B1	B2B connector	

2.9 ARC-BYT DB-D Connectors settings

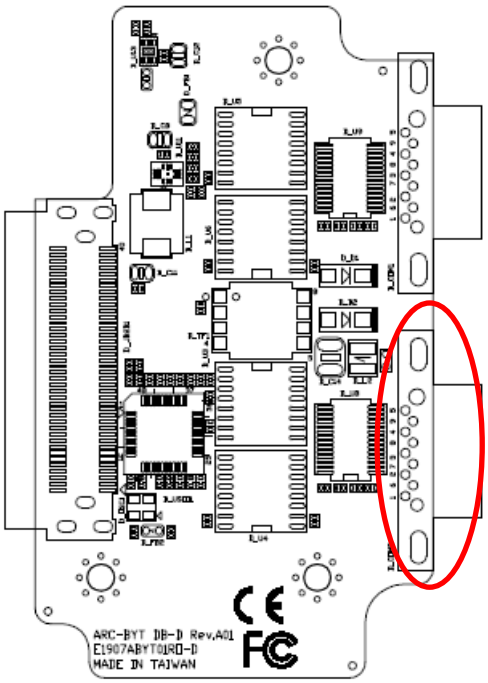
2.9.1 Serial Port 1 connector (D_COM1)

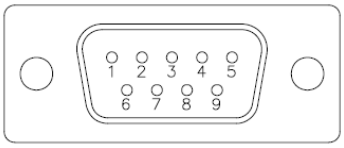




Signal	PIN	PIN	Signal
NDCD#_3_D	1	6	NDSR#_3_D
NRXD_3_D	2	7	NRTS#_3_D
NTXD_3_D	3	8	NCTS#_3_D
NDTR#_3_D	4	9	NRI#_3_D
GND	5		

2.9.2 Serial Port 2 connector (D_COM2)

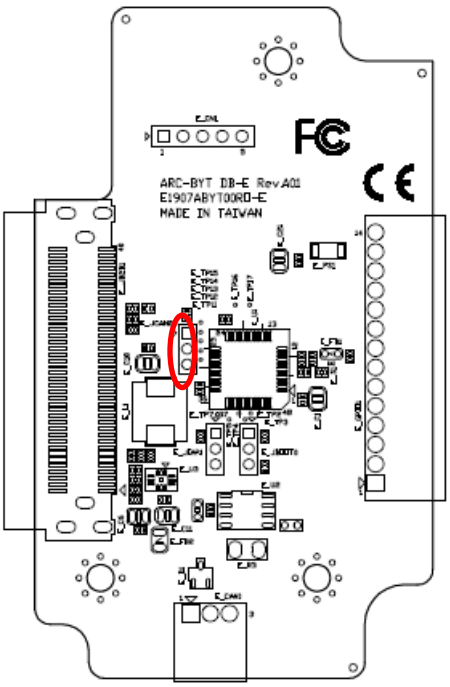




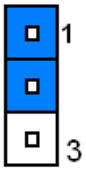
Signal	PIN	PIN	Signal
NDCD#_2_D	1	6	NDSR#_2_D
NRXD_2_D	2	7	NRTS#_2_D
NTXD_2_D	3	8	NCTS#_2_D
NDTR#_2_D	4	9	NRI#_2_D
GND	5		

2.10 ARC-BYT DB-E Jumpers & Connectors settings

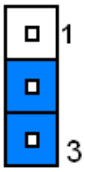
2.10.1 CAN2.0 Switch (E_JCAN20)



CAN2.0A (11-bit)*

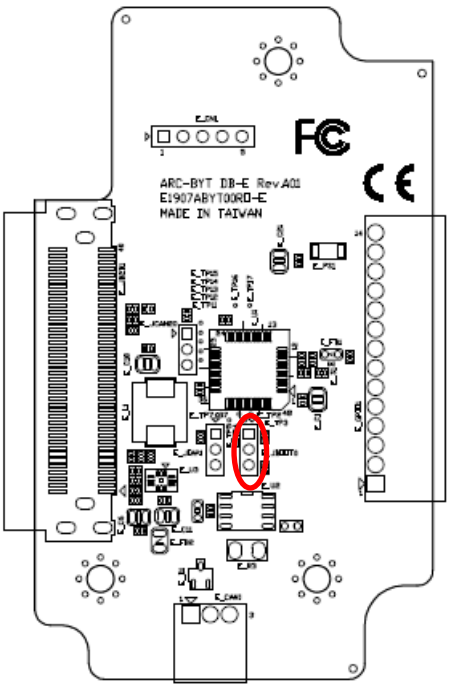


CAN2.0B (29-bit)

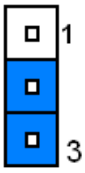


***Default**

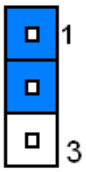
2.10.2 For user update FW (E_JBOOT0)



Default*

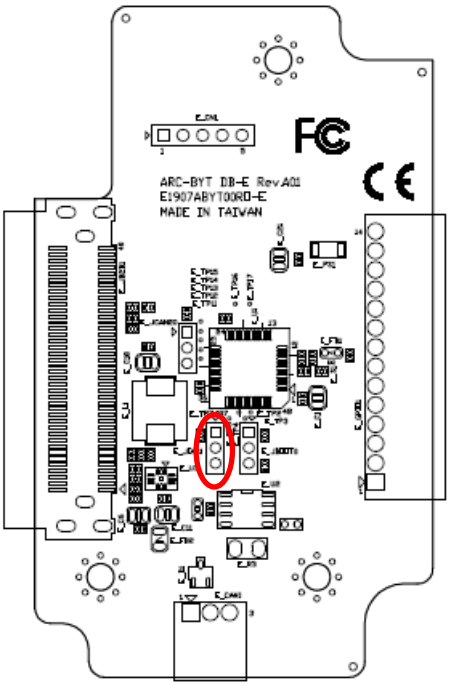


For user update FW

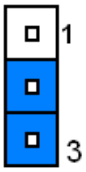


***Default**

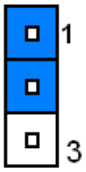
2.10.3 For user update FW (E_JIAP1)



Default*

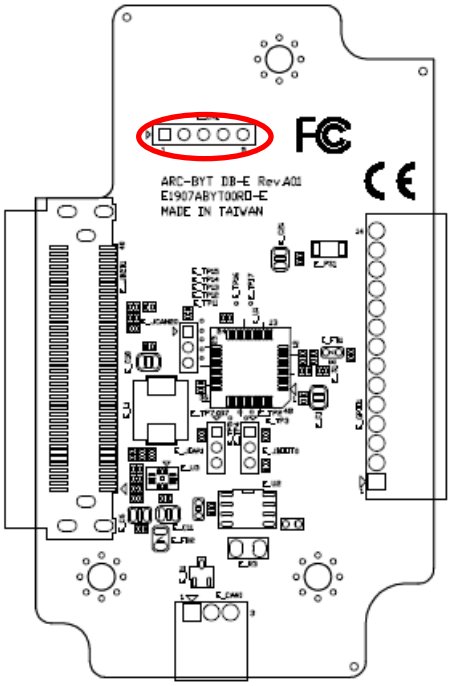


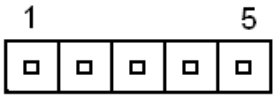
For user update FW



***Default**

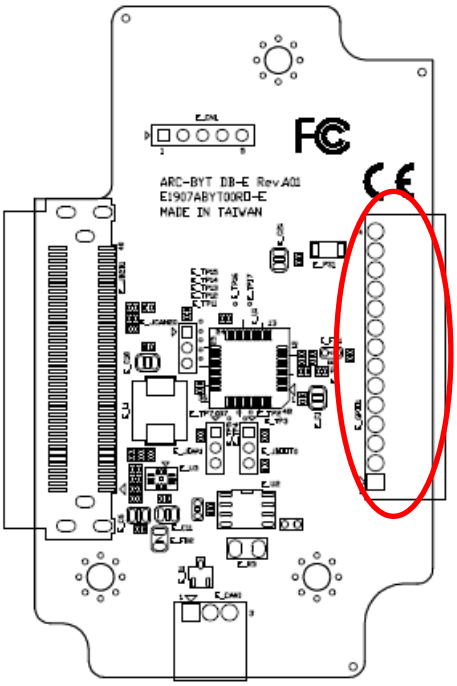
2.10.4 For user update FW (E_CN1)

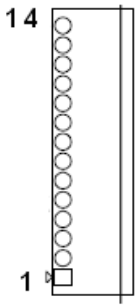




Signal	PIN
+3.3V	1
SWDIO	2
SWCLK	3
CAN_BUS_RESET#	4
GND	5

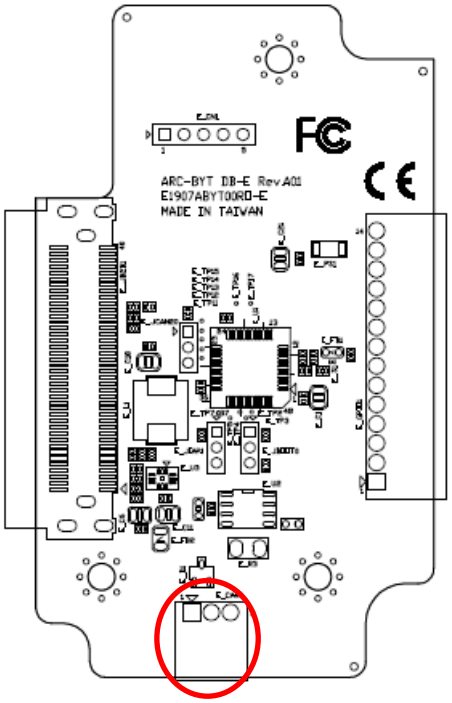
2.10.5 General purpose I/O connector (E_GPIO1)

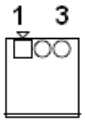




Signal	PIN
GND	14
+3.3V	13
DO5	12
DO4	11
DO3	10
DO2	9
DO1	8
DO0	7
DI5	6
DI4	5
DI3	4
DI2	3
DI1	2
DI0	1

2.10.6 CAN Bus connector (E_CAN1)

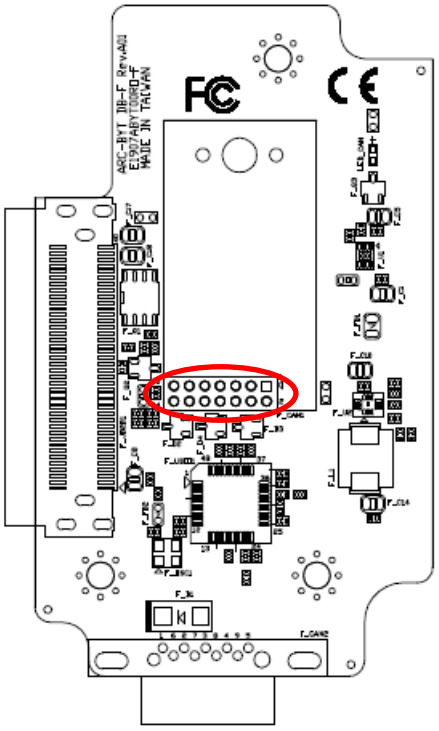


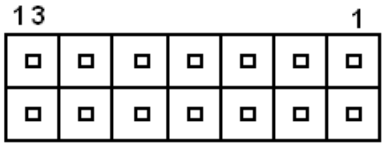


Signal	PIN
CANH	1
CANL	2
GND	3

2.11 ARC-BYT DB-F Connectors settings

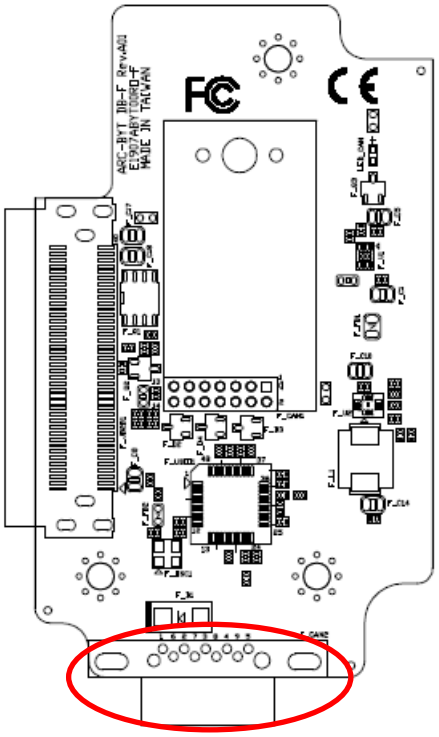
2.11.1 CAN Bus connector 1 (F_CAN1)

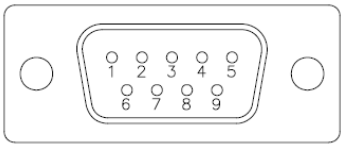




Signal	PIN	PIN	Signal
CAN_PWR	1	2	CAN_8
CAN_IND	3	4	CAN_9
GND	5	6	BAT_GND
CAN_WAKE	7	8	CAN_11
UART_RXD_1_F	9	10	CAN_12
UART_TXD_1_F	11	12	CAN_13
+5V	13	14	CAN_14

2.11.2 CAN Bus connector 2 (F_CAN2)

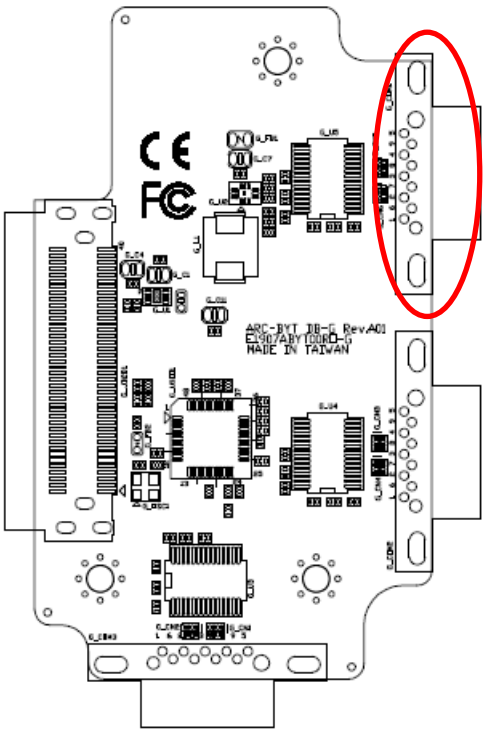


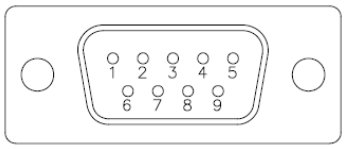


Signal	PIN	PIN	Signal
BAT_PWR	1	6	CAN_12
CAN_8	2	7	CAN_13
CAN_9	3	8	CAN_14
BAT_GND	4	9	NC
CAN_11	5		

2.12 ARC-BYT DB-G Connectors settings

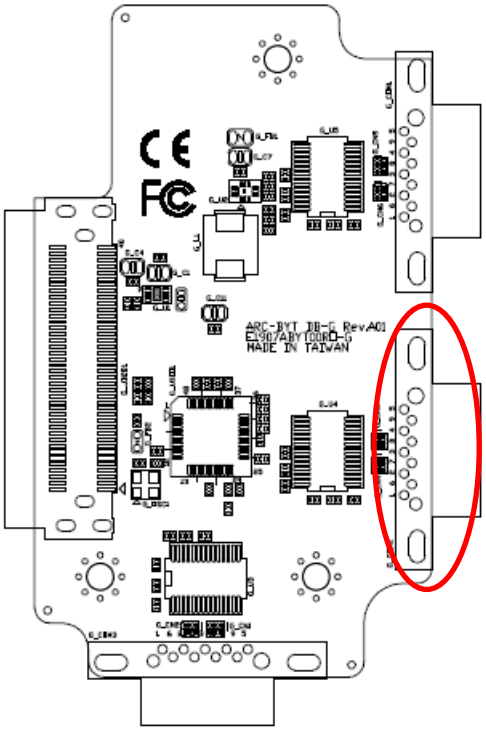
2.12.1 Serial Port 1 connector (G_COM1)

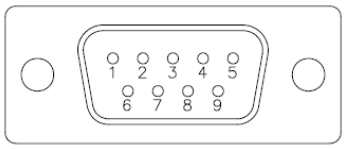




Signal	PIN	PIN	Signal
NDCD#_3_G	1	6	NDSR#_3_G
NRXD_3_G	2	7	NRTS#_3_G
NTXD_3_G	3	8	NCTS#_3_G
NDTR#_3_G	4	9	NRI#_3_G
GND	5		

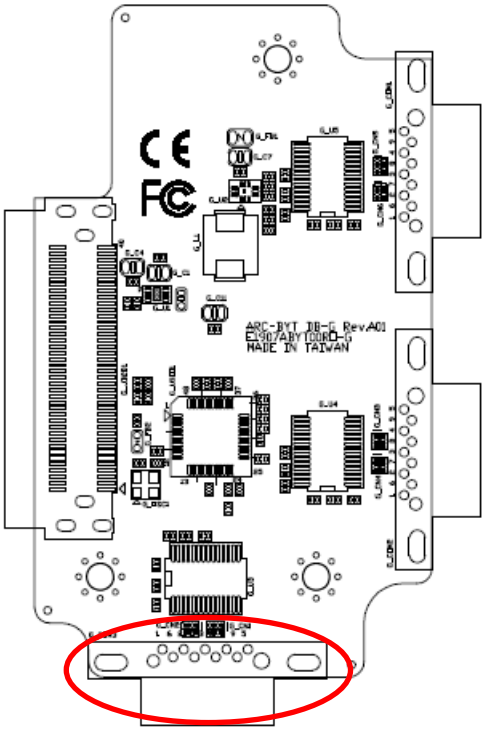
2.12.2 Serial Port 2 connector (G_COM2)

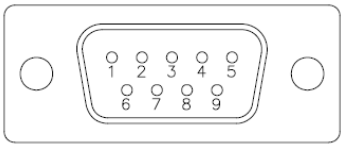




Signal	PIN	PIN	Signal
NDCD#_2_G	1	6	NDSR#_2_G
NRXD_2_G	2	7	NRTS#_2_G
NTXD_2_G	3	8	NCTS#_2_G
NDTR#_2_G	4	9	NRI#_2_G
GND	5		

2.12.3 Serial Port 3 connector (G_COM3)

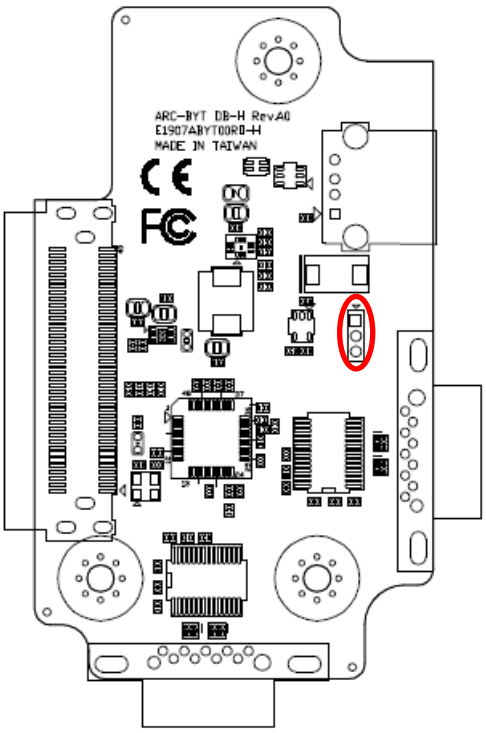




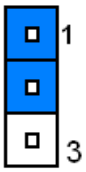
Signal	PIN	PIN	Signal
NDCD#_1_G	1	6	NDSR#_1_G
NRXD_1_G	2	7	NRTS#_1_G
NTXD_1_G	3	8	NCTS#_1_G
NDTR#_1_G	4	9	NRI#_1_G
GND	5		

2.13 ARC-BYT DB-H Jumpers settings

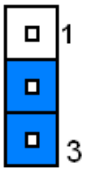
2.13.1 USB Power selector (H_USB_PWR_SEL1)



+5VSB*



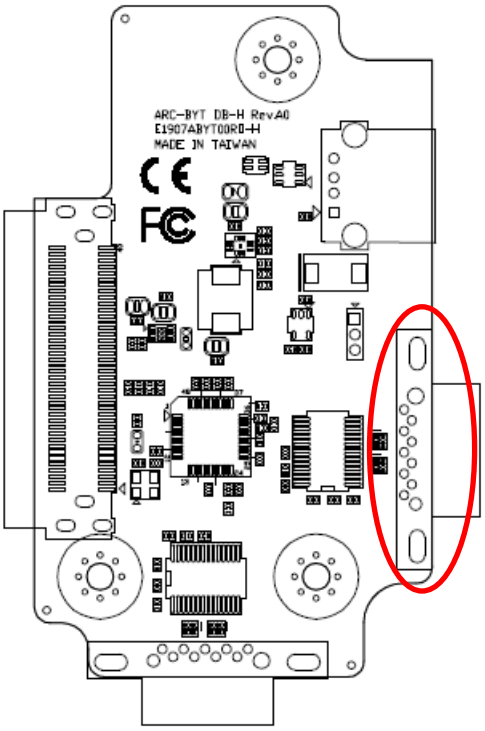
+5V

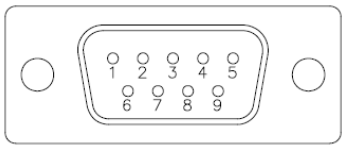


***Default**

2.14 ARC-BYT DB-H Connectors settings

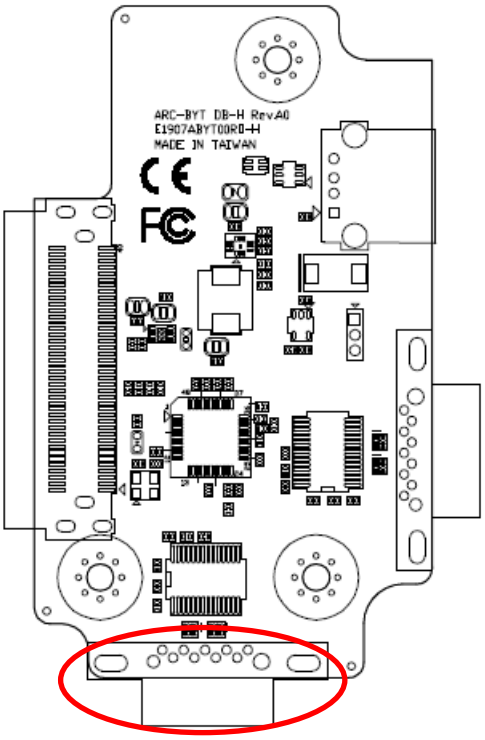
2.14.1 Serial Port 1 connector (H_COM1)

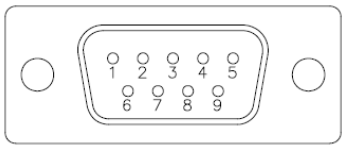




Signal	PIN	PIN	Signal
NDCD#_1_H	1	6	NDSR#_1_H
NRXD_1_H	2	7	NRTS#_1_H
NTXD_1_H	3	8	NCTS#_1_H
NDTR#_1_H	4	9	NRI#_1_H
GND	5		

2.14.2 Serial Port 2 connector (H_COM2)

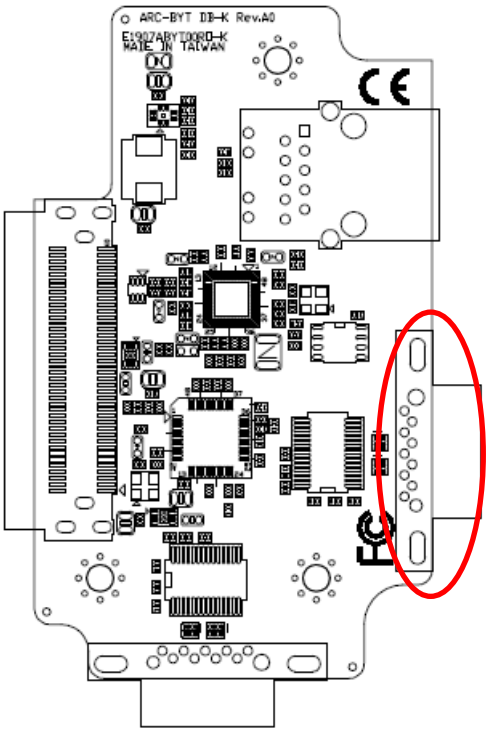


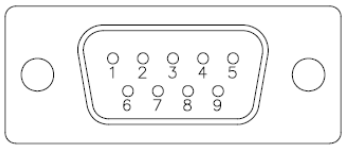


Signal	PIN	PIN	Signal
NDCD#_2_H	1	6	NDSR#_2_H
NRXD_2_H	2	7	NRTS#_2_H
NTXD_2_H	3	8	NCTS#_2_H
NDTR#_2_H	4	9	NRI#_2_H
GND	5		

2.15 ARC-BYT DB-K Connectors settings

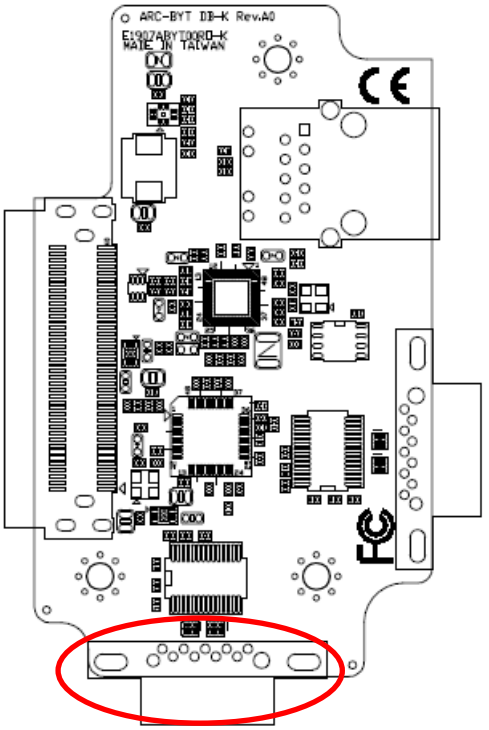
2.15.1 Serial Port 1 connector (I_COM1)

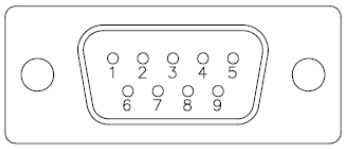




Signal	PIN	PIN	Signal
NDCD#_1_I	1	6	NDSR#_1_I
NRXD_1_I	2	7	NRTS#_1_I
NTXD_1_I	3	8	NCTS#_1_I
NDTR#_1_I	4	9	NRI#_1_I
GND	5		

2.15.2 Serial Port 2 connector (I_COM2)





Signal	PIN	PIN	Signal
NDCD#_2_I	1	6	NDSR#_2_I
NRXD_2_I	2	7	NRTS#_2_I
NTXD_2_I	3	8	NCTS#_2_I
NDTR#_2_I	4	9	NRI#_2_I
GND	5		

3.BIOS Setup

3.1 Introduction

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

3.2 Starting Setup

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

While the BIOS is in control, the Setup program can be activated in one of two ways:
By pressing <Del> or <F2> immediately after switching the system on, or
By pressing the <Del> or <F2> key when the following message appears briefly at the left-top of the screen during the POST (Power On Self Test).

Press <Del> or <F2> to enter SETUP

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

Press F1 to Continue, DEL to enter SETUP

3.3 Using Setup

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

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

- **Navigating Through The Menu Bar**

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

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

- **To Display a Sub Menu**

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

3.4 Getting Help

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

3.5 In Case of Problems

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

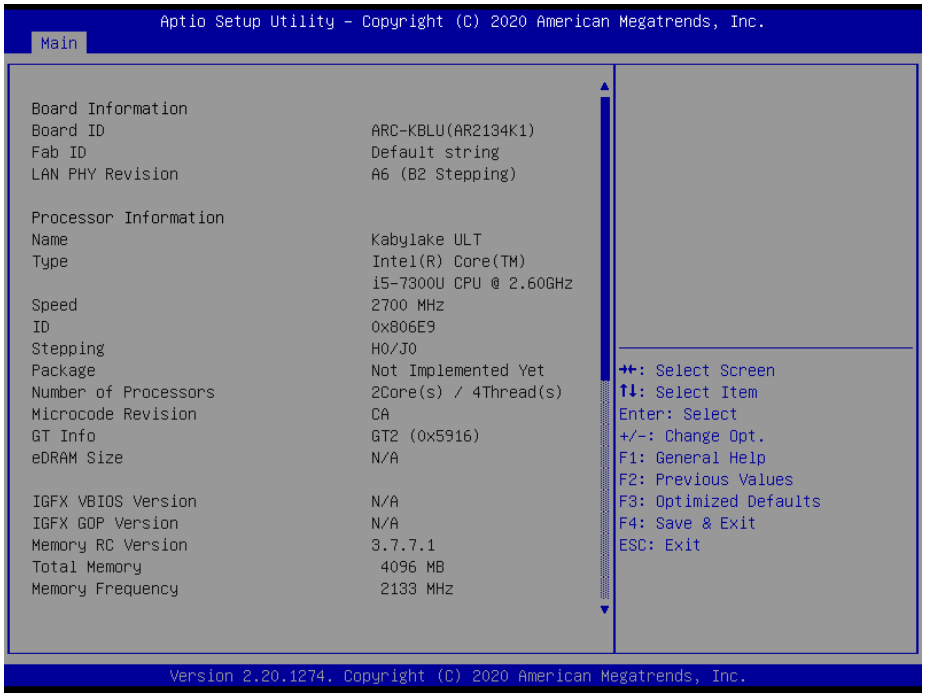
The best advice is to only alter settings which you thoroughly understand. To this end, we strongly recommend that you avoid making any changes to the chipset defaults. These defaults have been carefully chosen by both BIOS Vendor and your systems manufacturer to provide the absolute maximum performance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

3.6 BIOS setup

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

3.6.1 Main Menu

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



3.6.1.1 System Language

This option allows choosing the system default language.

3.6.1.2 System Date

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

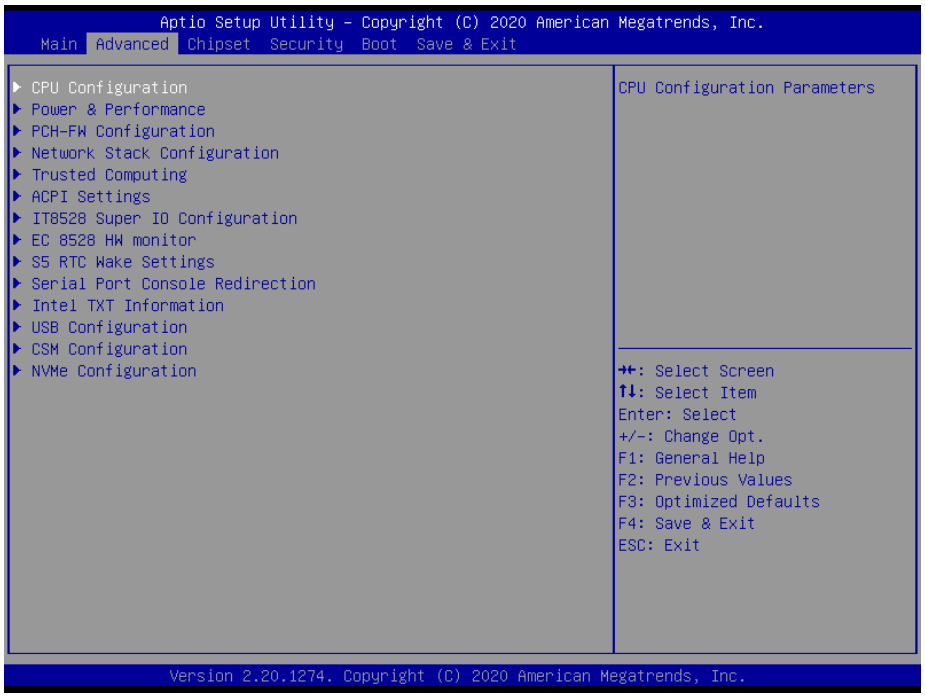
3.6.1.3 System Time

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

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

3.6.2 Advanced Menu

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

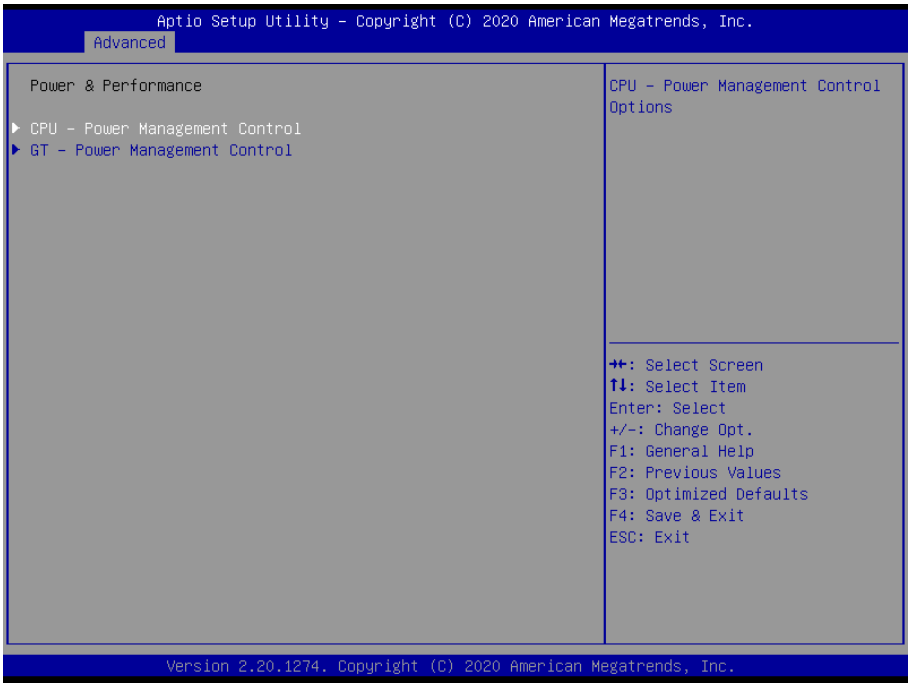


3.6.2.1 CPU Configuration

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 Vanderpool Technology.
Active Processor Cores	All**[Default]** 1 2 3 4 5 6 7 8	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

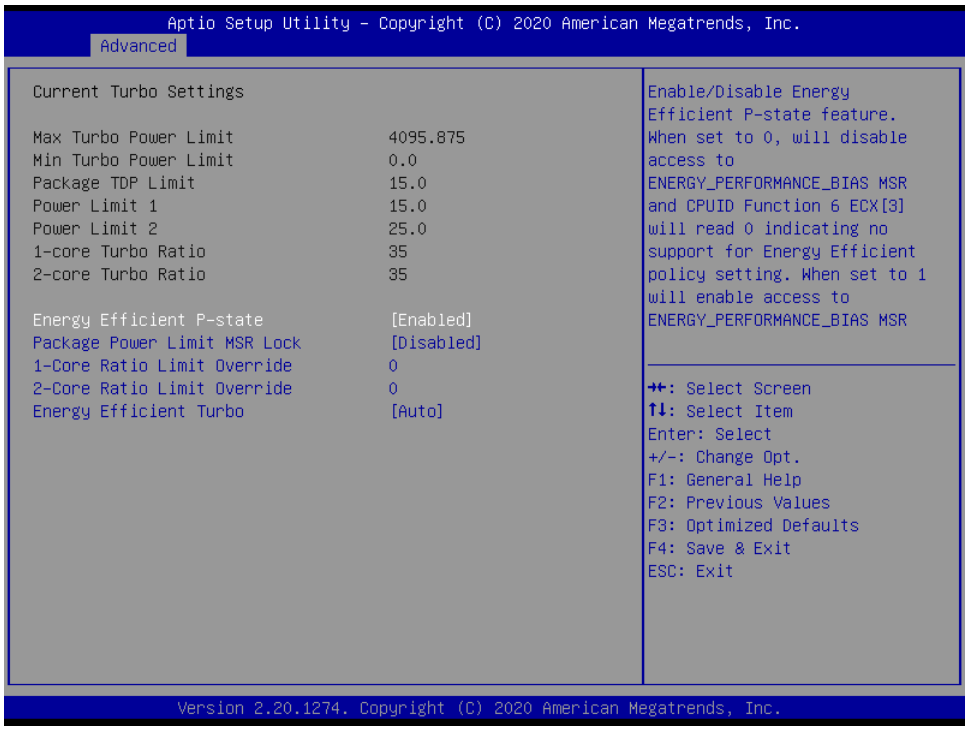


3.6.2.2.1 CPU-Power Management Control

Item	Option	Description
Intel® SpeedSted™	Enabled**[Default]**, Disabled	Allows more than two frequency ranges to be supported.
Turbo Mode	Enabled**[Default]**, Disabled	Enable/Disable processor Turbo Mode (requires EMTTM enabled too). AUTO means enabled, unless max turbo ratio is bigger than 16 SKL A0 W/A.

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

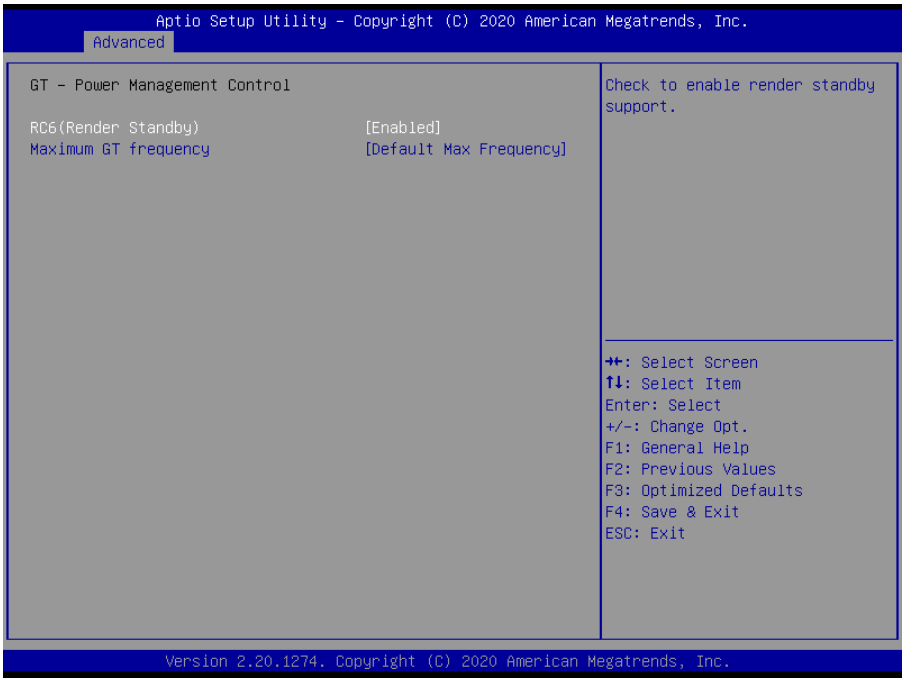
3.6.2.2.1.1 View/Configure Turbo Options



Item	Option	Description
Energy Efficient P-state	Enabled**[Default]**, Disabled	Enable/Disable Energy Efficient P-state feature. When set to 0, will disable access to ENERGY_PERFORMANCE_BIAS MSR and CPUID Function 6 ECX[3] will read 0 indicating no support for Energy Efficient policy setting. When set to 1 will enable access to ENERGY_PERFORMANCE_BIAS MSR 1B0.
Package Power Limit MSR Lock	Enabled, Disabled**[Default]**	Enable/Disable locking of Package Power Limit settings. When enabled, PACKAGE_POWER_LIMIT MSR will be locked and a reset will be required to unlock the register.
1-Core Ratio Limit Override	0	1-Core Ratio Limit with range of (Max Non-Turbo Ratio – 255). Min = Max Non-Turbo Ratio. Max = fused turbo ratio, or 255 if CPU is unlocked for overclocking. This 1-Core Ratio Limit must be greater than or equal all other ratio values.
2-Core Ratio Limit Override	0	2-Core Ratio Limit with range of (Max Non-Turbo Ratio – 255). Min = Max Non-Turbo Ratio. Max = fused turbo ratio, or 255 if CPU is unlocked for overclocking. This 2-Core Ratio Limit Must be <= to 1-Core

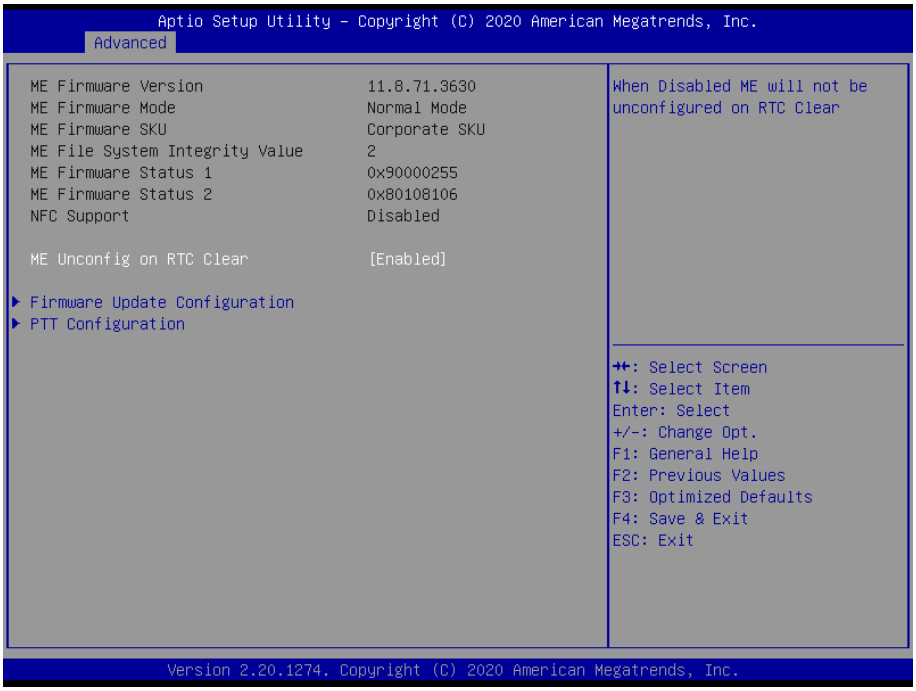
		Ratio Limit.
Energy Efficient Turbo	Disabled Enabled Auto**[Default]**	Enable/Disable Energy Efficient Turbo Feature. This feature will opportunistically lower the turbo frequency to increase efficiency. Recommeded only to disable in overlocking situations where turbo frequency must remain constant. Otherwise, leave enabled.

3.6.2.2.2 GT-Power Management Control



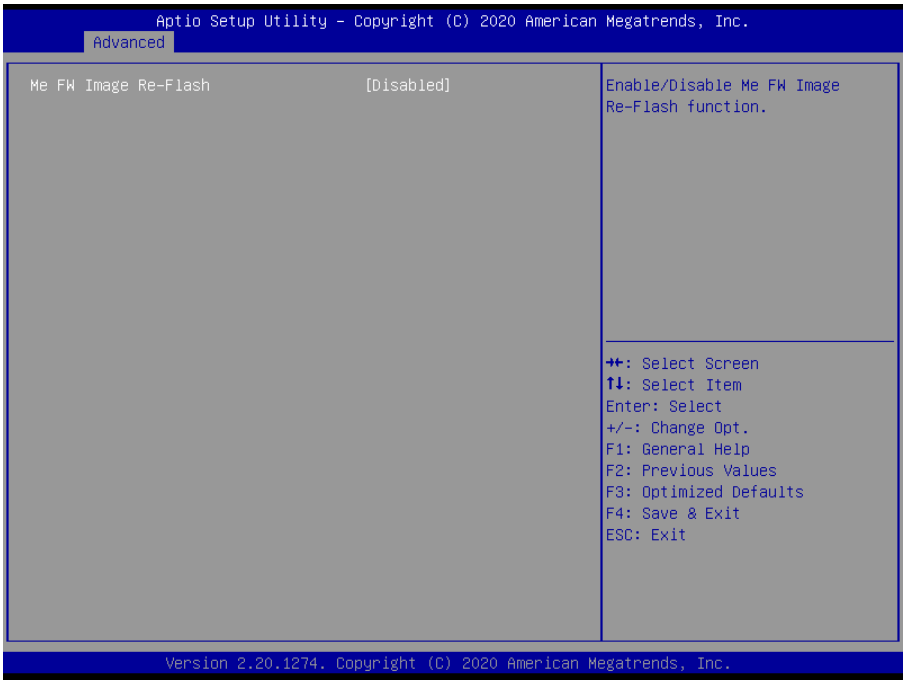
Item	Option	Description
RC6 (Render Standby)	Enabled**[Default]**, Disabled	Check to enable render standby support.
Maximum GT frequency	Default Max Frequency**[Default]**, 100Mhz/150Mhz/200Mhz/ 250Mhz/300Mhz/350Mhz/ 400Mhz/450Mhz/500Mhz/ 550Mhz/600Mhz/650Mhz/ 700Mhz/750Mhz/800Mhz/ 850Mhz/900Mhz/950Mhz/ 1000Mhz/1050Mhz/1100Mhz/ 1150Mhz/1200Mhz	Auto Updated.

3.6.2.3 PCH-FW Configuration



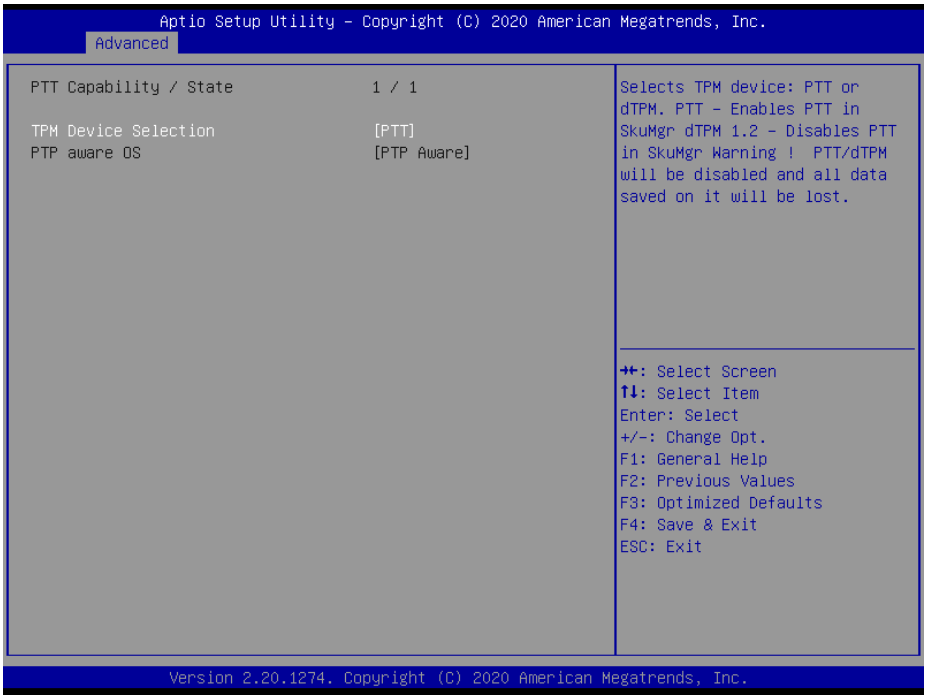
Item	Option	Description
ME Unconfig on RTC Clear	Enabled**[Default]**, Disabled	When Disabled ME will not be unconfigured on RTC Clear.

3.6.2.3.1 Firmware Update Configuration



Item	Option	Description
Me FW Image Re-Flash	Enabled**[Default]**, Disabled	Check to enable render standby support.

3.6.2.4 PTT Configuration



Item	Option	Description
TPM Device Selection	dTPM PTT**[Default]**,	Selects TPM device: PTT or dTPM. PTT-Enables PTT in SkuMgr dTPM 1.2-Disables PTT in SkuMgr Warning! PTT/dTPM will be disabled and all data saved on it will be lost.

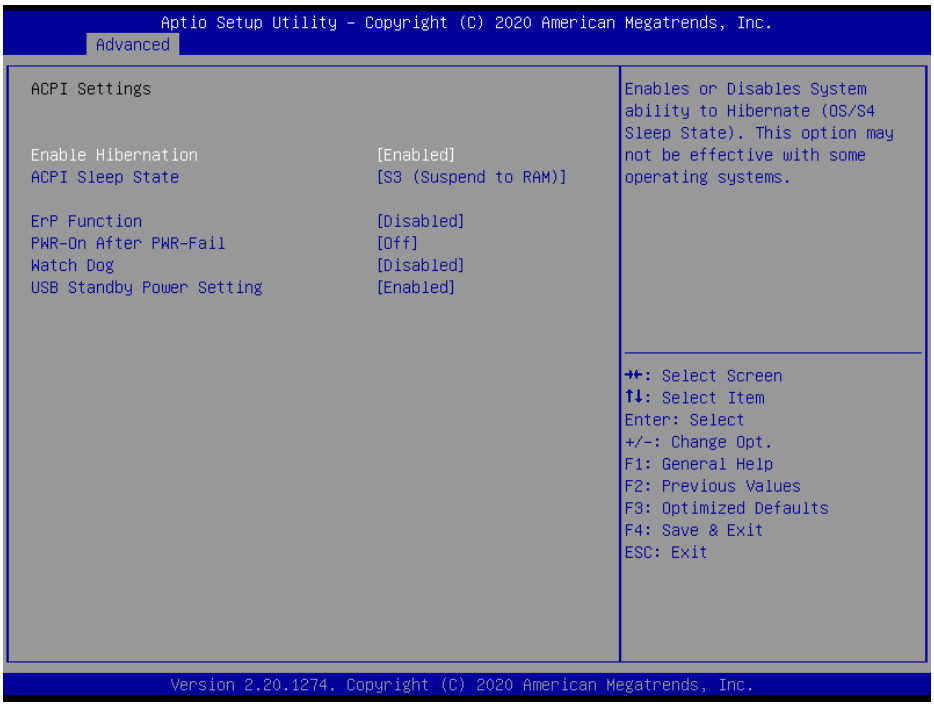
3.6.2.5 Network Stack Configuration

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

3.6.2.6 Trusted Computing

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

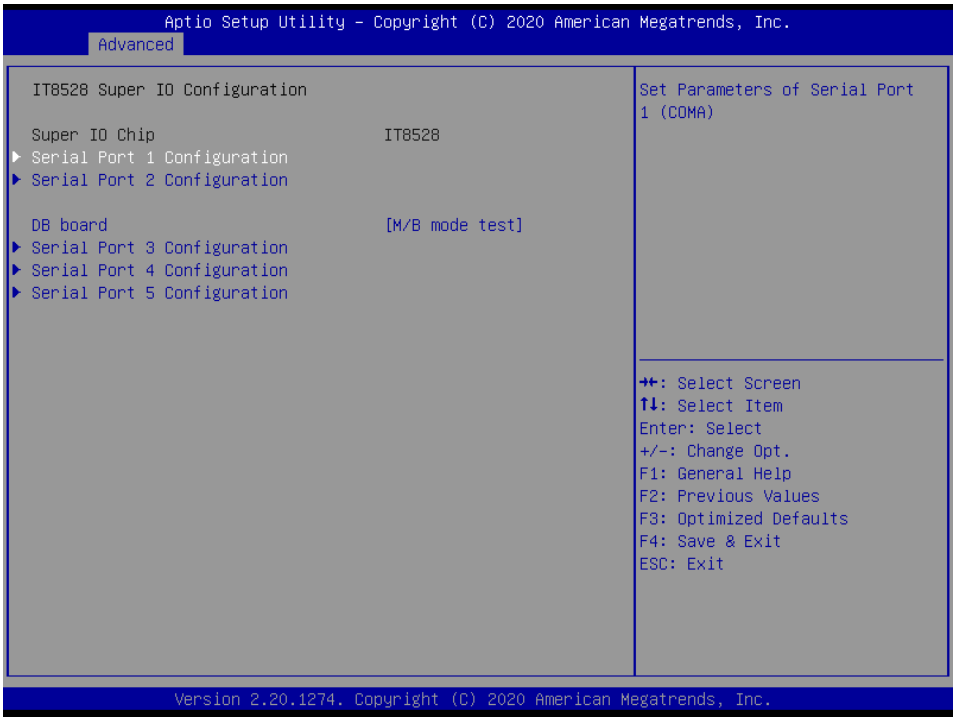
3.6.2.7 APCI Settings



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.
ErP Function	Disabled**[Default]**, Enabled	ErP Function (Deep S5).
PWR-On After PWR-Fail	Off**[Default]** On Last state	AC loss resume.
Watch Dog	Disabled**[Default]**, 30 sec 40 sec 50 sec 1 min 2 min 10 min 30 min	Select WatchDog.
USB Standby Power Setting	Disabled Enabled**[Default]**,	Enabled/Disabled USB Standby Power during S3/S4/S5.

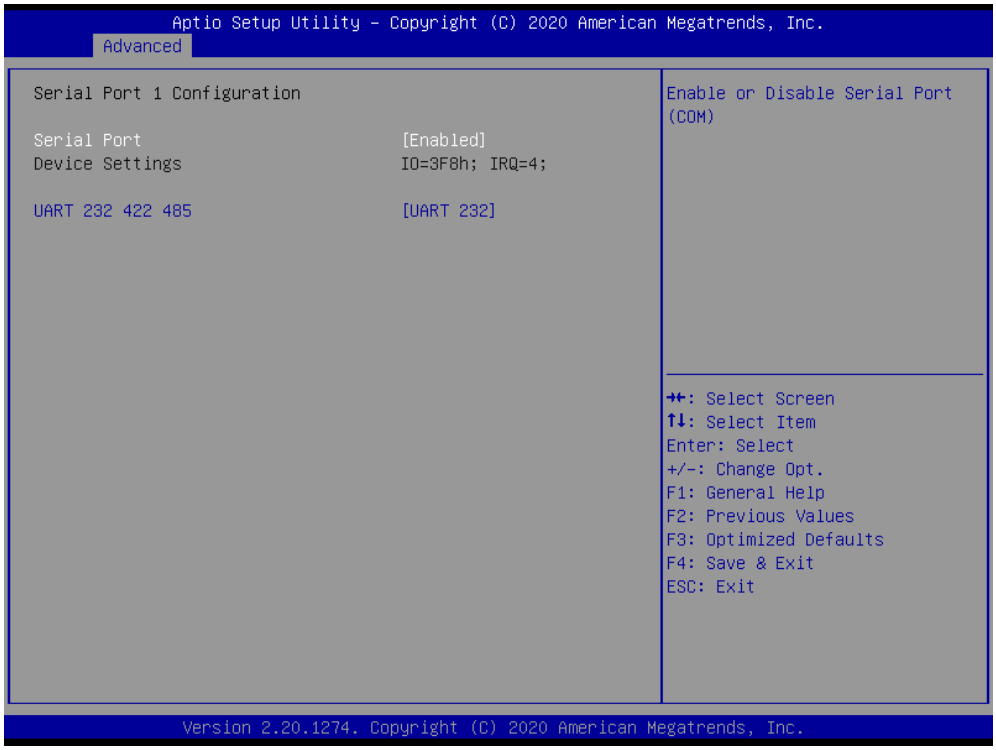
3.6.2.8 IT8528 Super IO Configuration

You can use this item to set up or change the IT8528 Super IO configuration for serial ports. Please refer to 3.6.2.8.1~ 3.6.2.8.5 for more information.



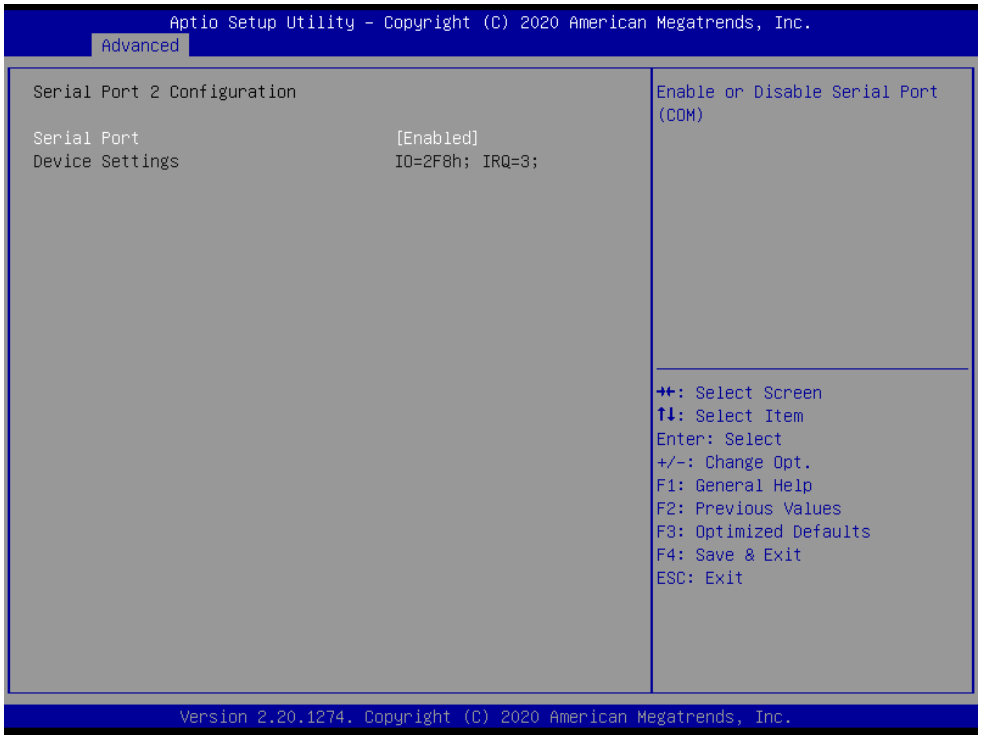
Item	Options	Description
DB board	DB-A/C/E/J DB-B DB-F 1COM DB-D/H/K 2COM DB-G 3COM M/B mode test**[Default]**,	DB board A-K. DA-A/B/C/E/J w/o UART DB-G w/t 3UART DB-D/H/K w/t 2UART DB-F w/t 1UART.
Serial Port 1 Configuration	Set Parameters of Serial Port 1 (COMA).	
Serial Port 2 Configuration	Set Parameters 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).	

3.6.2.8.1 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

3.6.2.8.2 Serial Port 2 Configuration

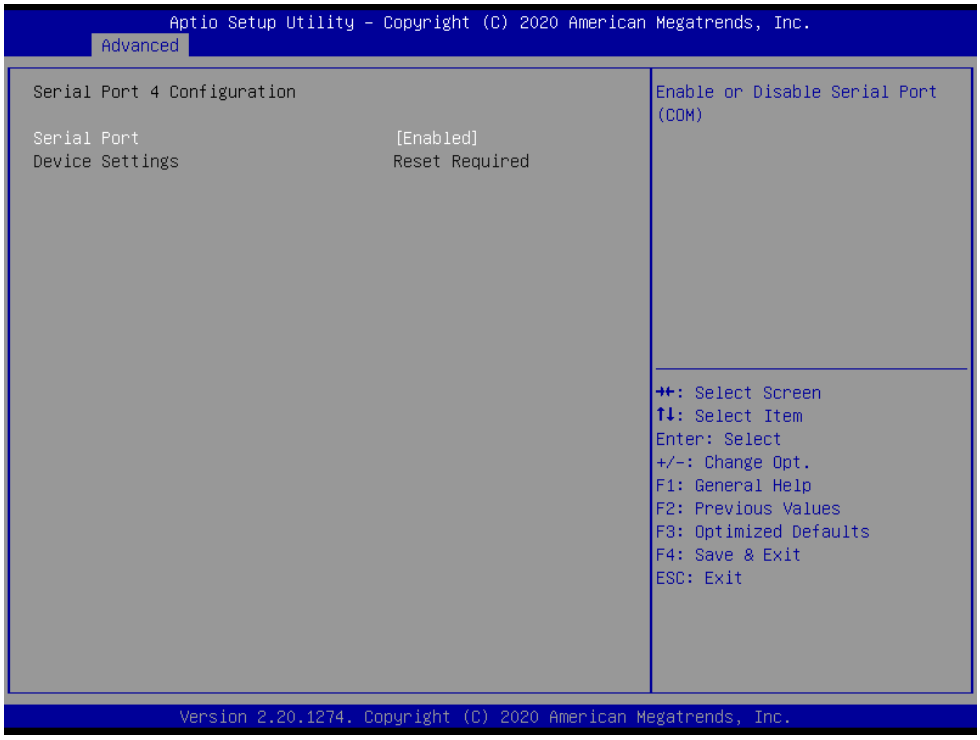


Item	Option	Description
Serial Port	Enabled**[Default]**, Disabled	Enable or Disable Serial Port (COM).

3.6.2.8.3 Serial Port 3 Configuration

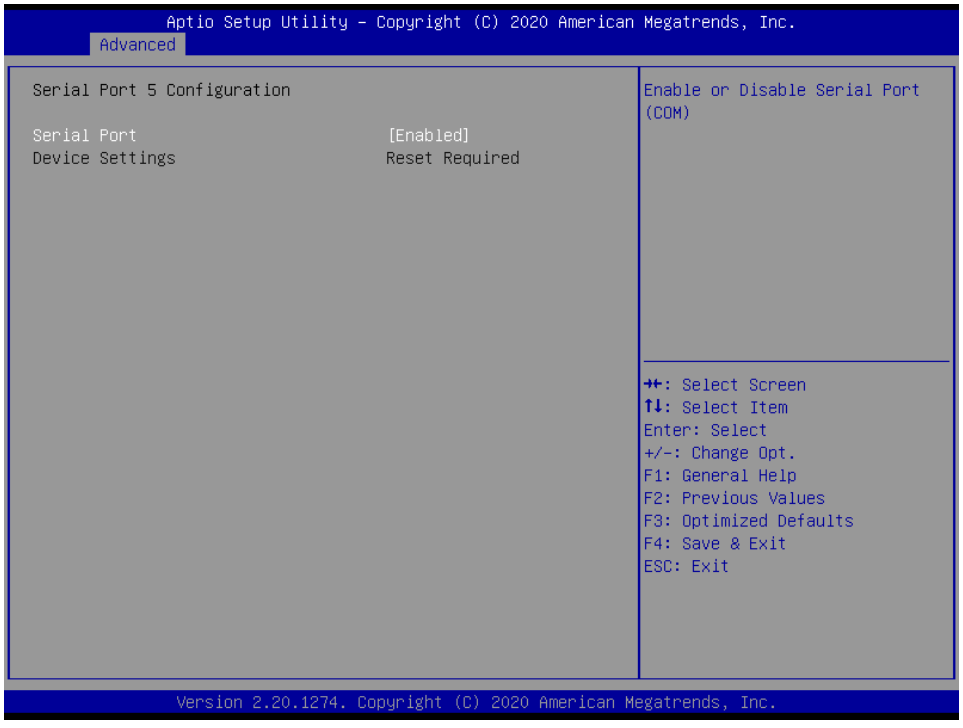
Item	Option	Description
Serial Port	Enabled**[Default]**, Disabled	Enable or Disable Serial Port (COM).

3.6.2.8.4 Serial Port 4 Configuration



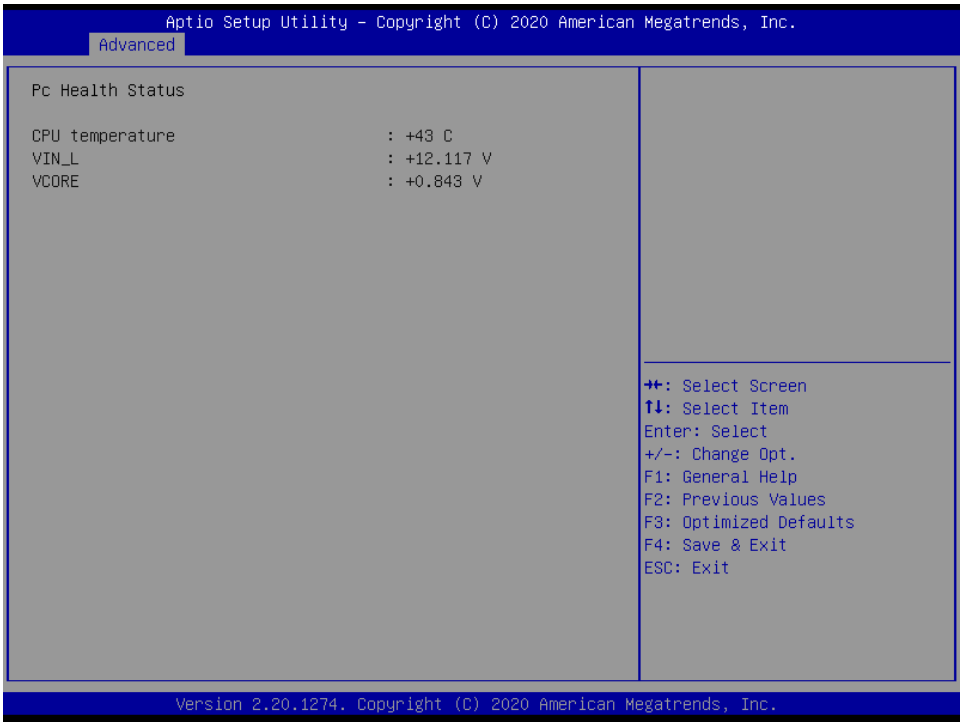
Item	Option	Description
Serial Port	Enabled**[Default]**, Disabled	Enable or Disable Serial Port (COM).

3.6.2.8.5 Serial Port 5 Configuration



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

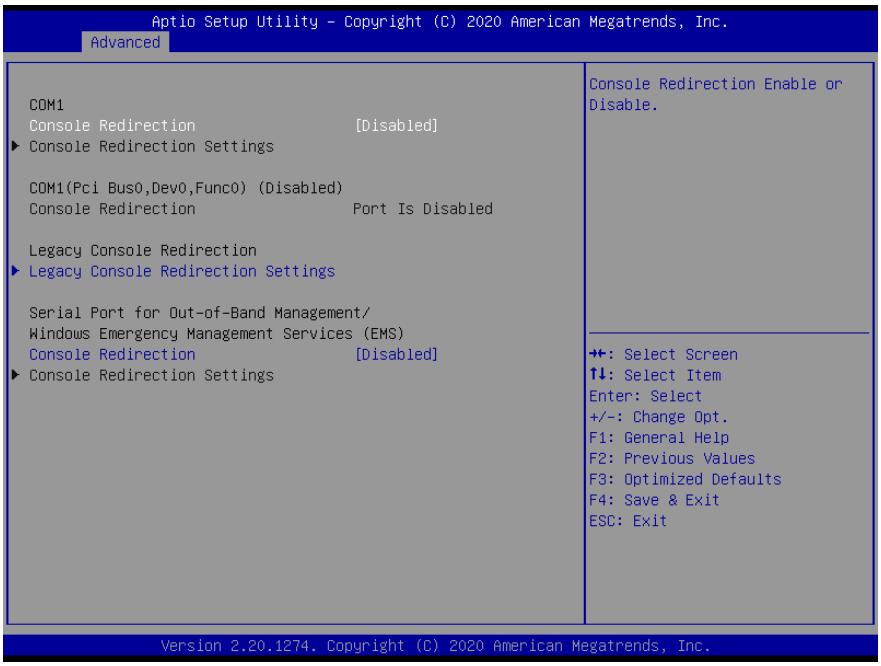
3.6.2.9 H/W Monitor



3.6.2.10 S5 RTC Wake Settings

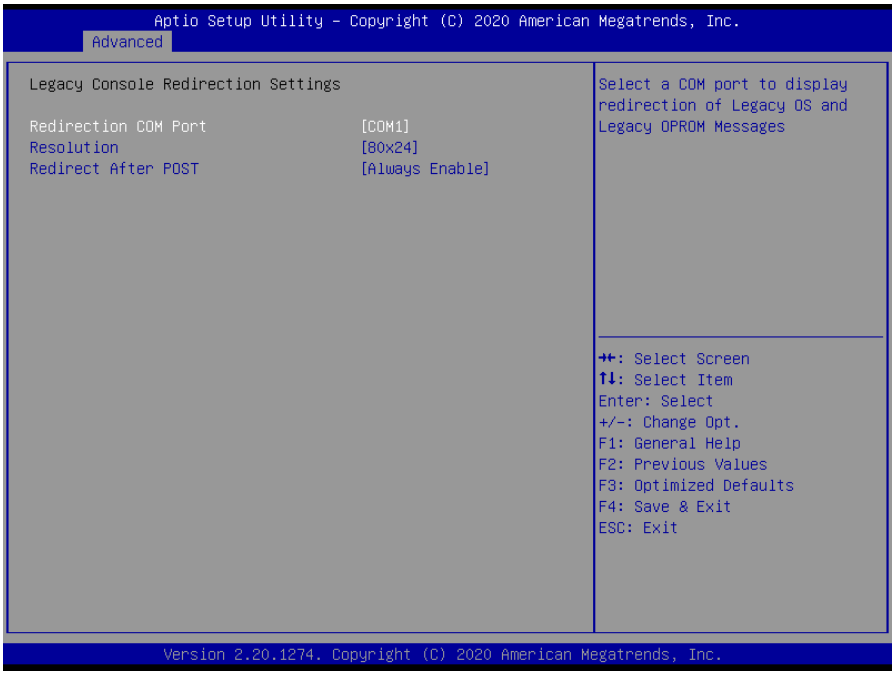
Item	Options	Description
Wake system from S5	Disabled**[Default]**, Fixed Time Dynamic Time	Enable or disable System wake on alarm event. Select Fixed Time, system will wake on the hr::min::sec specified. Select Dynamic Time, System will wake on the current time + Increase minute(s).

3.6.2.11 Serial Port Console Redirection



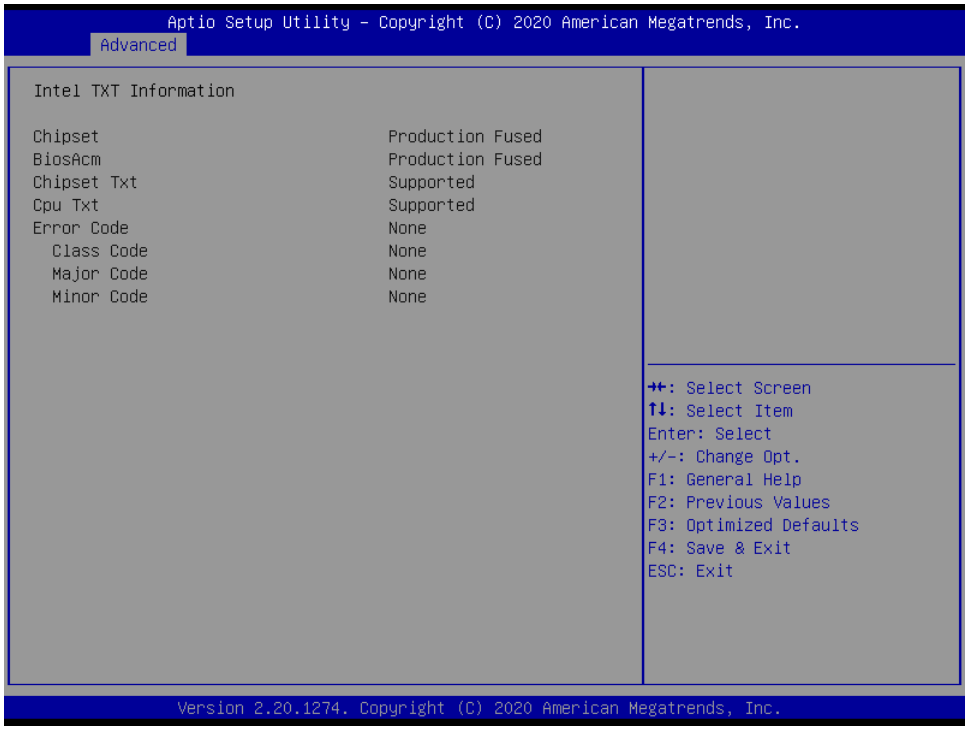
Item	Options	Description
Console Redirection	Disabled**[Default]**, Enabled	Console Redirection Enable or Disable.

3.6.2.11.1 Legacy Console Redirection Settings



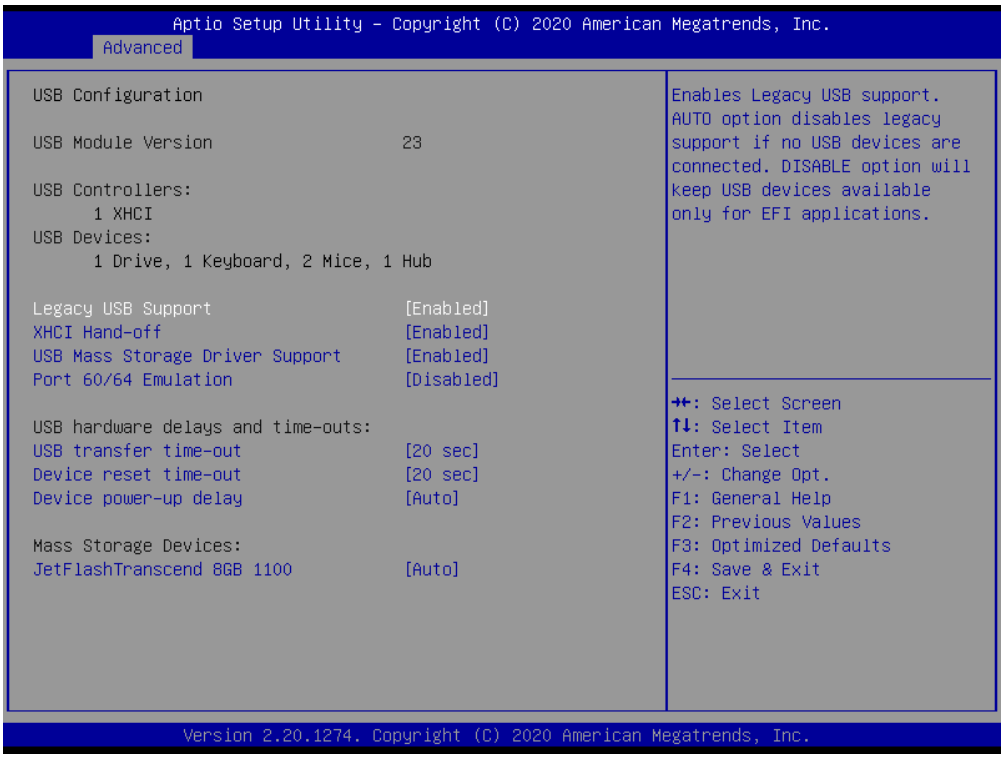
Item	Option	Description
Redirection COM Port	COM1**[Default]**,	Select a COM port to display redirection of Legacy OS and Legacy OPROM Messages.
Resolution	80x24**[Default]** 80x25	On Legacy OS, the Number of Rows and Columns supported redirection.
Redirect After POST	Always Enable**[Default]** BootLoader	When Bootloader is selected, then Legacy Console Redirection is disabled before booting to legacy OS. When Always Enable is selected, then Legacy Console Redirection is enabled for legacy OS. Default setting for this option is set to Always Enable.

3.6.2.12 Intel TXT Configuration



3.6.2.13 USB Configuration

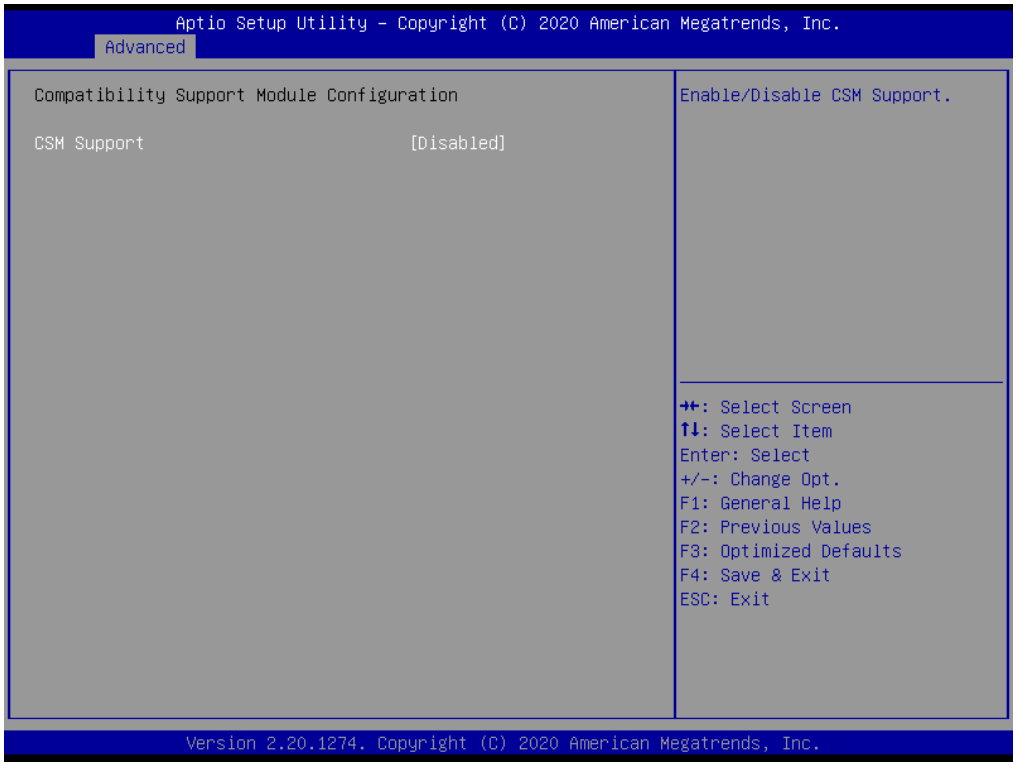
The USB Configuration menu helps read USB information and configures USB settings.



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	Enabled Disabled**[Default]**	Enable 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

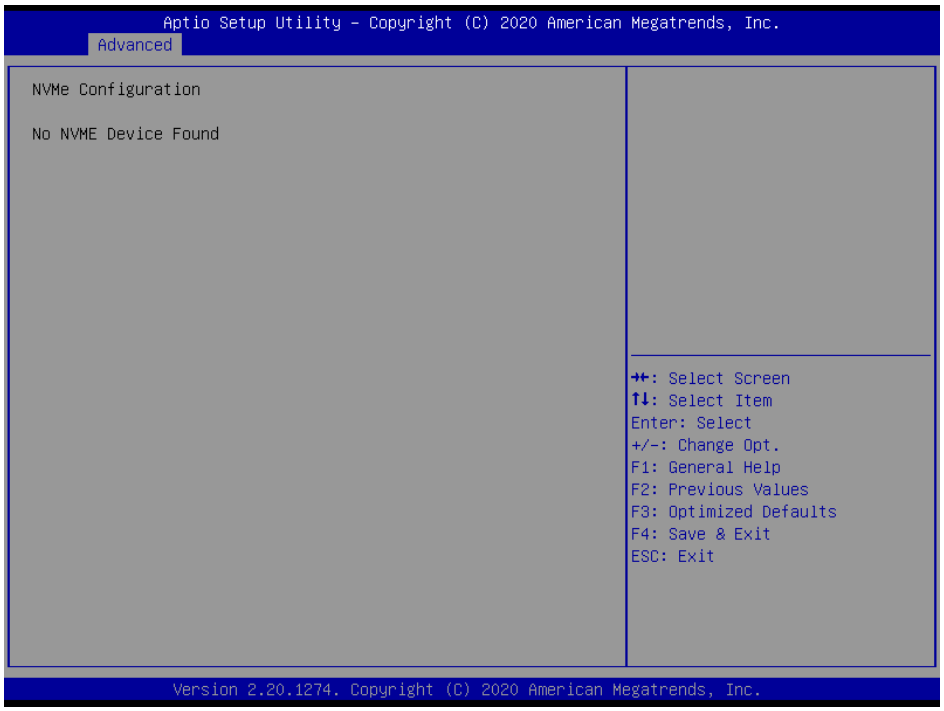
		100ms, for a Hub port the delay is taken form Hub descriptor.
JetFlashTranscend 8GB 1100	Auto**[Default]** Floppy Forced FDD Hard Disk CD-ROM	Mass storage device emulation type. 'AUTO' enumerates devices according to their media format. Optical drives are emulated as 'CDROM', drives with no media will be emulated according to a drive type.

3.6.2.14 CSM Configuration



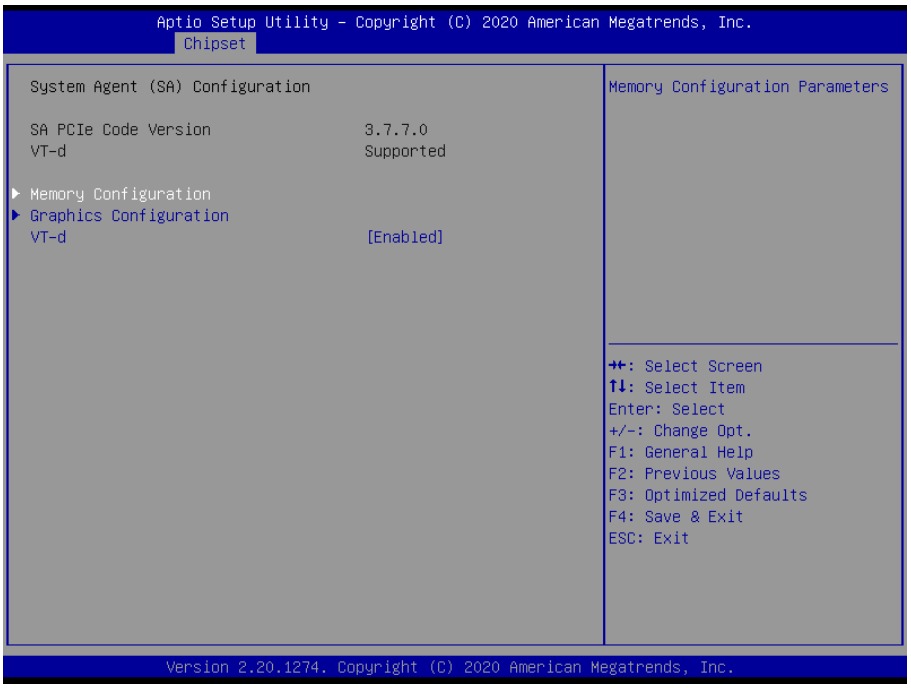
Item	Options	Description
CSM Support	Enabled Disabled**[Default]**	Enable/Disable CSM Support.

3.6.2.15 NVMe Configuration



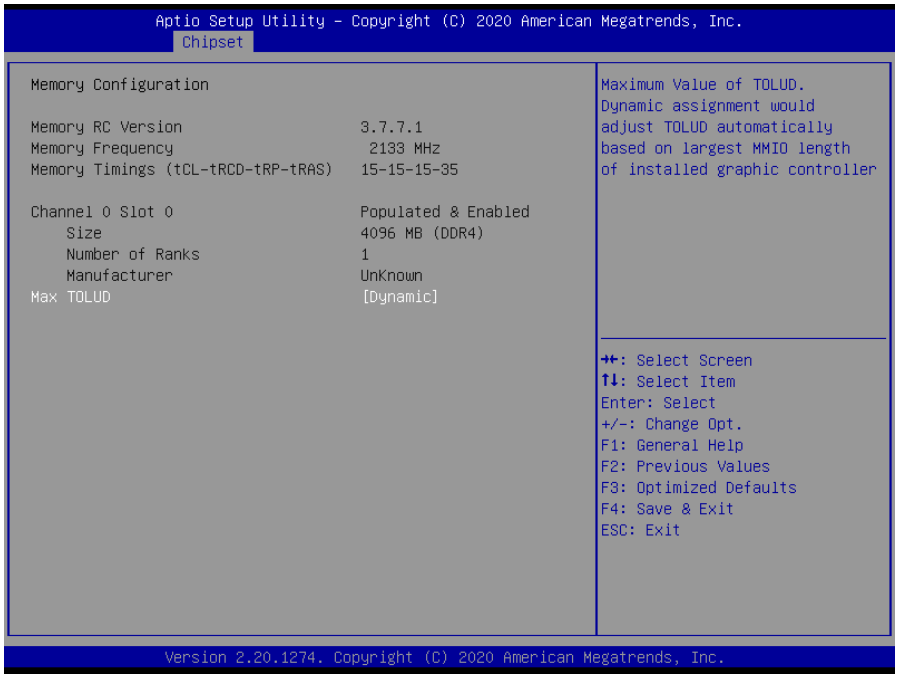
3.6.3 Chipset

3.6.3.1 System Agent (SA) Configuration



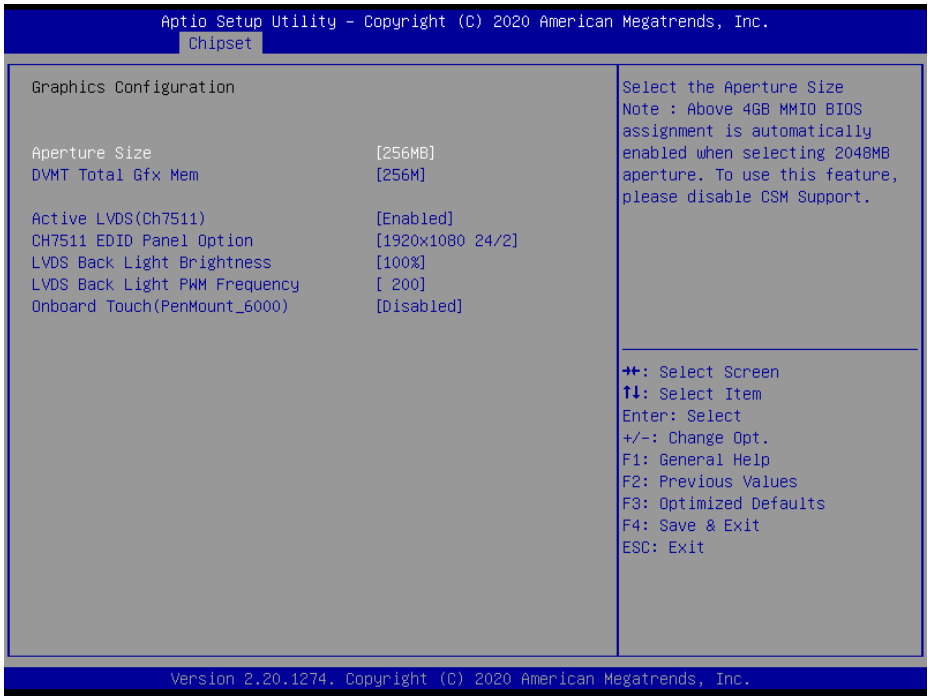
Item	Option	Description
VT-d	Enabled**[Default]** Disabled	VT-d capability.

3.6.3.1.1 Memory Configuration



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

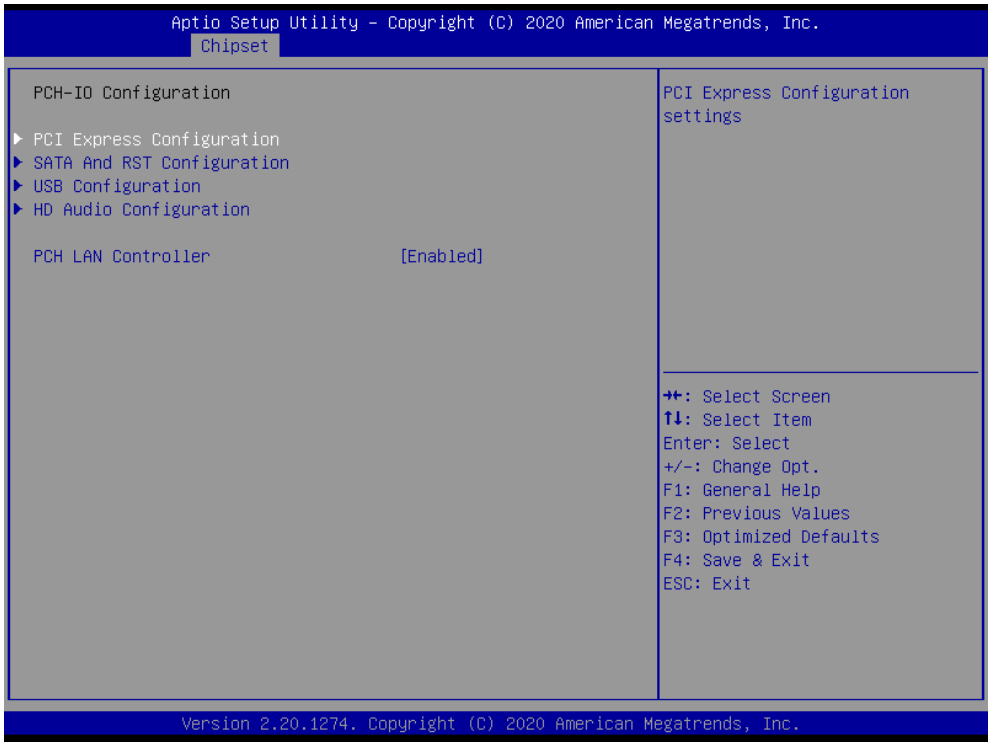
3.6.3.1.2 Graphics Configuration



Item	Option	Description
Aperture Size	128MB**[Default]** 256MB 512MB 1024MB 2048MB	Select the Aperture Size Note: Above 4GB MMIO BIOS assignment is automatically enabled when selecting 2048MB aperture. 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.
Active LVDS (CH7511)	Enabled**[Default]** Disabled	Active Internal LVDS (eDP->Ch7511-to-LVDS).
CH7511 EDID Panel Option	1024x768 24/1 800x600 18/1 1024x768 18/1 1366x768 18/1 1024x600 18/1 1280x800 18/1 1920x1200 24/2 1920x1080 18/2 1280x1024 24/2 1440x900 18/2 1600x1200 24/2	Port1-EDP to LVDS (Chrontel 7511) Panel EDID Option.

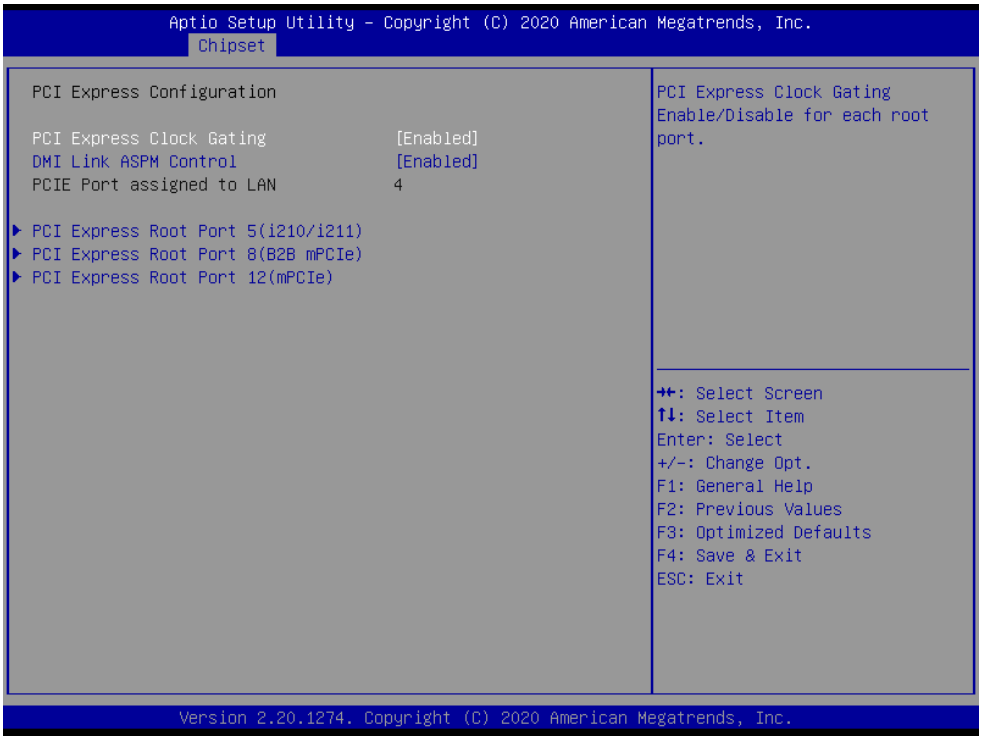
	1366x768 24/1 1920x1080 24/2**[Default]** 1680x1050 24/2	
LVDS Back Light Brightness	00% 25% 50% 75% 100%**[Default]**	Select LVDS back light PWM duty.
LVDS Back Light PWM Frequency	200**[Default]** 300 400 500 700 1k 2k 3k 5k 10k 20k	Select LVDS back light PWM Frequency.
Onboard Touch(PenMount_6000)	Disabled**[Default]** Enabled	Enabled/Disabled USB Touch.

3.6.3.2 PCH-IO Configuration



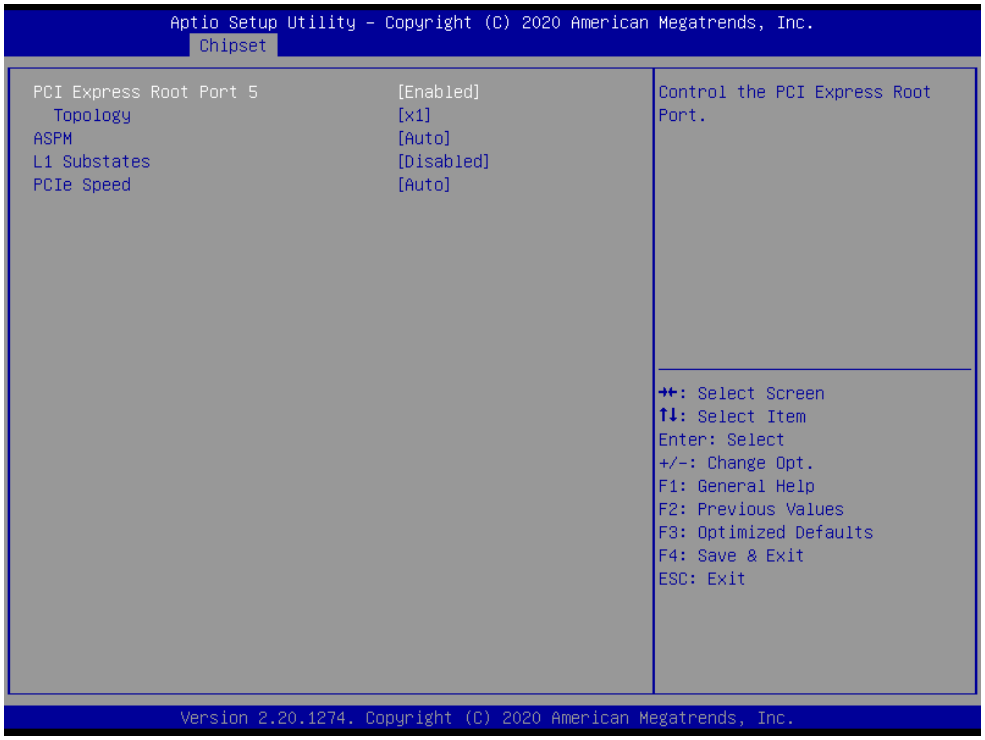
Item	Option	Description
PCH LAN Controller	Disabled Enabled**[Default]**	Enable or disable onboard NIC.

3.6.3.2.1 PCI Express Configuration



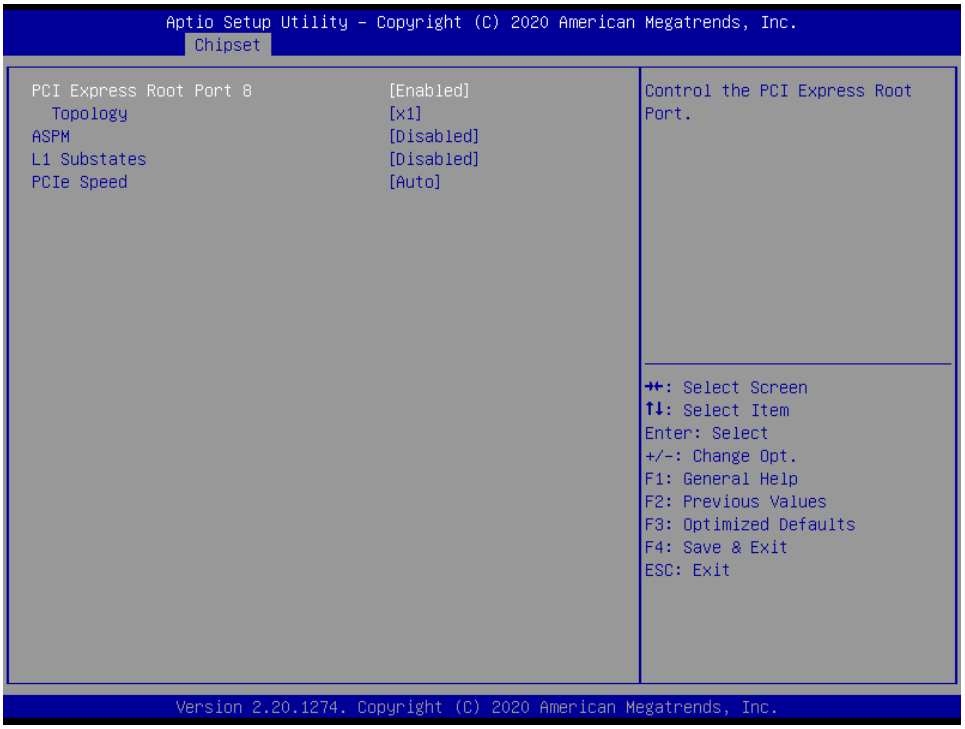
Item	Option	Description
PCI Express Clock Gating	Disabled Enabled**[Default]**	PCI Express Clock Gating Enable/Disable for each root port.
DMI Link ASPM Control	Disabled Enabled**[Default]**	The control of Active State Power Management of the DMI Link. Auto is equal to POR setting.

3.6.3.2.1.1 PCI Express Root Port5 (i210/211)



Item	Option	Description
PCI Express Root Port 5	Enabled**[Default]**, Disabled	Control the PCI Express Root Port.
Topology	Unknown x1**[Default]**, x4 Sata Express M2	Identify the SATA Topology if it is Default or ISATA or Flex or DirectConnect or M2.
ASPM	Auto**[Default]** L0sL1 L1 L0s Disabled	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	Configure PCIe speed.

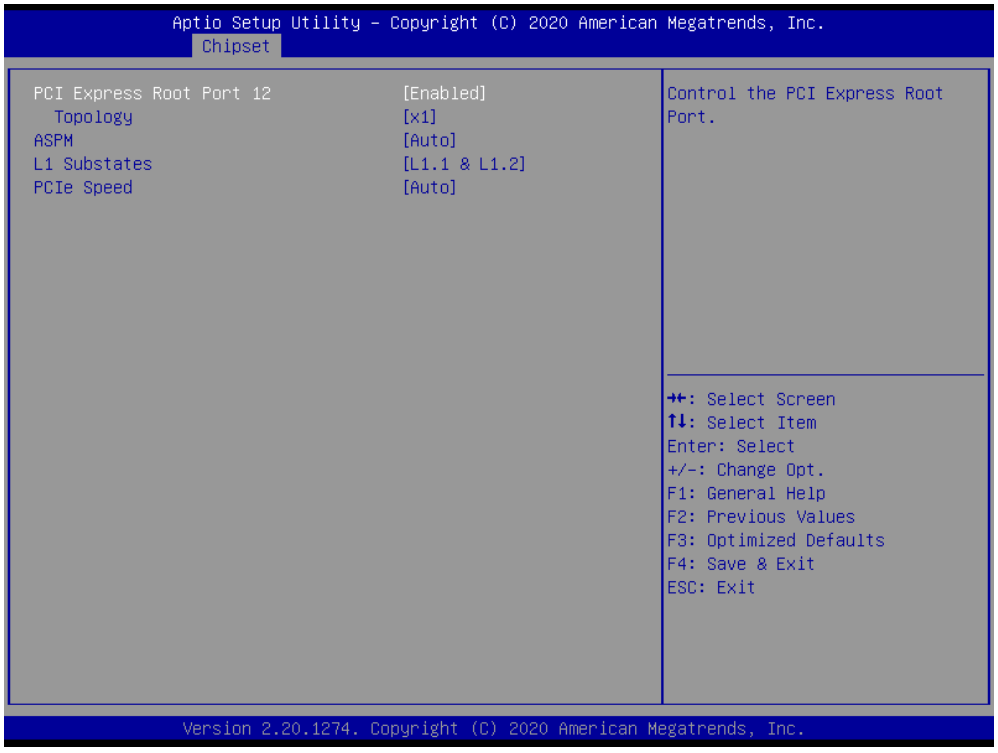
3.6.3.2.1.2 PCI Express Root Port8 (B2B mPCIe)



Item	Option	Description
PCI Express Root Port 8	Enabled**[Default]**, Disabled	Control the PCI Express Root Port.
Topology	Unknown x1**[Default]**,	Identify the SATA Topology if it is Default or ISATA or Flex or DirectConnect or M2.

	x4 Sata Express M2	
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.

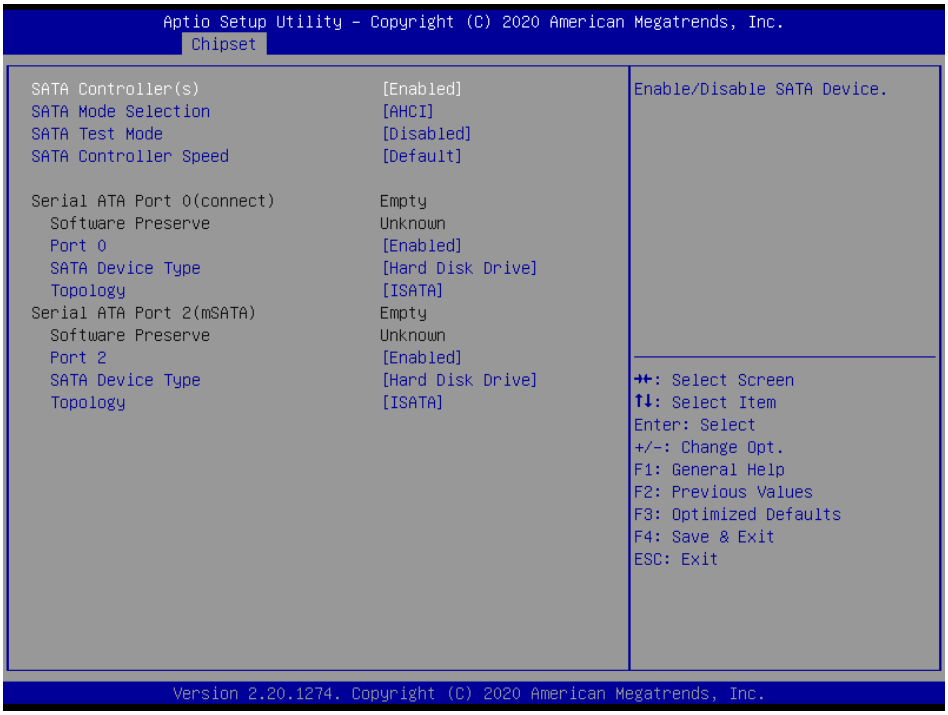
3.6.3.2.1.3 PCI Express Root Port12 (mPCIe)



Item	Option	Description
PCI Express Root Port 12	Enabled**[Default]**, Disabled	Control the PCI Express Root Port.
Topology	Unknown x1**[Default]**, x4 Sata Express M2	Identify the SATA Topology if it is Default or ISATA or Flex or DirectConnect or M2.
ASPM	Auto**[Default]** L0sL1	Set the ASPM Level: Force L0s – Force all links to L0s State AUTO – BIOS auto

	L1 L0s Disabled	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	Configure PCIe speed.

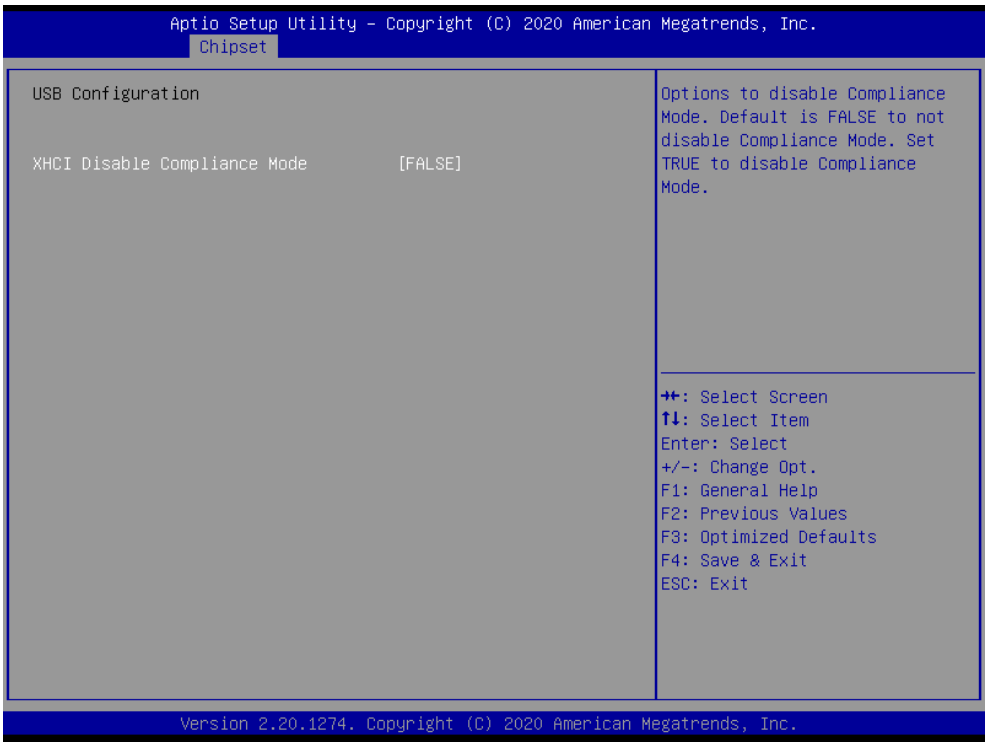
3.6.3.2.2 SATA And RST Configuration



Item	Option	Description
SATA Controller(s)	Enabled**[Default]** Disabled,	Enable/Disable SATA Device.
SATA Mode Selection	AHCI**[Default]** RAID	Determines how SATA controller(s) operate.
SATA Test Mode	Enabled Disabled**[Default]**	Test Mode Enable/Disable (Loop Back).
SATA Controller Speed	Default**[Default]** Gen1 Gen2 Gen3	Indicates the maximum speed the SATA controller can support.
Port 0	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.
Topology	Unknown ISATA**[Default]**	Identify the SATA Topology if it is Default or ISATA or Flex or DirectConnect or M2.

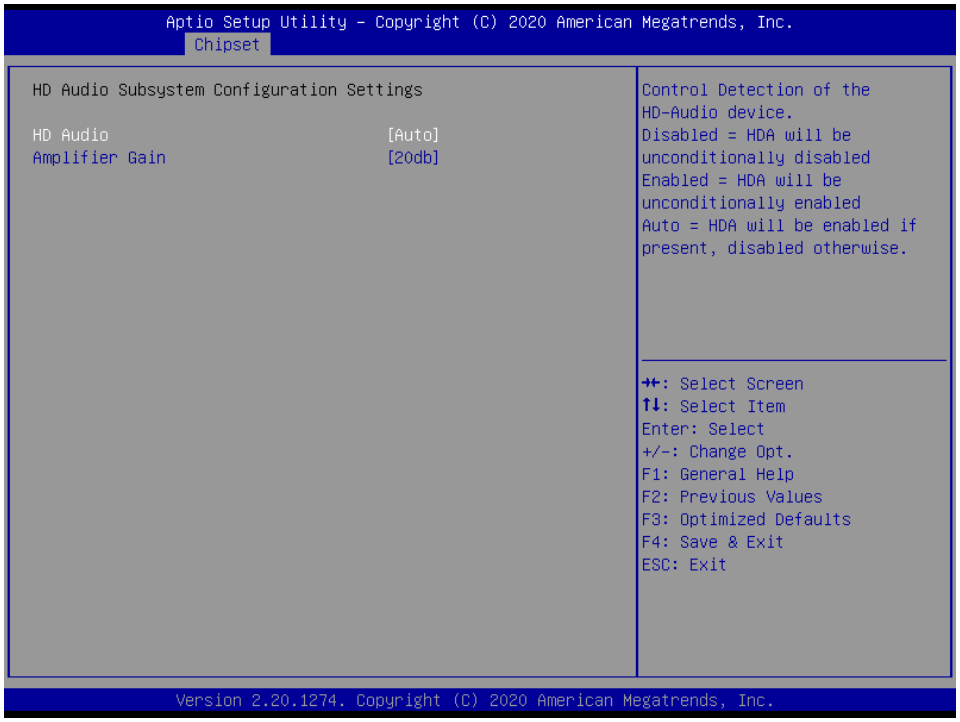
	Direct Connect Flex M2	
Port 1	Enabled**[Default]** Disabled,	Enable or Disable SATA Port.
SATA Device Type	Hard Disk Drive**[Default]** Solid State Drive	Identify the SATA port is connected to Solid State Drive or Hard Disk Drive.
Topology	Unknown ISATA**[Default]** Direct Connect Flex M2	Identify the SATA Topology if it is Default or ISATA or Flex or DirectConnect or M2.

3.6.3.2.3 USB Configuration



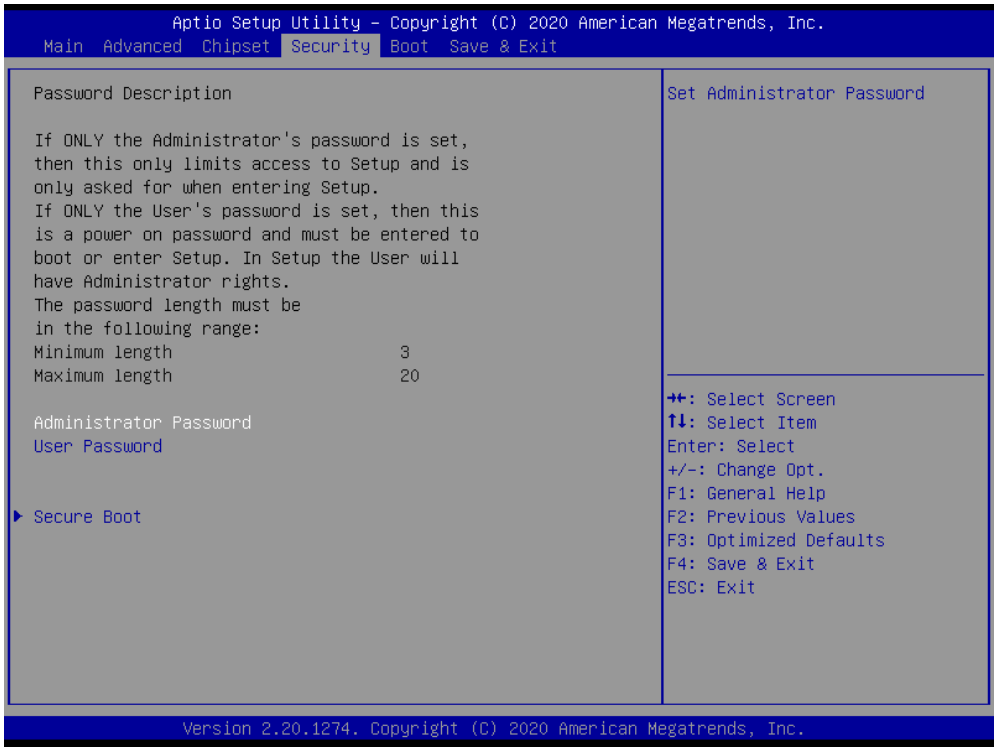
Item	Option	Description
XHCI Disable Compliance Mode	FALSE**[Default]**, TRUE	Option to disable Compliance Mode. Default is FALSE to not disable Compliance Mode. Set TRUE to disable Compliance Mode.

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.
Amplifier Gain	20db**[Default]**, 26db 32db 36db	Amplifier Gain.

3.6.4 Security



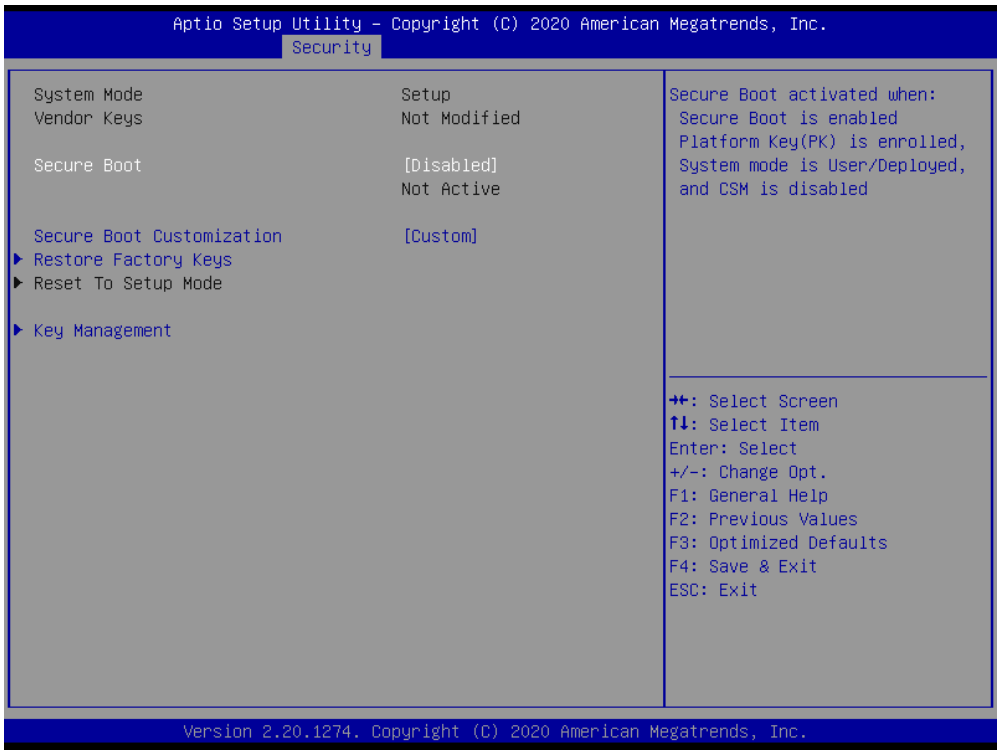
- **Administrator Password**

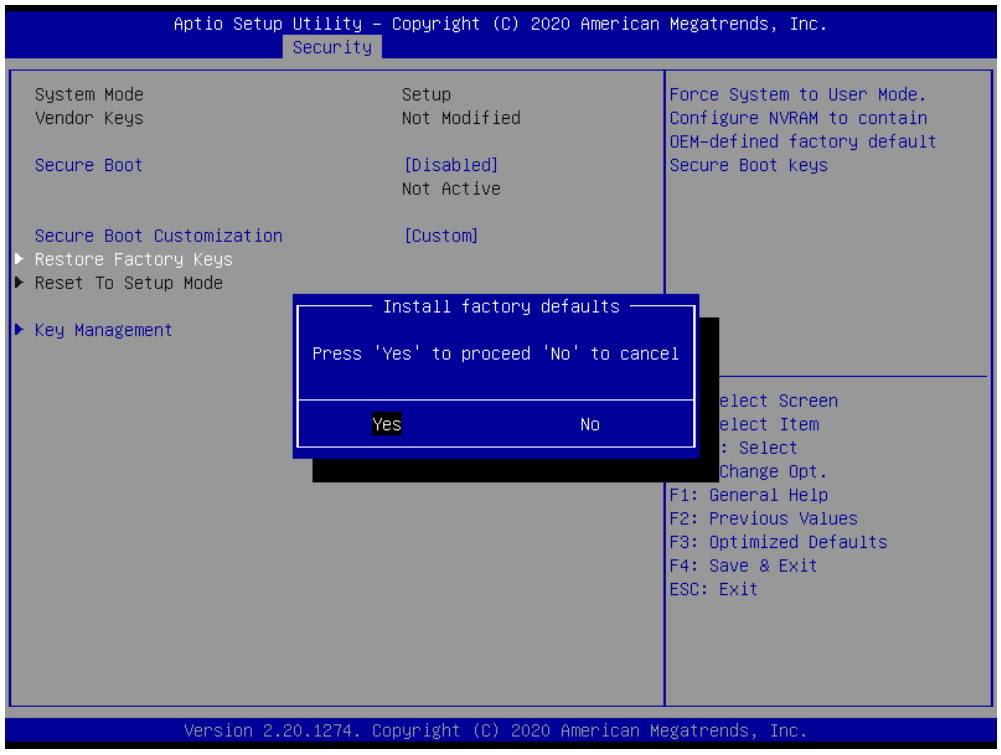
Set setup Administrator Password

- **User Password**

Set User Password

3.6.4.1 Secure Boot menu

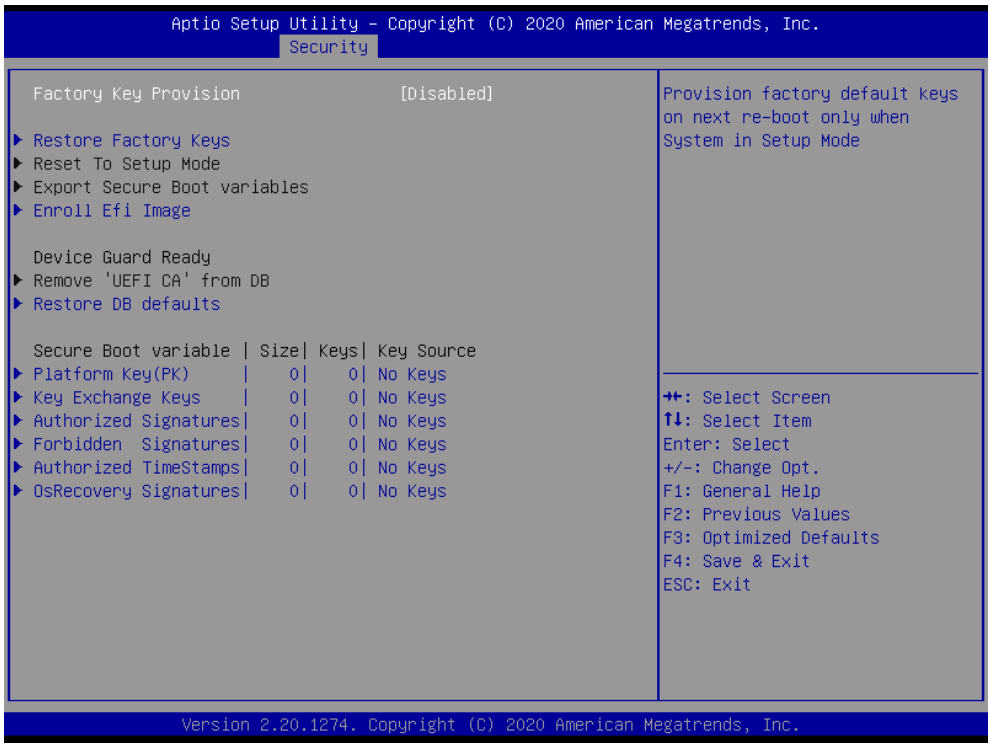




Item	Option	Description
Secure Boot	Disabled**[Default]** Enabled	Secure Boot can be enabled if 1.System running in User mode with enrolled Platform Key(PK) 2.CSM function is disabled.

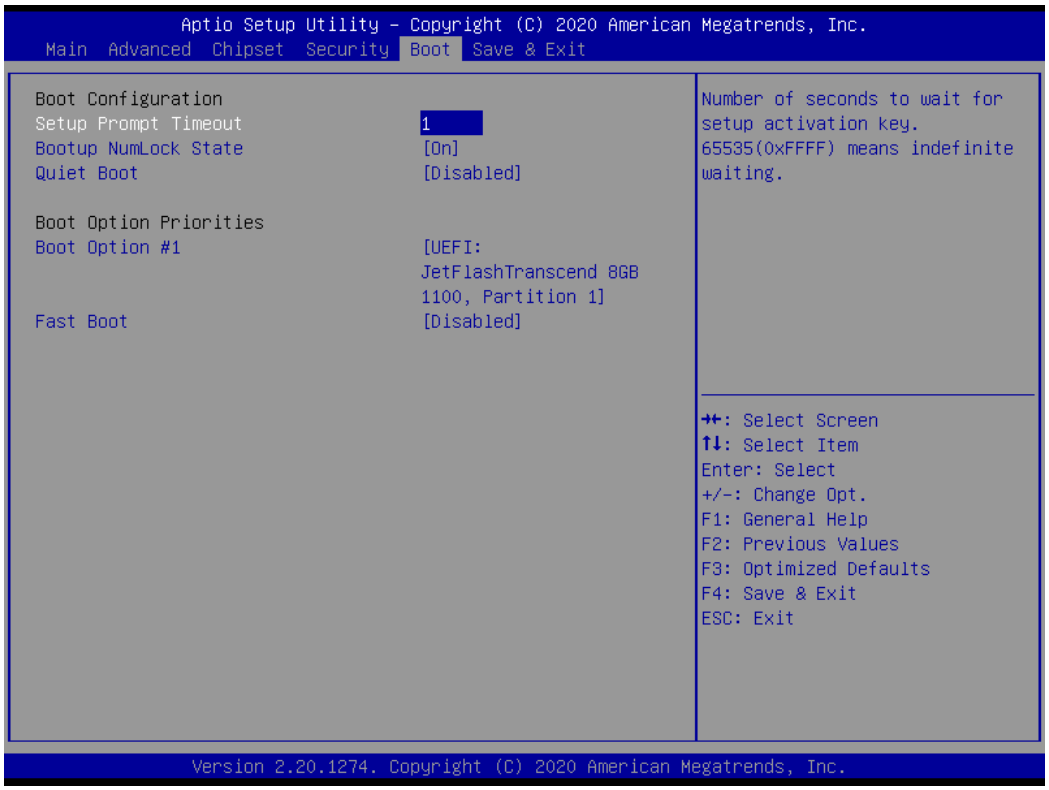
Secure Boot Customization	Standard Custom**[Default]**	Customizable Secure Boot mode: In Custom mode Secure Boot Policy variables can be configured by a physically present user without full authentication.

3.6.4.1.1 Key Management



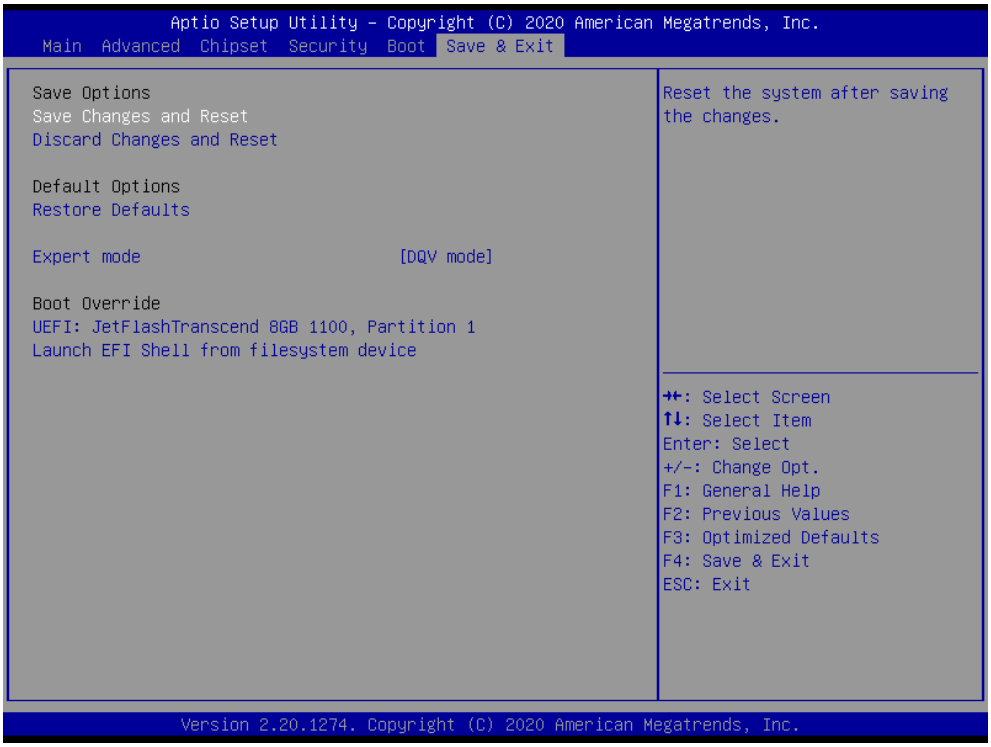
Item	Option	Description
Factory Key Provision	Disabled**[Default]** Enabled,	Provision factory default keys on next re-boot only when System in Setup Mode.

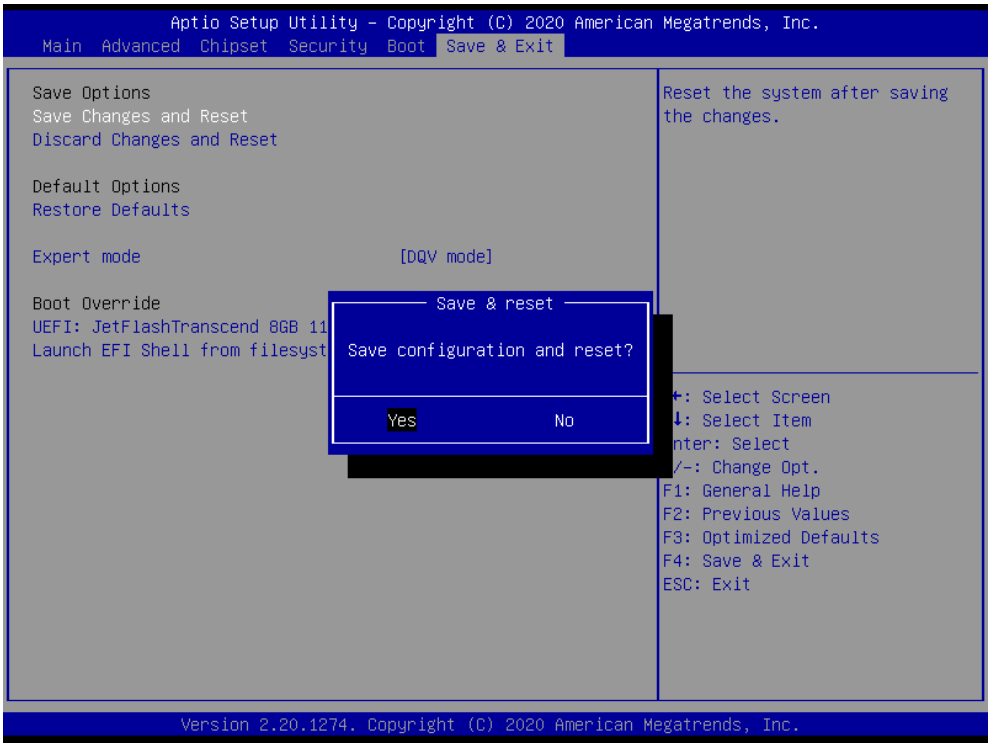
3.6.5 Boot



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	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 Expert mode

Switch Expert mode or DQV mode.
Option: DQV mode **[Default]**/Expert mode

3.6.6.5 Launch EFI Shell from filesystem device

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