ARC-21W33

21.5" Intel® Pentium®/Celeron®/Atom™ SoC Processor Apollo Lake Fanless Rugged Touch Panel PC with IET Expansion

Quick Reference Guide

2nd Ed – 01 October 2024

Copyright Notice

Copyright © 2024 Avalue Technology Inc., ALL RIGHTS RESERVED.

Part No. E2017A140A1R

Declaration of Conformity



This device complies with part 15 fcc rules. Operation is subject to the following two conditions:

(1) This device may not cause harmful interference.

(2) This device must accept any interference received including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a class "a" digital device, pursuant to part 15 of the fcc rules.

These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications.

Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

CE statement

The product(s) described in this manual complies with all application European Union (CE) directives if it has a CE marking. For computer systems to remain CE compliant, only CE-compliant parts may be used. Maintaining CE compliance also requires proper cable and cabling techniques.

Notice

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

Copyright Notice

© 2024 by Avalue Technology Inc. All rights are reserved. No parts of this manual may be copied, modified, or reproduced in any form or by any means for commercial use without the prior written permission of Avalue Technology Inc. All information and specification provided in this manual are for reference only and remain subject to change without prior notice.

Acknowledgements

Intel and Pentium are trademarks of Intel Corporation.

Microsoft Windows is registered trademark of Microsoft Corp.

All other product names or trademarks are properties of their respective owners.

Disclaimer

This manual is intended to be used as a practical and informative guide only and is subject

to change without notice. It does not represent a commitment on the part of Avalue. This product might include unintentional technical or typographical errors. Changes are periodically made to the information herein to correct such errors, and these changes are incorporated into new editions of the publication.

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 and Assistance

1. Visit the Avalue website at https://www.avalue.com/ where you can find the latest information about the product.
2. Contact your distributor or our technical support team or sales representative for technical support if you need additional assistance. Please have following information ready before you call:

- Product name and serial number
- Description of your peripheral attachments
- Description of your software (operating system, version, application software, etc.)
- A complete description of the problem
- The exact wording of any error messages

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

Product Warranty (Returns & Warranties policy)

1. Purpose

Avalue establishes the following maintenance specifications and operation procedures for providing the best quality of service and shortened repair time to our customers.

2. Warranty

2.1 Warranty Period

Avalue endeavors to offer customers the most comprehensive post-sales services and protection; besides offering a 2-year warranty for standard Avalue products, an extended warranty service can also be provided based on additional request from the customer. Within the warranty period, customers are entitled to receive comprehensive and prompt repair and warranty.

Standard products manufactured by Avalue are offered a 2-year warranty, from the date of delivery from Avalue. For ODM/OEM products manufactured by Avalue or PCBA with conformal coating, will follow up the define warranty of the agreement, otherwise will be offered 1-year warranty for ODM/OEM products but non-warranty for PCBA with conformal coating. For outsourcing parts kit by Avalue (ex: Motherboard, LCD touch panel, CPU, RAM, HDD) are offered a 6-month warranty, and Mobile/Tablet PC battery are offered a warranty of the half year, from the date of delivery by Avalue. Products before the mass production stage, i.e. engineering samples are not applied in this warranty or service policy. For extended warranty and cross-territory services, product defects resulting from design, production process or material are covered by the pre-set warranty period after the date of delivery from Avalue. For non-Avalue products, the product warranty and repair time shall be based on the service standards provided by the original manufacturer; in principle Avalue will provide these products a warranty service for no more than one year.

2.2 Maintenance services within the warranty period

In the case of Avalue product DOA (Defect-on-Arrival) when the customer finds any defect within 1 month after the delivery, Avalue will replace it with a new product in a soonest way. Except for custom products, once the customer is approved of a Cross-Shipment Agreement, which allows for delivery a new product to the customer before receiving the defective one, Avalue will immediately proceed with new product replacement for the said DOA case. On validation of the confirmed defect, Avalue is entitled to reserve the right whether to provide a new product for replacement. For the returned defective new product, it is necessary to verify that there shall be no bruise, alteration, scratch or marking to the appearance, and that none of the delivered accessories missing; otherwise, the customer will be requested to pay a processing fee. On the other hand, if the new product defect is resulting from incorrect configuration or erroneous use by the user instead of any problem of the hardware itself, the customer will also be requested to pay for relevant handling fees.

As for other conditions, Avalue will handle defects by way of repair. The customer will be requested to send the defective product to an Avalue authorized service center, and Avalue will return the repaired product back to the customer as soon as possible.

2.3 Ruling of an out-of-warranty defect

The following situations are not included in the warranty:

- The warranty period has expired.
- Product has been altered or its label of the serial number has been torn off.
- Product functionality issues resulting from improper use by the user, unauthorized dismantle or alteration, unfit operation environment, improper maintenance, accident or other causes. Avalue reserves the right for the ruling of the aforementioned situations.
- Product damage resulting from lightning, flood, earthquake or other calamities.
- The warranty rules of non-Avalue products and accessories shall be in accordance with standards set up by the original manufacturer. These products and accessories include RAM, HDD, FDD, CD-ROM, CPU, FAN, etc.
- Product upgrade request or test request submitted by the customer after expiration of the warranty.
- PCBA with conformal coating.
- Avalue semi-product and outsourced products without Avalue serial number.
- Products before the mass production stage, i.e. engineering samples.

3. Procedure for sending for repair

3.1 Attain a RMA number

A customer's rejected product returned for repair shall have a RMA (Return Merchandise Authorization) number. Without a RMA number, Avalue will not provide any repair service for the rejected product, and the product will be returned to the customer at customer's cost. Avalue will not issue any notice for the return of the product.

Each returned product for repair shall have a RMA number, which is simply the authorization of the return for repair; it is not a guarantee that the returned goods can be repaired or replaced. For applying for a RMA number, the customer may enter the eRMA webpage of Avalue https://www.avalue.com/en/member and log-in with an account number and a password authorized by Avalue. The system will then automatically issue a RMA number.

When applying for the RMA number, it is essential to fill in basic information of the customer and the product, together with detailed description of the problem encountered. If possible, avoid using ambiguous words such as "does not work" or "problematic". Without a substantial description of the problem, it is hard to start the repair and will cause prolonged repair time. Lacking detailed statement of fault steps also makes the problem hard to be identified, sometimes resulting in second-time repairs.

In case the customer can't define the cause of problem, please contact Avalue application engineers. Sometimes when the problem can be resolved even before the customer sends back the product.
On the other hand, if the customer only returns the key parts to Avalue for repair, it is necessary that the serial number of the entire unit is given in the "Problem Description" field, so that warranty period can be ruled accordingly; or Avalue will handle the case as an Out-of- warranty case.

3.2 Return of faulty product for repair

It is recommended that the customer not to return the accessories (manual, connection cables, etc.) with the products for repair, devices such as CPU, DRAM, CF memory card, etc., shall also be removed from the faulty goods before return for repair. If these devices are relevant to described repair problems and necessary to be returned with the goods; please clearly indicate the items included in the eRMA application form. Avalue shall not be responsible for any item that is not itemized. Moreover, make sure the problem(s) are detailed in the "Problem Description" field.
In the list of delivery, the customer may fill-in a value which is lower than the actual value, to prevent customs levying a higher tax over the excessive value of the return goods. The customer shall be held responsible for extra fees caused by this. We strongly recommend that "Invoice for customs purpose only with no commercial value" be indicated on the delivery note. Also for the purpose of expedited handling, please printout the RMA number and put it in the carton, also indicate the number outside of the carton, with the recipient addressing to Avalue RMA Department.
When returning the defective product, please use an anti-static bag or ESD material to pack it properly. In case of improper packing resulting in damages in the transportation process, Avalue reserves the right to reject the un-repaired faulty good at the customer's costs. Furthermore, it is suggested that the faulty goods shall be sent via a door-to-door courier service. The customer shall be held responsible for any customs clearance fee or extra expenses if Air-Cargo is used for the delivery.
In case of a DOA situation of a new product, Avalue will be responsible for the product and the freight. If the faulty goods are within the warranty period, the sender will take responsibility for the freight. For an out-of-warranty case, the customer shall be responsible for the freight of both trips.

3.3 Maintenance Charge

Avalue will charge a moderate repair fee for the following conditions:

- The warranty period has expired.
- Product has been altered or its label of the serial number has been torn off.
- Product functionality issues resulting from improper use by the user, unauthorized dismantle or alteration, unfit operation environment, improper maintenance, accident

or other causes. Avalue reserves the right for the ruling of the aforementioned situations.

- Product damage resulting from lightning, flood, earthquake or other calamities.
- The warranty rules for non-Avalue products and accessories shall be in accordance with standards set up by the original supplier. These products and accessories include RAM, HDD, FDD, CD-ROM, CPU, FAN, etc.
- Product upgrade request or test request submitted by the customer after expiry of the warranty.
- PCBA with conformal coating.
- Avalue semi-product and outsourced products without Avalue serial number
- Products before the mass production stage, i.e. engineering samples.
- In case the products received are examined as NPF (No Problem Found) within the warranty period, the customer shall be responsible for the freight of both trips.
- Please contact your local distributor to examine in advance to prevent unnecessary freight cost.

For system failure of out-of-warranty products, Avalue will provide a quotation prior to repair service. When the customer applies for the cost, please refer to the Quotation number. In case the customer does not return the DOA product that has already been replaced by a new one, or the customer does not sign back the quotation of the out-of-warranty maintenance, Avalue reserves the right of whether or not to provide the repair service. In case the customer does not reply in 3 months, Avalue shall directly scrap or return the product back to customer at customer's cost without further notice to the customer.

3.4 Maintenance service of phased-out products

For servicing phased-out products, Avalue provides an extended period, starting the date of phase-out, as a guaranteed maintenance period of such products, for continuance of the maintenance service to meet customer's requirements. In case of unexpected factors causing Avalue to be unable to repair/replace a warranted but phased-out product, Avalue will, depending on the availability, upgrade the product (free of charge with continued warranty period as of the original product), or, give partial refund (based on the length of the remaining warranty period) to solve this kind of problem.

3.5 Maintenance Report

On completion of repair of a defective product, a Maintenance Report indicating the maintenance result and part(s) replaced (if any) will be sent to the customer together with the product. If the customer demands an additional maintenance analysis report, a service fee of various level will be charged depending on the warranty status. In case the analysis result shows that the defect attributes to Avalue's faulty design or process, the analysis fee will be exempted.

4. Service Products

Avalue provides service products to manage with different customer needs. Should you have any need, please consult to Avalue Sales Department.

Defect Analysis Report (DAR)

Avalue provides DAR (Defect Analysis Report) services aiming to elevating customer satisfaction. A DAR includes defect cause identification/verification/suggestion and improvement precautions, with instructions on correct usage for the avoidance of any reoccurrence.

Upgrade Service

Avalue is capable to provide system upgrade service for customization requirements. This upgrade service is applicable for main parts, such as CPU, memory, HDD, SSD, storage devices; also replacements motherboards of systems. Please contact Avalue sales for details to evaluate the possibility of system upgrade service and obtain information of lead time and price.

Safety Instructions

Safety Precautions

Before installing and using this device, please note the following precautions.

1. Read these safety instructions carefully.
2. Keep this User's Manual for future reference.
3. Disconnected this equipment from any AC outlet before cleaning.
4. For plug-in equipment, the power outlet socket must be located near the equipment and must be easily accessible.
5. Keep this equipment away from humidity.
6. Put this equipment on a reliable surface during installation. Dropping it or letting it fall may cause damage.
7. Make sure the voltage of the power source is correct before connecting the equipment to the power outlet.
8. Use a power cord that has been approved for using with the product and that it matches the voltage and current marked on the product's electrical range label. The voltage and current rating of the cord must be greater than the voltage and current rating marked on the product.
9. Position the power cord so that people cannot step on it. Do not place anything over the power cord.
10. All cautions and warnings on the equipment should be noted.
11. If the equipment is not used for a long time, disconnect it from the power source to

avoid damage by transient overvoltage.

12. Never pour any liquid into an opening. This may cause fire or electrical shock.

13. Never open the equipment. For safety reasons, the equipment should be opened only by qualified service personnel. If one of the following situations arises, get the equipment checked by service personnel:

- The power cord or plug is damaged.
- Liquid has penetrated into the equipment.
- The equipment has been exposed to moisture.
- The equipment does not work well, or you cannot get it work according to the user's manual.
- The equipment has been dropped and damaged.
- The equipment has obvious signs of breakage.

14. CAUTION: Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer.

15. Equipment intended only for use in a RESTRICTED ACCESS AREA.

Explanation of Graphical Symbols

	Warning	A WARNING statement provides important information about a potentially hazardous situation which, if not avoided, could result in death or serious injury.
	Caution	A CAUTION statement provides important information about a potentially hazardous situation which, if not avoided, may result in minor or moderate injury to the user or patient or in damage to the equipment or other property.
	Note	A NOTE provides additional information intended to avoid inconveniences during operation.
		Direct current.
		Alternating current
		Stand-by, Power on
		FCC Certification
		CE Certification
		Follow the national requirements for disposal of equipment.
		Stacking layer limit
		This side up

		Fragile Packaging
		Beware of water damage, moisture-proof
		Carton recyclable
		Handle with care
		Follow operating instructions of consult instructions for use.

Disposing of your old product

WARNING:
There is danger of explosion if the battery is mishandled or incorretly replaced. Replace only with the same type of battery. Do not disassemble it or attempt to recharge it outside the system. Do not crush, puncture, dispose of in fire, short the external contacts, or expose to water or ther liquids. Dispose of the battery in accordance with local regulations and instructions from your service provider.

CAUTION:
- Lithium Battery Caution: Danger of explosion if battery is incorrectly replaced. Replace only with same or equivalent type. Dispose batteries according to manufacturer's instructions.
- Disposal of a BATTERY into fire or a hot oven, or mechanically crushing or cutting of a BATTERY, that can result in an EXPLOSION
- Leaving a BATTERY in an extremely high temperature surrounding environment that can result in an EXPLOSION or the leakage of flammable liquid or gas.
- A BATTERY subjected to extremely low air pressure that may result in an EXPLOSION or the leakage of flammable liquid or gas.

Mise en garde!
AVERTISSEMENT : Il existe un risque d'explosion si la batterie est mal manipulée ou remplacée de manière incorrecte. Remplacez uniquement par le même type de batterie. Ne le démontez pas et ne tentez pas de le recharger en dehors du système. Ne pas écraser, percer, jeter au feu, court-circuiter les contacts externes ou exposer à l'eau ou à d'autres liquides. Jetez la batterie conformément aux réglementations locales et aux instructions de votre fournisseur de services.

MISE EN GARDE:
- Pile au lithium Attention : Danger d'explosion si la pile n'est pas remplacée correctement. Remplacer uniquement par un type identique ou équivalent. Jetez les piles conformément aux instructions du fabricant.
- L'élimination d'une BATTERIE dans le feu ou dans un four chaud, ou l'écrasement ou le découpage mécanique d'une BATTERIE, pouvant entraîner une EXPLOSION
- Laisser une BATTERIE dans un environnement à température extrêmement élevée pouvant entraîner une EXPLOSION ou une fuite de liquide ou de gaz inflammable.
- UNE BATTERIE soumise à une pression d'air extrêmement basse pouvant entraîner une EXPLOSION ou une fuite de liquide ou de gaz infl

Content

1. Getting Started 17
1.1 Safety Precautions 17
1.2 Packing List 17
1.3 System Specifications 19
1.4 System Overview 23
1.4.1 I/O View 23
1.5 System Dimensions 24
2. Hardware Configuration 25
2.1 ARC-21W33 connector mapping 26
2.1.1 Serial port 1 connector (COM1) 26
2.1.2 Serial port 2 connector (COM2) 26
2.2 Installing Hard Disk & Memory 27
2.3 Installing ARC-BYT DB 29
2.4 ARC-APL Overviews 31
2.5 ARC-APL Jumper and Connector list 32
2.6 ARC-APL Jumpers & Connectors settings 34
2.6.1 Clear CMOS (JBAT1) 34
2.6.2 Serial port 1/2 pin9 signal select (JRI1/JRI2) 34
2.6.3 PWM Level select (JPWM_SEL1) 35
2.6.4 AT/ATX Input power select (JAT1) 35
2.6.5 Serial port 1 in RS-232/422/485 mode (JCOM_SEL1) 36
2.6.6 LCD Inverter connector (JBKL1) 36
2.6.7 On-board header for USB2.0 (JUSB1) 37
2.6.8 On-board header for USB2.0 (JUSB2) 37
2.6.9 Battery connector (JBAT1) 38
2.6.10 LCD backlight brightness adjustment (JVR_BTN1) 38
2.6.11 LVDS connector (LVDS1) 39
2.6.12 AMPLIFIER_R (JSPR1) 40
2.6.13 AMPLIFIER_L (JSPL1) 40
2.6.14 BIOS SPI connector (BIOS_SPI1) 41
2.6.15 EC Debug connector (JEC1) 41
2.6.16 B2B connector (JB2B1) 42
2.6.17 Touch panel connector (JTP1) 43
2.6.18 SATA Power connector (SATA_PWR1) 43

2.6.19 FPC connector (JFPC1) 44
2.6.20 Battery connector (JUPS1) 44
2.6.21 Power Button (JBTN1) 45
2.6.22 Miscellaneous setting connector (JFP1) 45
2.6.23 LED Board connector (JLED1) 46
2.6.24 Low pin count connector (JLPC1) 46
2.6.25 Power connector (PWR1) 47
2.7 ARC-BYT DB-A/B/C/D/E/F/G/H/K Overviews 48
2.7.1 ARC-BYT DB-A 48
2.7.2 ARC-BYT DB-B 48
2.7.3 ARC-BYT DB-C 48
2.7.4 ARC-BYT DB-D 49
2.7.5 ARC-BYT DB-E 49
2.7.6 ARC-BYT DB-F 49
2.7.7 ARC-BYT DB-G 50
2.7.8 ARC-BYT DB-H 50
2.7.9 ARC-BYT DB-K 50
2.8 ARC-BYT DB-A/B/C/D/E/F/G/H/K Connector list 51
2.8.1 ARC-BYT DB-A 51
2.8.2 ARC-BYT DB-B 51
2.8.3 ARC-BYT DB-C 51
2.8.4 ARC-BYT DB-D 51
2.8.5 ARC-BYT DB-E 51
2.8.6 ARC-BYT DB-F 52
2.8.7 ARC-BYT DB-G 52
2.8.8 ARC-BYT DB-H 52
2.8.9 ARC-BYT DB-K 52
2.9 ARC-BYT DB-D Connectors settings 54
2.9.1 Serial Port 1 connector (D_COM1) 54
2.9.2 Serial Port 2 connector (D_COM2) 54
2.10 ARC-BYT DB-E Jumpers & Connectors settings 55
2.10.1 CAN2.0 Switch (E_JCAN20) 55
2.10.2 For user update FW (E_JBOOT0) 55
2.10.3 For user update FW (E_JIAP1) 56
2.11 ARC-BYT DB-F Connectors settings 58
2.12 ARC-BYT DB-G Connectors settings 59
2.12.1 Serial Port 1 connector (G_COM1) 59
2.12.2 Serial Port 2 connector (G_COM2) 59
2.12.3 Serial Port 3 connector (G_COM3) 60
2.13 ARC-BYT DB-H Jumpers settings 60

2.13.1 USB Power selector (H_USB_PWR_SEL1) 60
2.14 ARC-BYT DB-H Connectors settings 61
2.14.1 Serial Port 1 connector (H_COM1) 61
2.14.2 Serial Port 2 connector (H_COM2) 61
2.15 ARC-BYT DB-K Connectors settings 62
2.15.1 Serial Port 1 connector (I_COM1) 62
2.15.2 Serial Port 2 connector (I_COM2) 62
3. BIOS Setup 63
3.1 Introduction 64
3.2 Starting Setup 64
3.3 Using Setup 65
3.4 Getting Help 66
3.5 In Case of Problems 66
3.6 BIOS setup 67
3.6.1 Main Menu 67
3.6.1.1 System Language 68
3.6.1.2 System Date 68
3.6.1.3 System Time 68
3.6.2 Advanced Menu 68
3.6.2.1 Trusted Computing 69
3.6.2.2 APCI Settings 69
3.6.2.3 IT8528 Super IO Configuration 71
3.6.2.3.1 Serial Port 1 Configuration 72
3.6.2.3.2 Serial Port 2 Configuration 72
3.6.2.3.3 Serial Port 3 Configuration 73
3.6.2.3.4 Serial Port 4 Configuration 73
3.6.2.3.5 Serial Port 5 Configuration 74
3.6.2.4 H/W Monitor 74
3.6.2.5 S5 RTC Wake Settings 75
3.6.2.6 Serial Port Console Redirection 75
3.6.2.6.1 Legacy Console Redirection Settings 76
3.6.2.7 CPU Configuration 76
3.6.2.7.1 Socket 0 CPU Information 77
3.6.2.7.2 CPU Power Management Configuration 77
3.6.2.8 Network Stack Configuration 78
3.6.2.9 CSM Configuration 79
3.6.2.10 NVMe Configuration 79
3.6.2.11 USB Configuration 80
3.6.2.12 Security Configuration 81
3.6.3 Chipset 81

3.6.3.1 North Bridge 82
3.6.3.2 South Bridge 83
3.6.3.3 Uncore Configuration 83
3.6.3.4 South Cluster Configuration 85
3.6.3.4.1 HD-Audio Configuration 85
3.6.3.4.2 PCI Express Configuration 86
3.6.3.4.2.1 PCI Express Root Port 3 86
3.6.3.4.2.2 PCI Express Root Port 4 87
3.6.3.4.2.3 PCI Express Root Port 5 88
3.6.3.4.2.4 PCI Express Root Port 6 89
3.6.3.4.4 SATA Drives 90
3.6.3.4.3 USB Configuration 91
3.6.4 Security 91
3.6.4.1 Secure Boot menu 92
3.6.5 Boot 93
3.6.6 Save and exit 94
3.6.6.1 Save Changes and Reset 94
3.6.6.2 Discard Changes and Reset 94
3.6.6.3 Restore Defaults 95
3.6.6.4 Launch EFI Shell from filesystem device 95
4. Maintenance & Troubleshooting 96
5. Product Application 102
6. Operating the Device 103

1. Getting Started

1.1 Safety Precautions

Warning!



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

Caution!



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

1.2 Packing List

Before installation, please ensure all the items listed in the following table are included in the package.

Item	Description	Q'ty
1	ARC-21W33 Panel PC	1
2	Power Adapter	1
3	Screws for VESA	4
4	Screws for HDD	4
5	HDD shockproof Rubber	4
6	Screws for Wall Mount	12
7	Brackets for Wall Mount	12
8	Plastics spacer for Wall Mount	12



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

Purposes and Applications

ARC-21W33 is used the Intel Celeron® series (Apollo Lake platform), which has stronger performance and lower power consumption. it also inherits from ARC-series strength, Modularized, Flexible Expansion, Reliability and Stability.
ARC series have been passed stricter vibration and shock testing. It can be used on extreme environment like manufacture or factory. Typical applications are HMI, Automation, POI, KIOSK.
It also can be suitable for the customer's various application and scenario that need more ruggedized, vibration and water/dust-proof environment(IP65 Front Panel, IP41 Rear (except I/O)).

Unpacking

Note:
If any of the components listed in the checklist below are missing, do not proceed with the installation. Contact the Avalue reseller or vendor the product was purchased from or contact an Avalue sales representative directly by sending an email to sales@avalue.com

To unpack the flat bezel panel PC, follow the steps below.
WARNING!
The front side LCD screen has a protective plastic cover stuck to the screen. Only remove the plastic cover after the fiat bezel panel PC has been properly installed. This ensures the screen is protected during the installation process.

Step 1: Carefully cut the tape sealing the box. Only cut deep enough to break the tape.
Step 2: Open the outside box.
Step 3: Carefully cut the tape sealing the box. Only cut deep enough to break the tape.
Step 4: Open the inside box.
Step 5: Lift the panel PC out of the boxes.
Step 6: Remove the peripheral parts box from the main box.

1.3 System Specifications

Component	
Mother Board	ARC-APL
CPU	Onboard Intel® Celeron® J3455 SoC BGA Processor
CPU Cooler(Type)	Fanless Heatsink
Memory	One 204-pin DDR3L SODIMM Socket, Supports Up to 8GB DDR3L 1600MTs SDRAM
Power Supply	DC in
Adapter	60W power adaptor
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) 2 x mini-PCIe Socket
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”, 1920 x 1080 (E9689421501R)
B/L Inverter/Converter	LCD built in
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	16-bit GPIO
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 2x20-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-SKLU) 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 +9V ~ +36V, 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 (as EBM-BYT), co-lay with phoenix connector
Dimension	390 x 240 x 60mm
Weight	3.7 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
Operating Humidity	40°C @ 95% Relative Humidity, Non-condensing
Storage Temperature	-20 ~ 60 degree

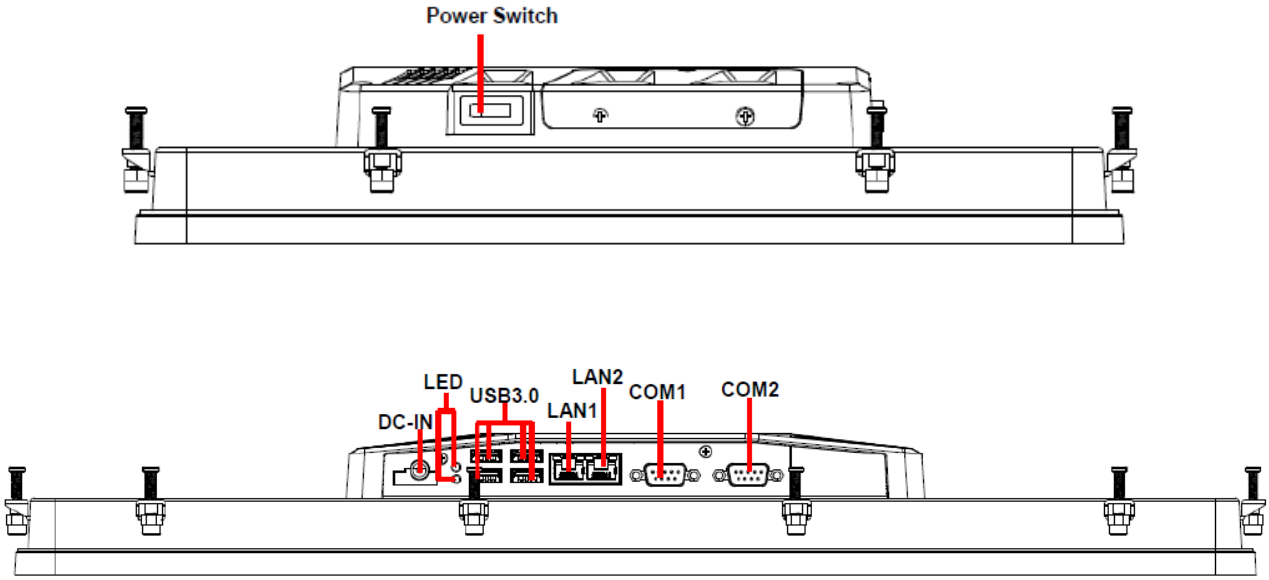
Compliant with following Flexible Expansion Modules	
ARC-BYT DB-A	4 x USB3.0 module
ARC-BYT DB-B	3 x Audio Jack (Line in/Line out/Mic in)+HDMI
ARC-BYT DB-C	HDMI + Mini PCIe (w/ SIM slot)
ARC-BYT DB-D	2 x COM Isolation module
ARC-BYT DB-E	12-bit GPIO+CAN Bus
ARC-BYT DB-F	CAN Bus for OBDII
ARC-BYT DB-G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

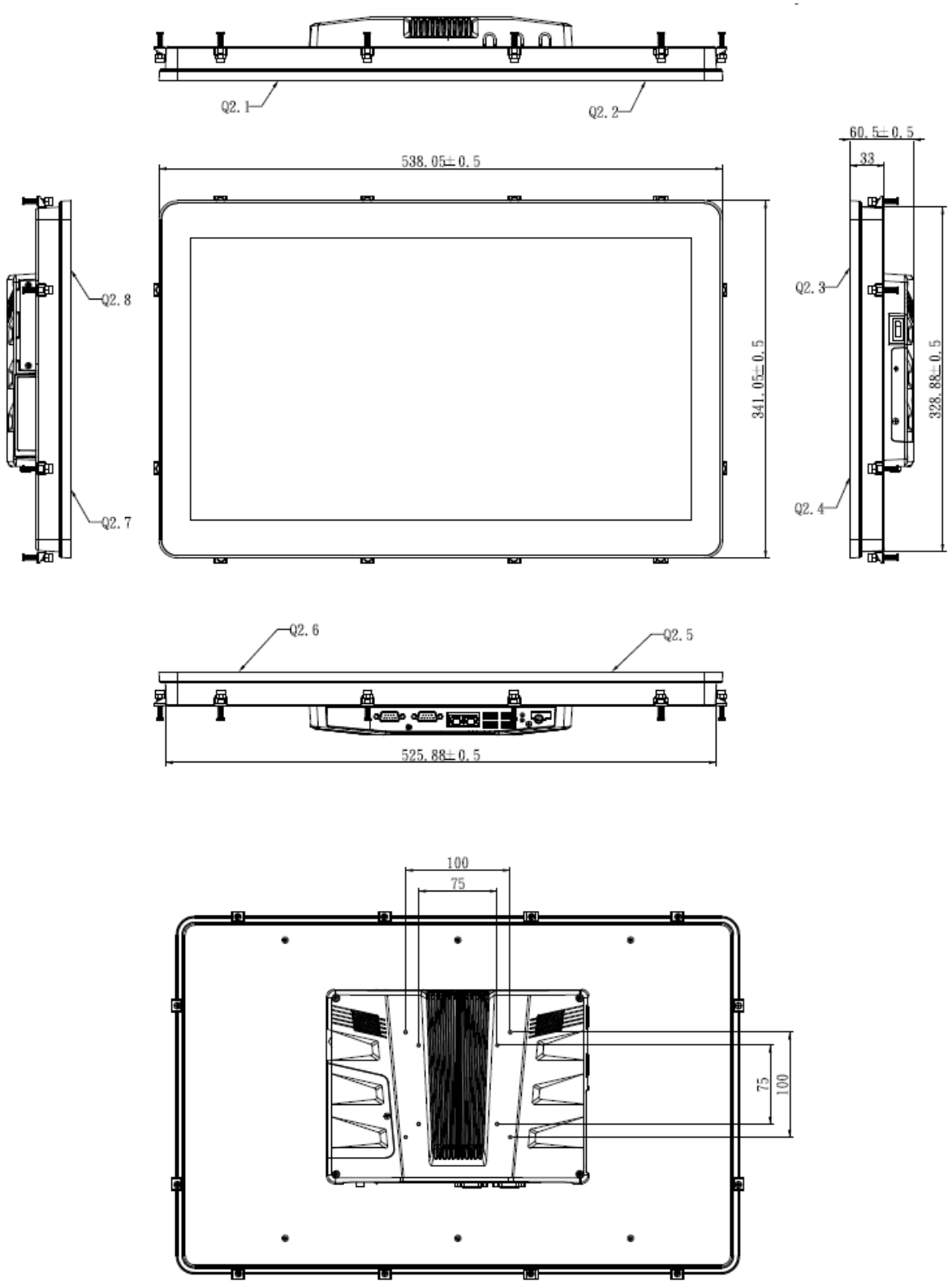
1.4.1 I/O View



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

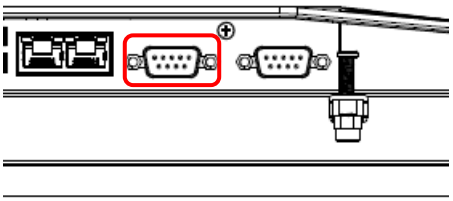


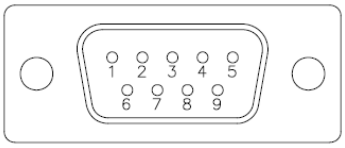
Note: If you need more information, please visit our website:

www.avalue.com

2.1 ARC-21W33 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

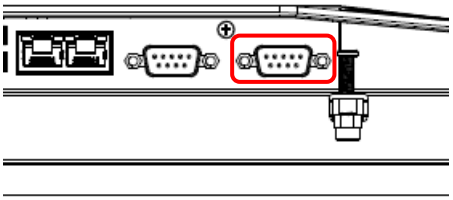
Signal	PIN	PIN	Signal
NDCDA#	1	6	NDSRA#
NRXDA	2	7	NRTSA#
NTXDA	3	8	NCTSA#
NDTRA#	4	9	NRIA#
GND	5		

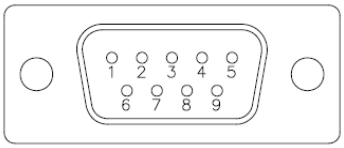
RS-422

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)





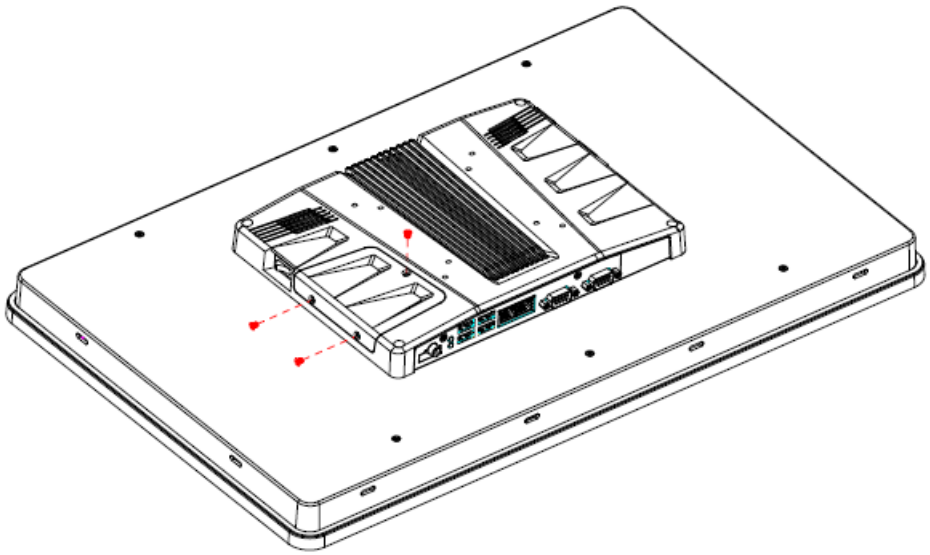
Signal	PIN	PIN	Signal
NDCDB#	1	6	NDSRB#
NRXDB	2	7	NRTSB#
NTXDB	3	8	NCTSB#
NDTRB#	4	9	NRIB#
GND	5		

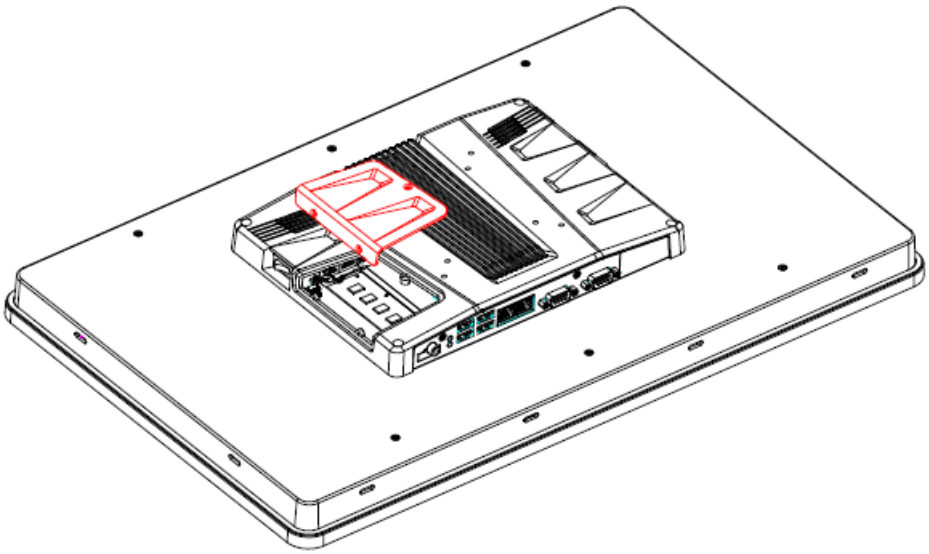
2.2 Installing Hard Disk & Memory

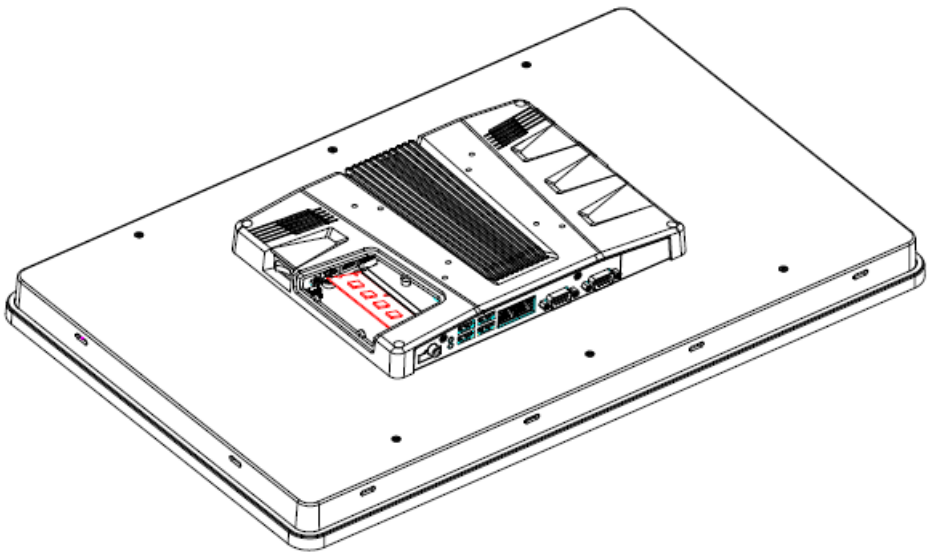
Step 1. Memory Installation: Remove 3 screws to release the chassis cover, and remove it.

Step 2.1 Insert the SODIMM into the memory socket.

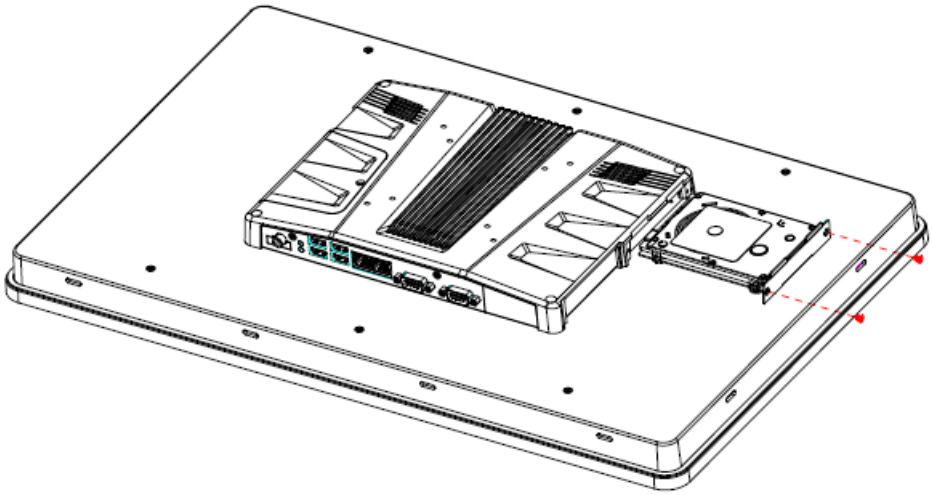
Step 2.2 Re-assemble your system back through previous steps to complete the installation.





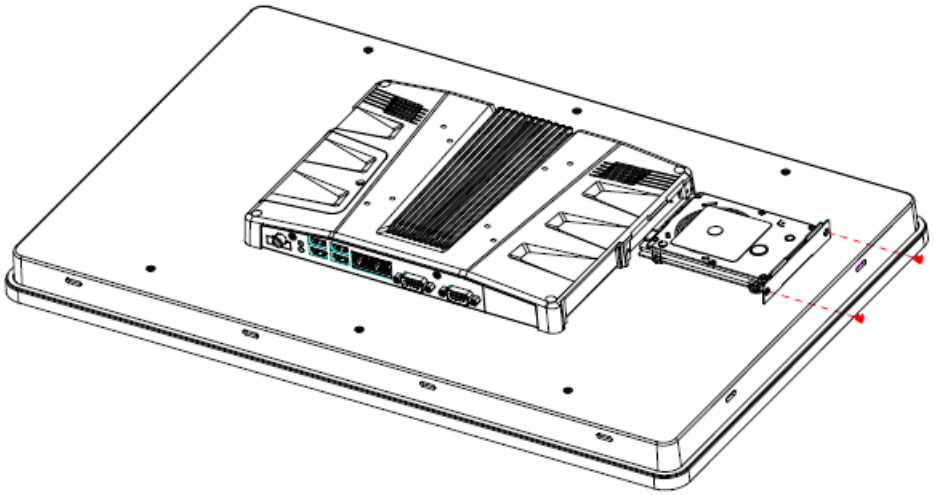


Step 3. HDD Installation: Insert the HDD into the Drive Bay and fasten 2 screws.

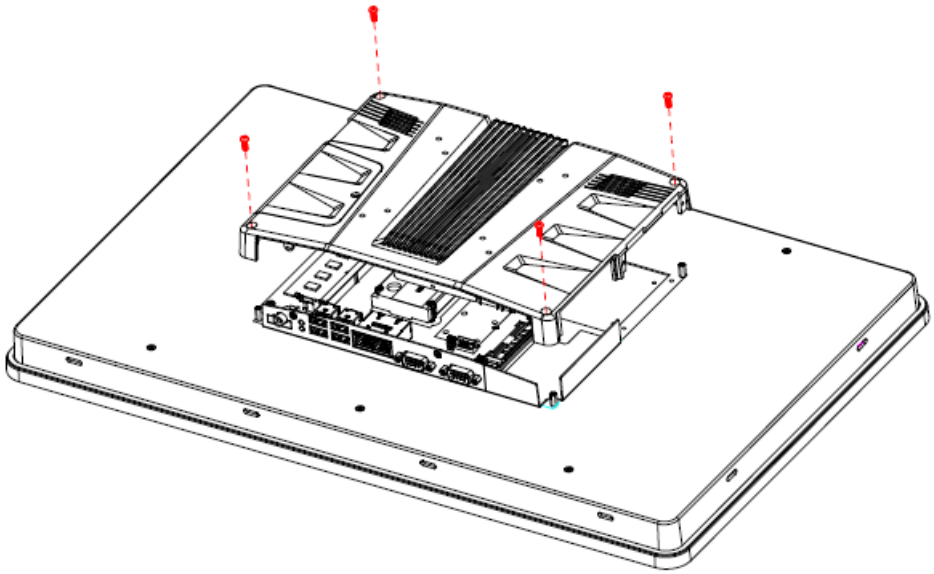


2.3 Installing ARC-BYT DB

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

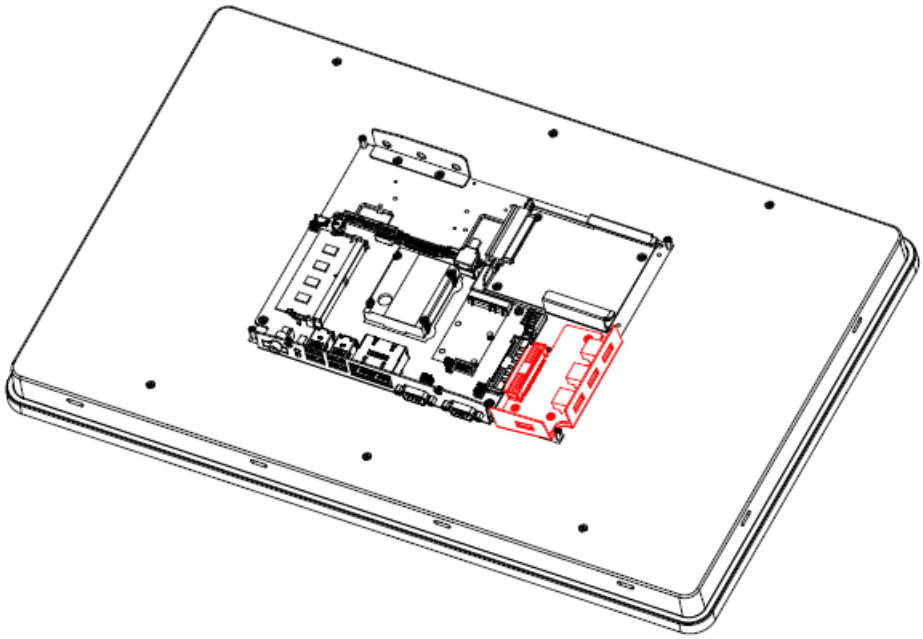


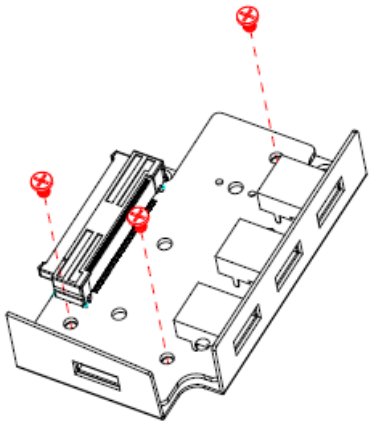
Step 2. Remove 4 screws to release the chassis cover, and remove it.

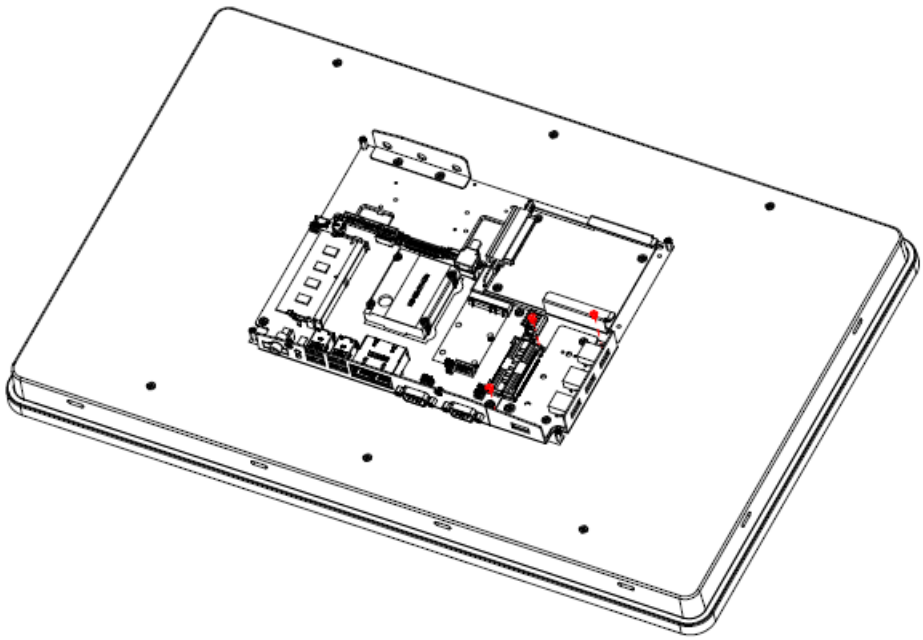


Step 2.1 Insert the ARC-BYT DB into the socket and fasten 3 screws.

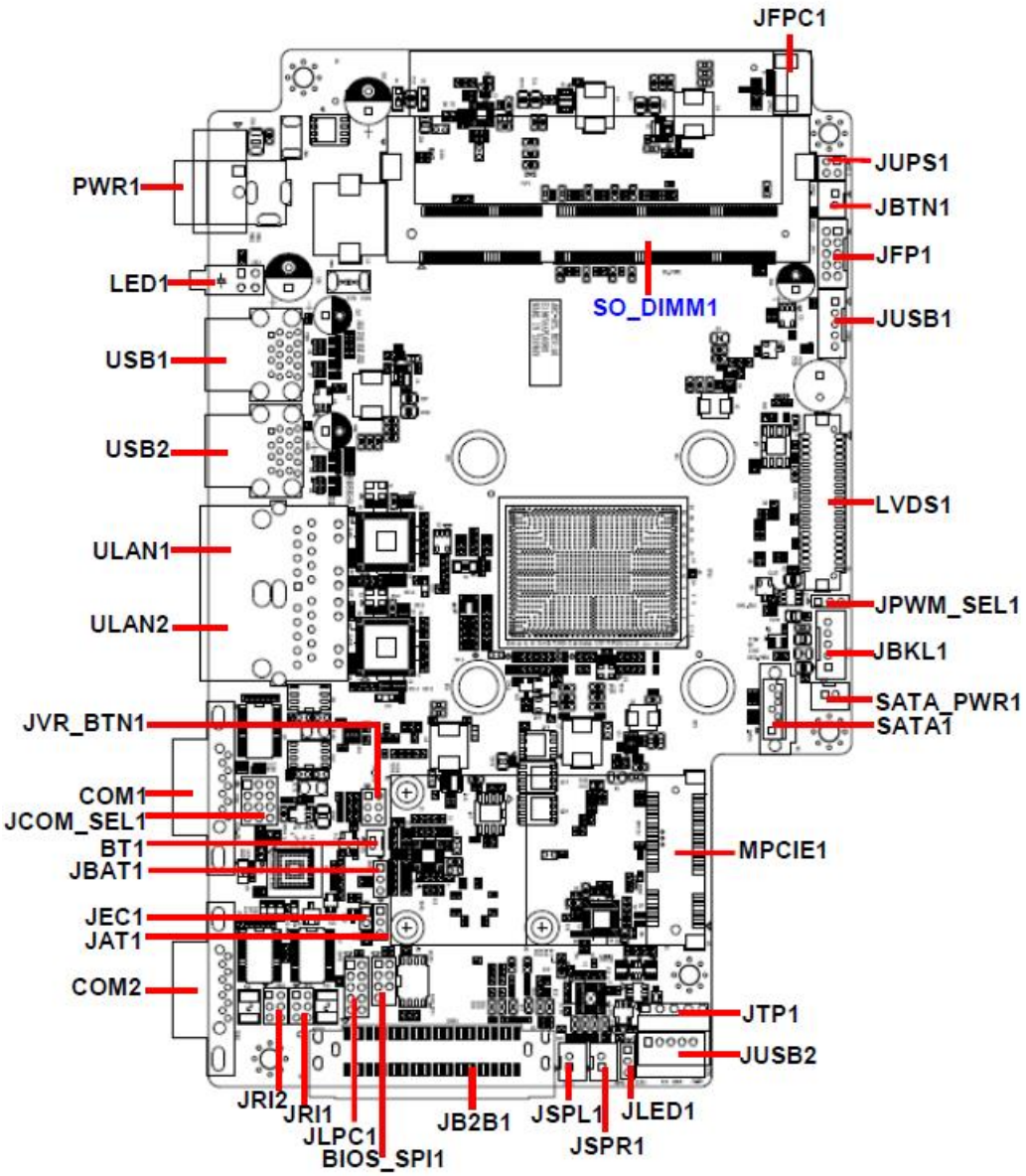
Step 2.2 Re-assemble your system back through previous steps to complete the installation







2.4 ARC-APL Overviews



2.5 ARC-APL Jumper and Connector list

Jumper

Label	Function	Note
JBAT1	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
JCOM_SEL1	Serial port 1 in RS-232/422/485 mode	4 x 3 header, pitch 2.00mm
JPWM_SEL1	PWM Level select	3 x 1 header, pitch 2.00mm
JAT1	AT/ATX Input power select	3 x 1 header, pitch 2.00mm

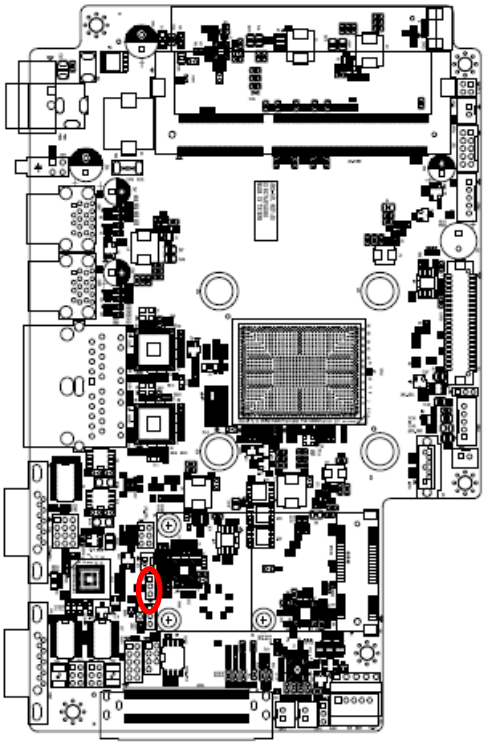
Connectors

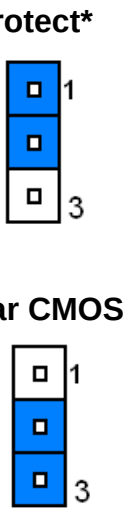
Label	Function	Note
SO_DIMM1	1 x 204-Pin DDR3L 1866MHz SO-DIMM	
JFP1	Miscellaneous setting connector	5 x 2 wafer, pitch 2.00 mm
JLPC1	Low pin count connector	5 x 2 header, pitch 2.00 mm
JBKL1	LCD Inverter connector	5 x 1 wafer, pitch 2.00mm Matching Connector: JST PHR-5
COM1/2	Serial Port 1/2 connector	D-sub 9 pin, male
JTP1	Touch panel connector	5 x 1 header, pitch 2.54mm
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
JVR_BTN1	LCD backlight brightness adjustment	3 x 2 header, pitch 2.00mm
LED1	HDD/Power LED indicator	
JLED1	LED Board connector	3 x 1 header, pitch 2.00mm
LVDS1	LVDS connector	DIN 40-pin wafer, pitch 1.25mm Matching Connector: Hirose DF13-40DS-1.25C
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 1 wafer, pitch 2.00mm
ULAN1/2	RJ-45 Ethernet 1/2	
MPCIE1	Mini-PCIe connector	
BT1	Battery connector	2 x 1 wafer, pitch 1.25mm

PWR1	Power connector	
BIOS_SPI1	BIOS SPI header	4 x 2 header, pitch 2.00 mm
JEC1	EC Debug connector	2 x 1 header, pitch 2.00 mm
SATA1	Serial ATA connector	
SATA_PWR1	SATA Power connector	2 x 1 wafer, pitch 2.00mm
JFPC1	FPC connector	8 x 1 wafer, pitch 0.50mm
JUPS1	Battery connector	2 x 2 header, pitch 2.00mm
JBTN1	Power Button	2 x 1 wafer, pitch 2.00mm

2.6 ARC-APL Jumpers & Connectors settings

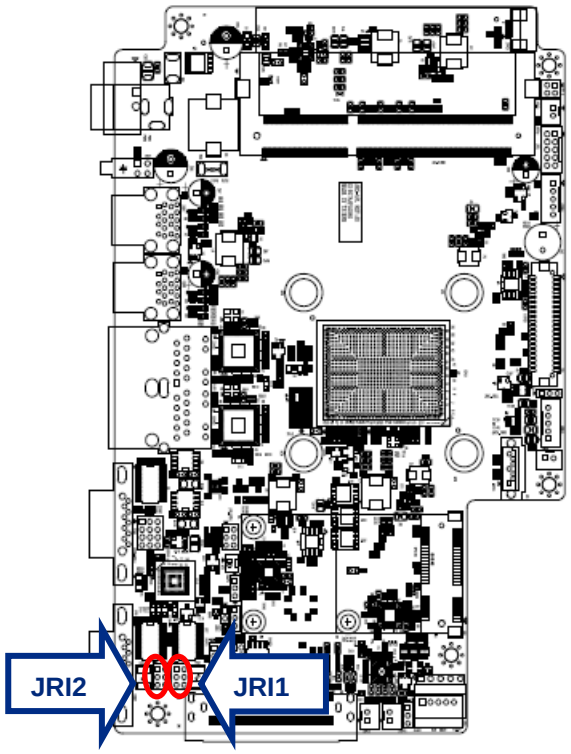
2.6.1 Clear CMOS (JBAT1)

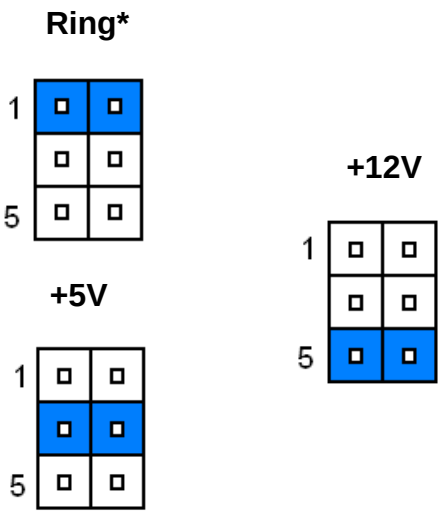




*Default

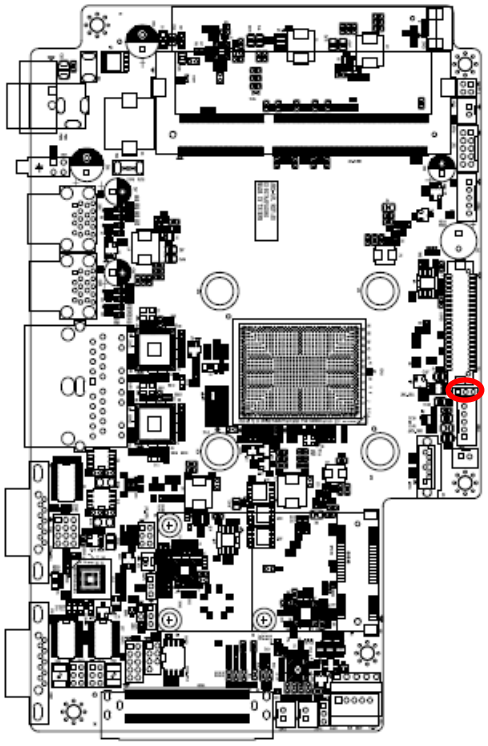
2.6.2 Serial port 1/2 pin9 signal select (JRI1/JRI2)



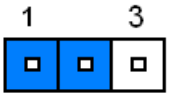


* Default

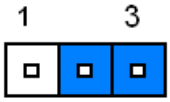
2.6.3 PWM Level select (JPWM_SEL1)



+3.3V*

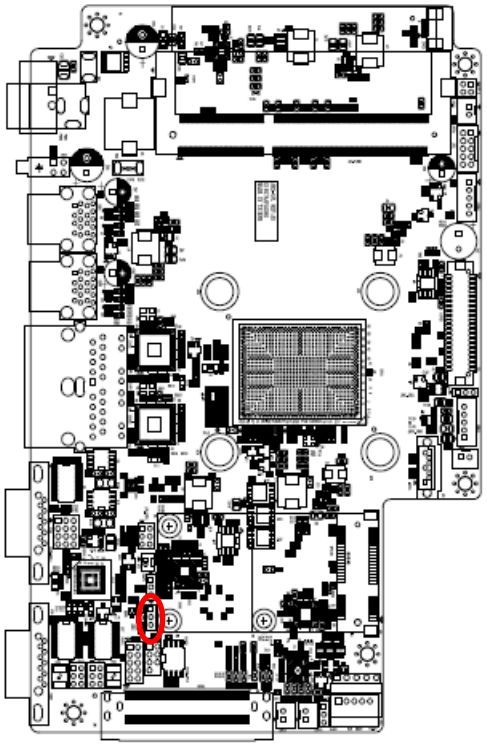


+5V

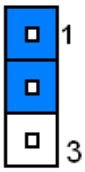


*** Default**

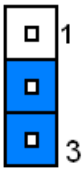
2.6.4 AT/ATX Input power select (JAT1)



ATX*

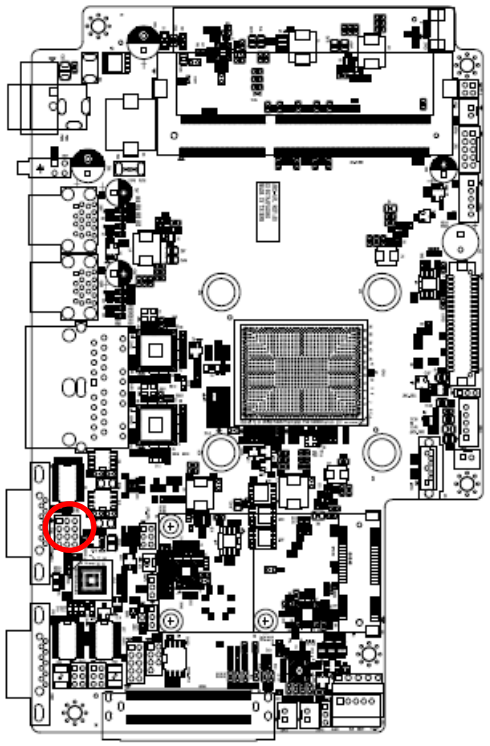


AT

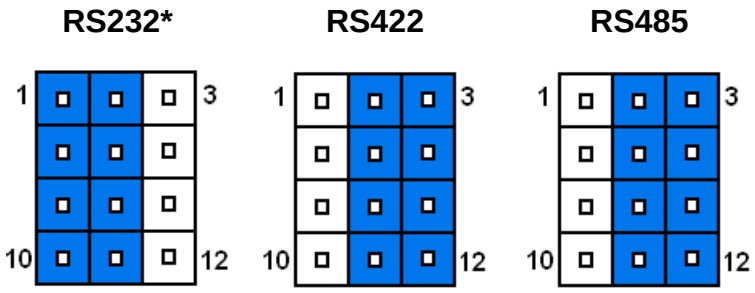


*** Default**

2.6.5 Serial port 1 in RS-232/422/485 mode (JCOM_SEL1)



*** Default**

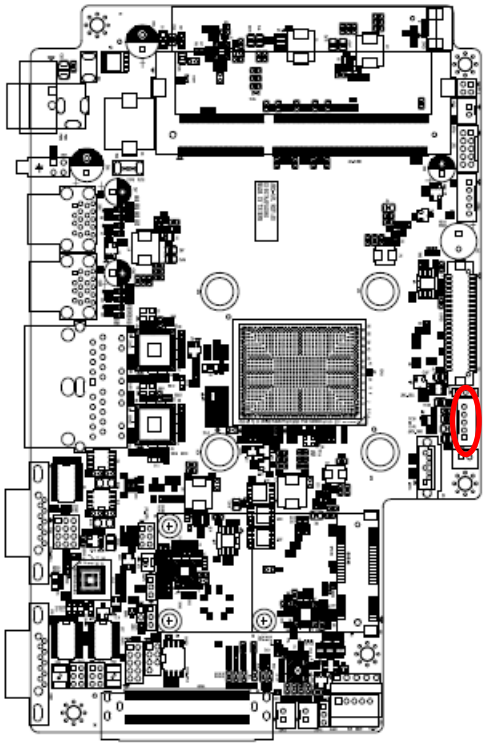


PIN	Signal	PIN	Signal	PIN	Signal
1	NDCDA#	2	COM1-1	3	485_422TX1-
4	NTXDA	5	COM1-3	6	422RX1+
7	NRXDA	8	COM1-2	9	485_422TX1+
10	NDTRA#	11	COM1-4	12	422RX1-

Note:

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

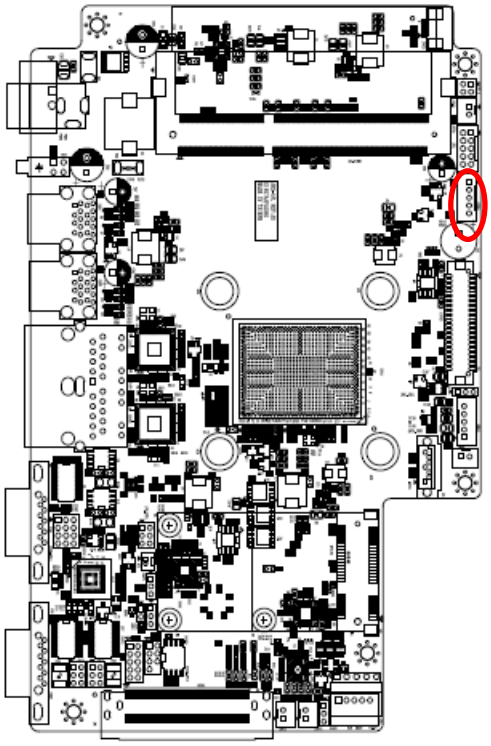
2.6.6 LCD Inverter connector (JBKL1)





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

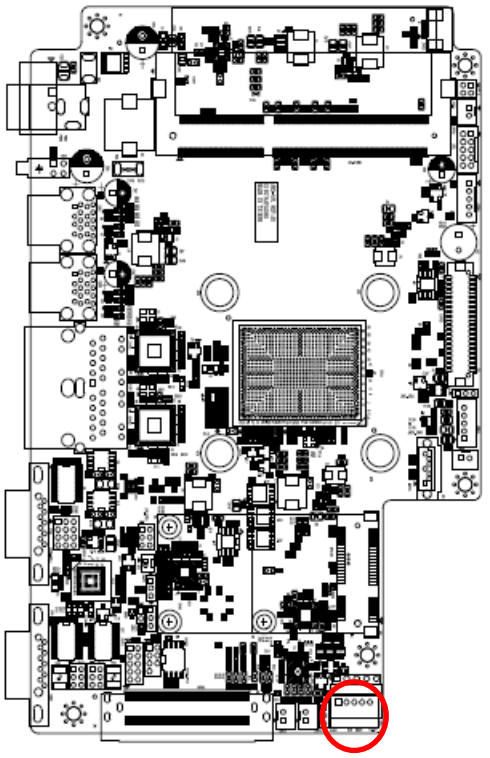
2.6.7 On-board header for USB2.0 (JUSB1)

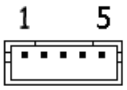




Signal	PIN
+5VSB	1
USB_R_DN6	2
USB_R_DP6	3
GND	4
GND	5

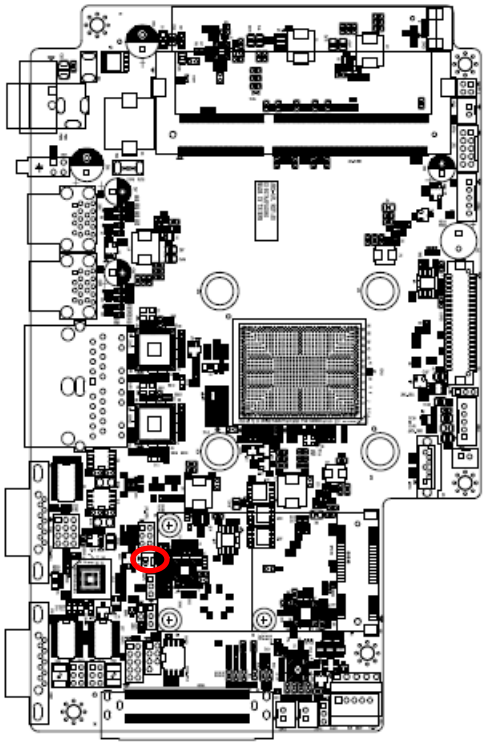
2.6.8 On-board header for USB2.0 (JUSB2)





Signal	PIN
+5VSB	1
USB_CA_PN7	2
USB_CA_PP7	3
GND	4
GND	5

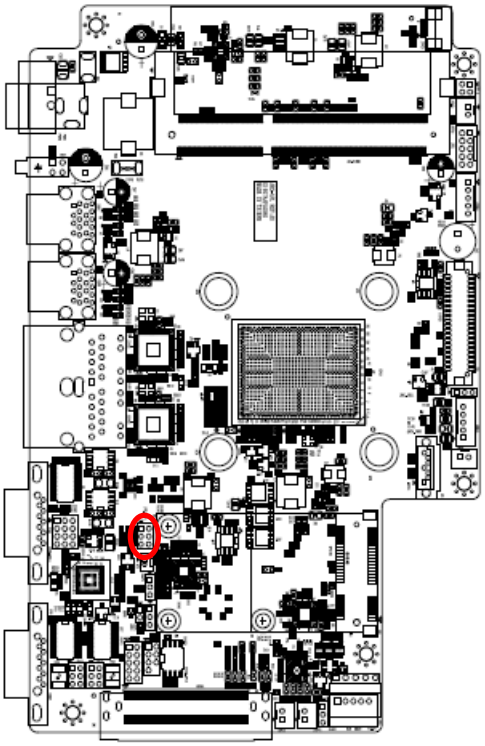
2.6.9 Battery connector (JBAT1)

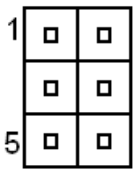




Signal	PIN
+RTCBATT	1
GND	2

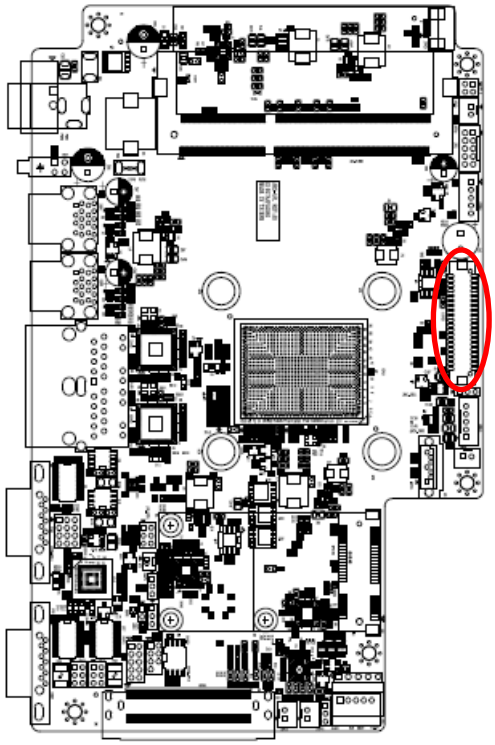
2.6.10 LCD backlight brightness adjustment (JVR_BTN1)





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

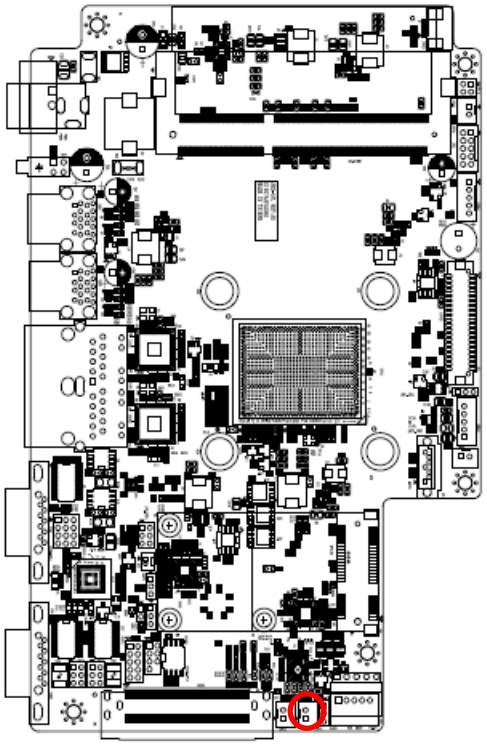
2.6.11 LVDS connector (LVDS1)





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

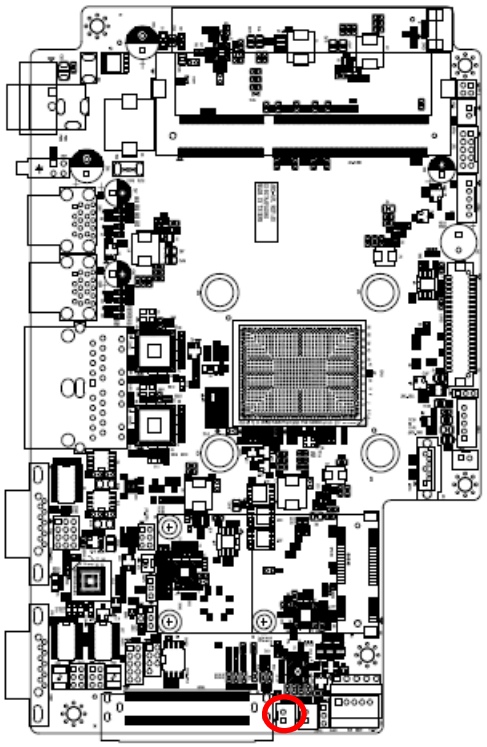
2.6.12 AMPLIFIER_R (JSPR1)





Signal	PIN
SPK_R-	2
SPK_R+	1

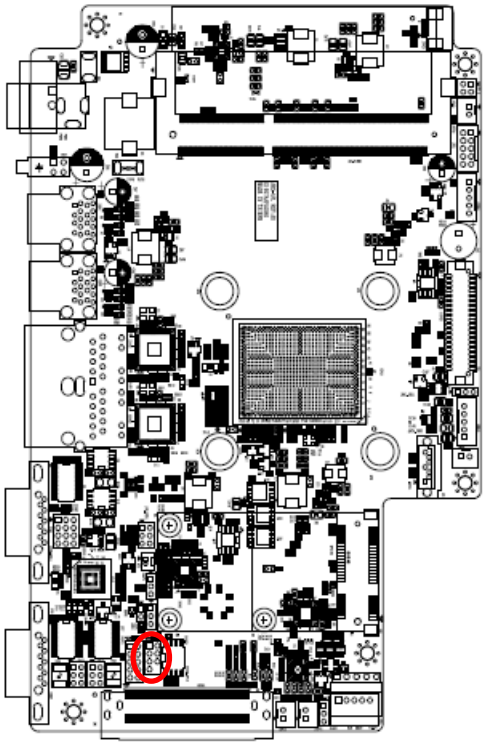
2.6.13 AMPLIFIER_L (JSPL1)

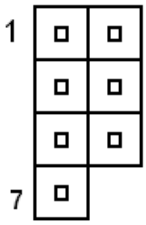




Signal	PIN
SPK_L-	2
SPK_L+	1

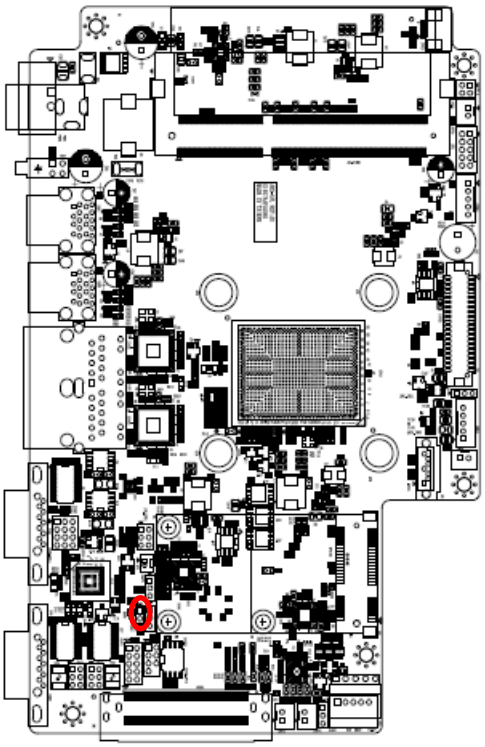
2.6.14 BIOS SPI connector (BIOS_SPI1)

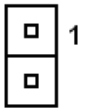




Signal	PIN	PIN	Signal
+1.8VSB	1	2	GND
SPI_CS#0	3	4	SPI_CLK
SPI_MISO	5	6	SPI_MOSI
SPI_HOLD#	7		

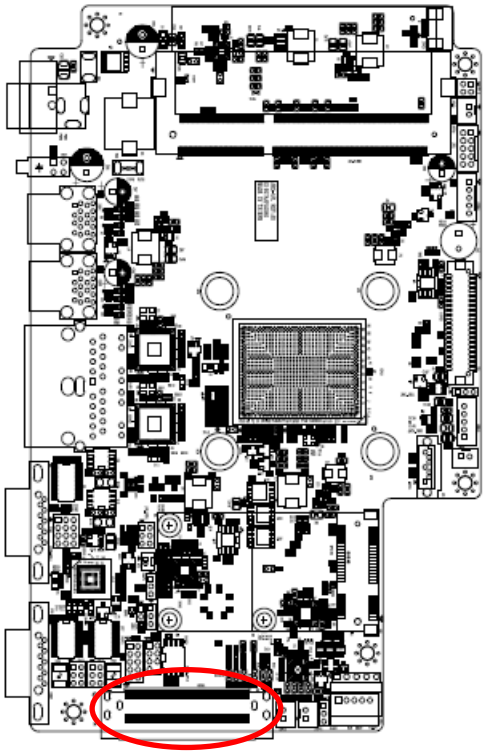
2.6.15 EC Debug connector (JEC1)

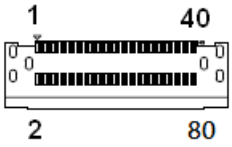




Signal	PIN
EC_SMCLK_DEBUG	1
EC_SMDAT_DEBUG	2

2.6.16 B2B connector (JB2B1)

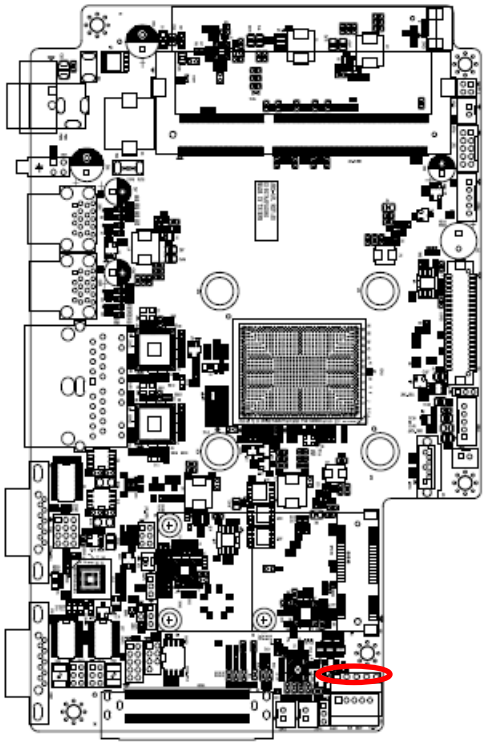




Signal	PIN	PIN	Signal
GND	1	41	GND
GND	2	42	GND
+12V	3	43	GND
+12V	4	44	GND
GND	5	45	GND
LPC_SERIRQ	6	46	+5VSB
LPC_FRAME#	7	47	+5VSB
LPC_IET_CLK1	8	48	+5VSB
LPC_AD0	9	49	+5VSB
LPC_AD1	10	50	+5VSB

Signal	PIN	PIN	Signal
LPC_AD2	11	51	GND
LPC_AD3	12	52	USB_DP_4
PS_ON_B2B	13	53	USB_DN_4
PLT_RST_BUF#	14	54	GND
PCH_SLP_S3#	15	55	SMB_SCL_S5
HDMI_HPD_CONN	16	56	SMB_SDA_S5
GND	17	57	GND
HDMI_DDC_CLK	18	58	NC
HDMI_DDC_DAT	19	59	PCIEUSB3_PONRSTB
GND	20	60	PCIEUSB3_SMIB_INT#
HDMI_TX_N2	21	61	PCIE_WAKE#_3
HDMI_TX_P2	22	62	PLT_RST_BUF#
GND	23	63	PCIE_CLKREQ#_3
HDMI_TX_N1	24	64	GND
HDMI_TX_P1	25	65	PCIE_TXN_3
GND	26	66	PCIE_TXP_3
HDMI_TX_N0	27	67	GND
HDMI_TX_P0	28	68	PCIE_RXN_3
GND	29	69	PCIE_RXP_3
HDMI_CLKN	30	70	GND
HDMI_CLKP	31	71	CLK_PCIE_N3
GND	32	72	CLK_PCIE_P3
GND	33	73	GND
MIC1-R-IN	34	74	GND
MIC1-L-IN	35	75	MIC1_JD
GND	36	76	GND
FRONT-JD	37	77	LINE1-JD
FRONT-R-OUT	38	78	LINE1-R-IN
FRONT-L-OUT	39	79	LNE1-L-IN
GND	40	80	GND

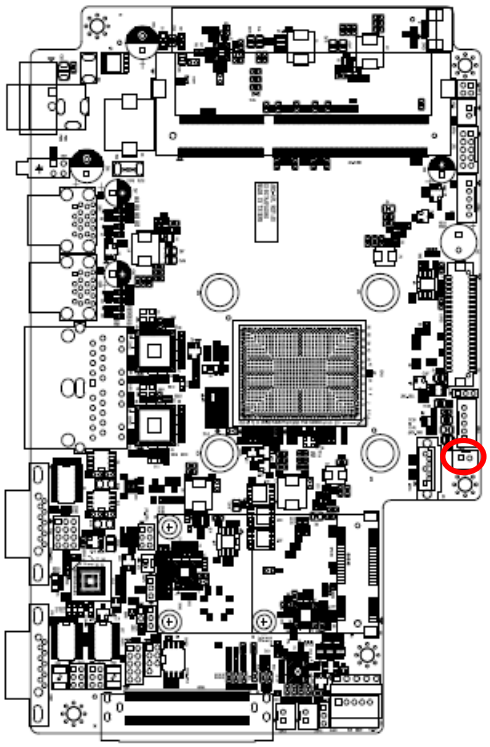
2.6.17 Touch panel connector (JTP1)

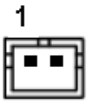




Signal	PIN
X+	1
X-	2
SENSE	3
Y+	4
Y-	5

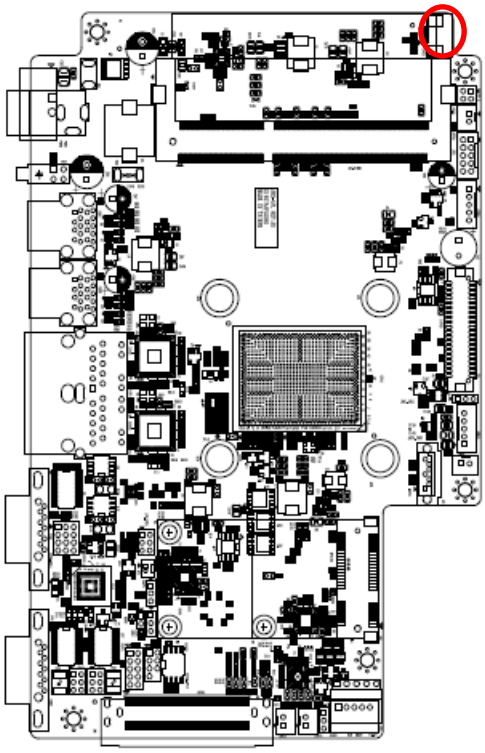
2.6.18 SATA Power connector (SATA_PWR1)

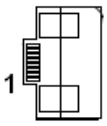




Signal	PIN
GND	1
+5V	2

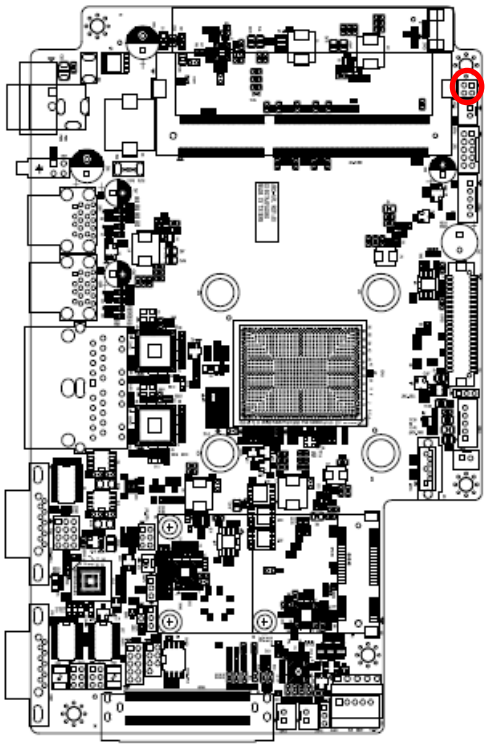
2.6.19 FPC connector (JFPC1)

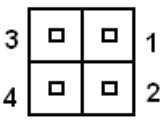




Signal	PIN
+5VSB	8
+3.3VSB	7
EC_SMDAT	6
NC	5
EC_SMCLK	4
AUX_INT1#	3
+5VSB	2
GND	1

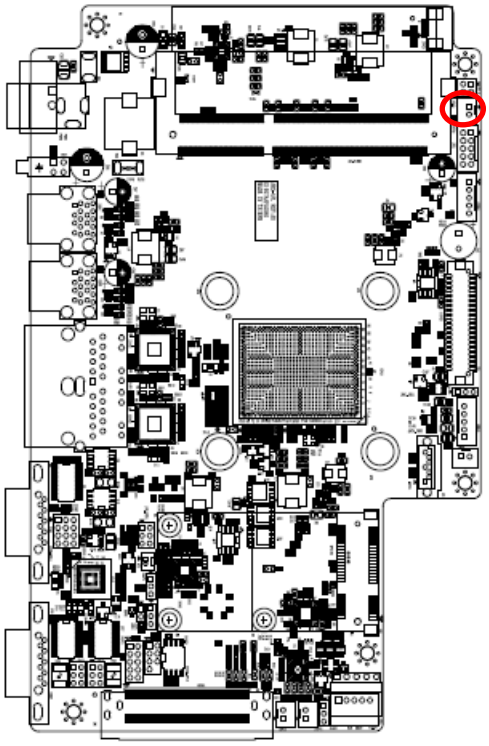
2.6.20 Battery connector (JUPS1)





Signal	PIN	PIN	Signal
AC_PRESENT2	3	1	AC_PRESENT1
SMB_DSA_S0	4	2	SMB_SCL_S0

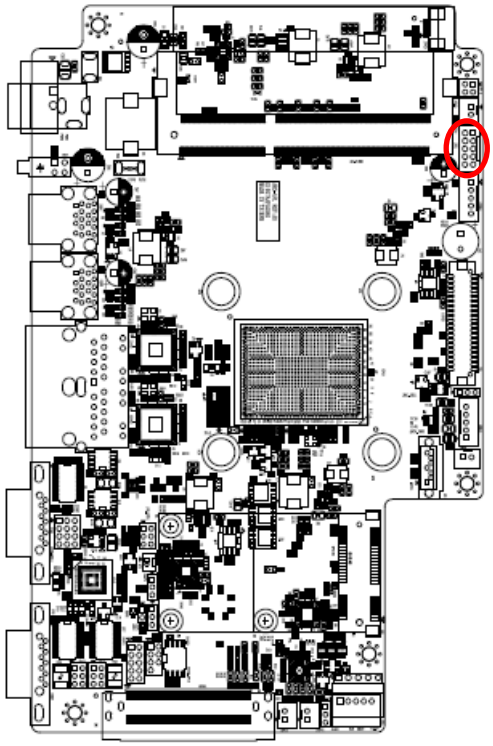
2.6.21 Power Button (JBTN1)

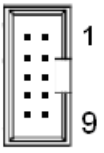




Signal	PIN
BUTTON	1
GND	2

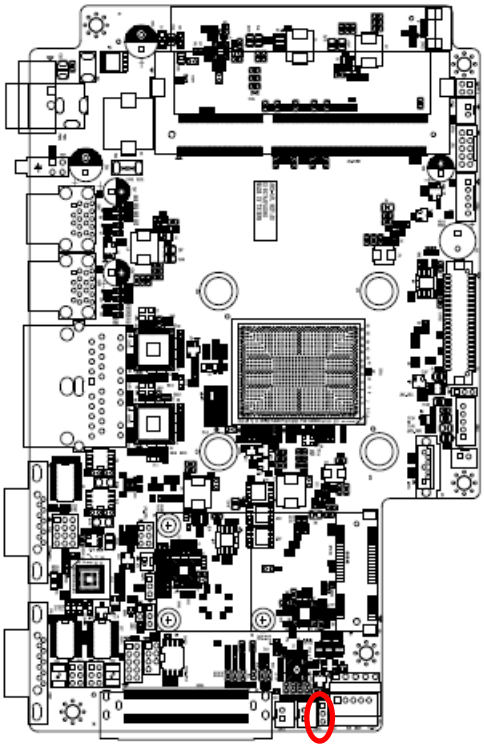
2.6.22 Miscellaneous setting connector (JFP1)

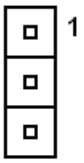




Signal	PIN	PIN	Signal
+3.3VSB	2	1	GND
VOL_UP#	4	3	VOL_DN#
BRI_UP#	6	5	BRI_DN#
LED_ONOFF#	8	7	PWR_BTN_IN_EC#
POWER_LED2	10	9	POWER_LED1

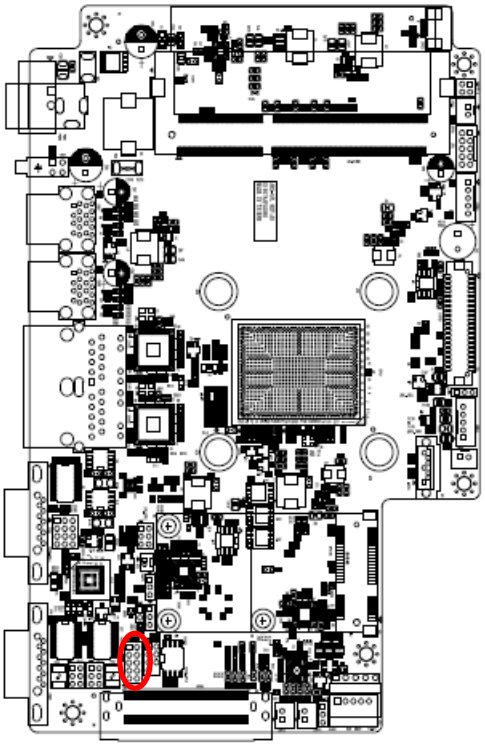
2.6.23 LED Board connector (JLED1)

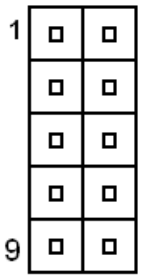




Signal	PIN
+5VSB	1
LUMEN_EN	2
GND	3

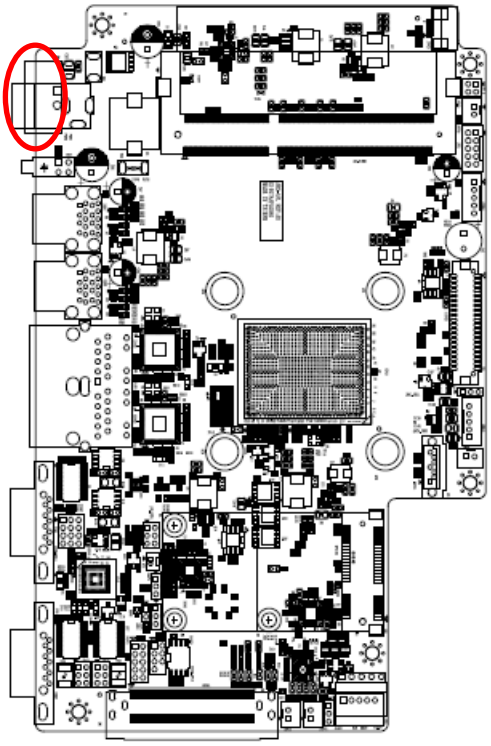
2.6.24 Low pin count connector (JLPC1)

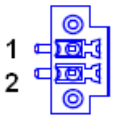




Signal	PIN	PIN	Signal
LPC_AD0	1	2	+3.3V
LPC_AD1	3	4	PLT_RST_BUF#
LPC_AD2	5	6	LPC_FRAME#
LPC_AD3	7	8	LPC_PORT80_CLK
LPC_SERIRQ	9	10	GND

2.6.25 Power connector (PWR1)



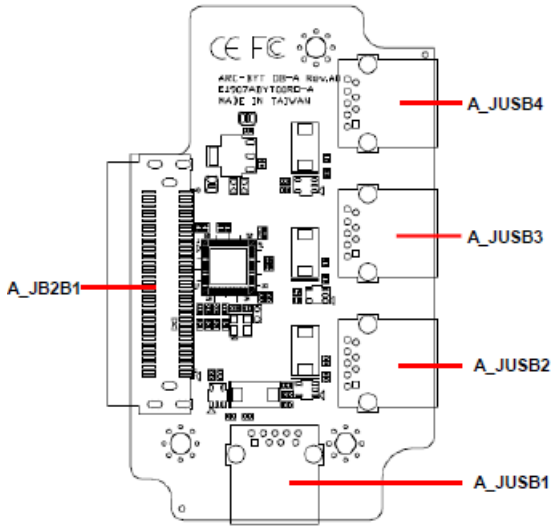


***Option: Phoenix Connector**

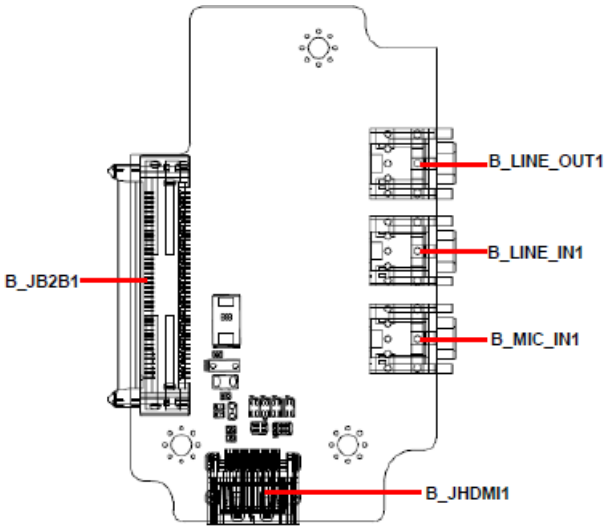
Signal	PIN
+DCIN	1
GND	2

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

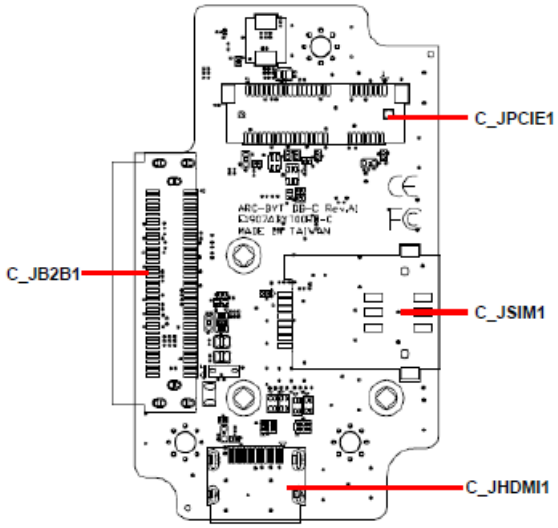
2.7.1 ARC-BYT DB-A



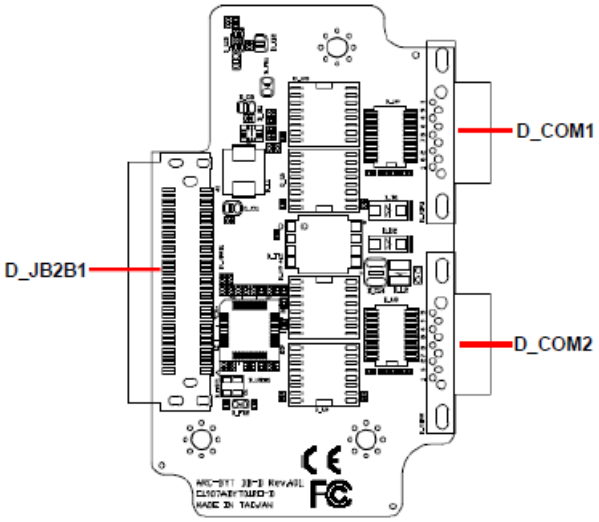
2.7.2 ARC-BYT DB-B



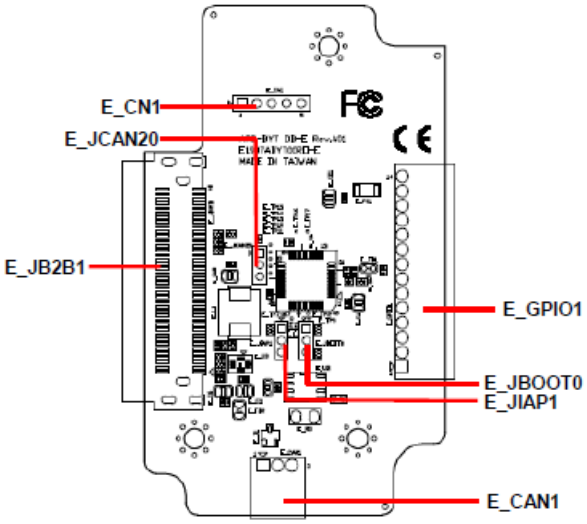
2.7.3 ARC-BYT DB-C



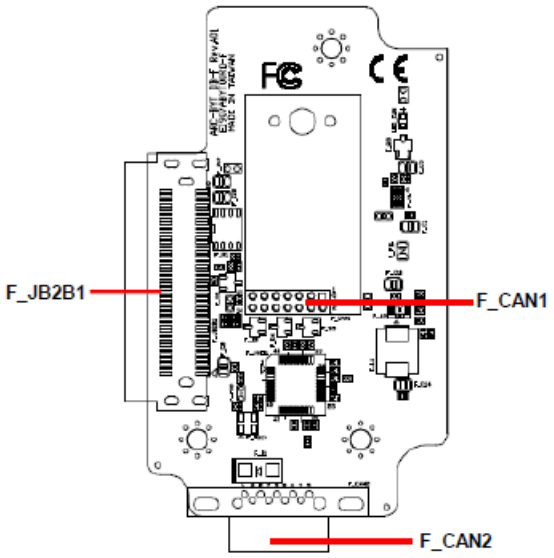
2.7.4 ARC-BYT DB-D



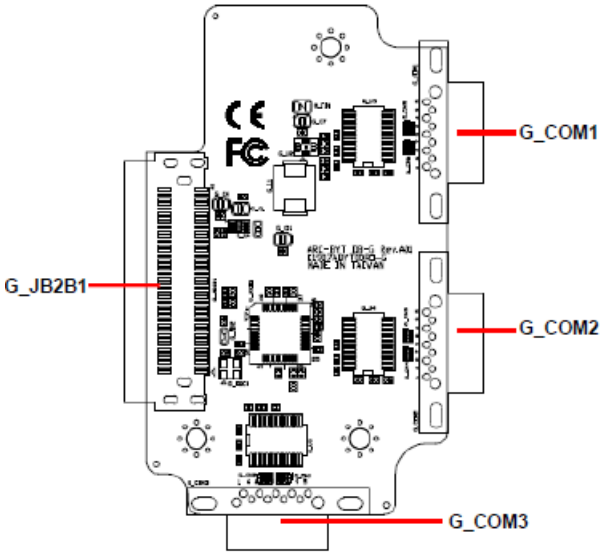
2.7.5 ARC-BYT DB-E



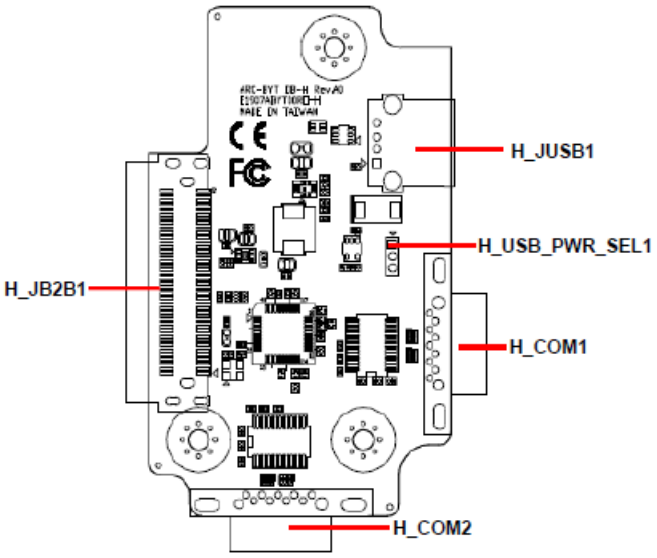
2.7.6 ARC-BYT DB-F



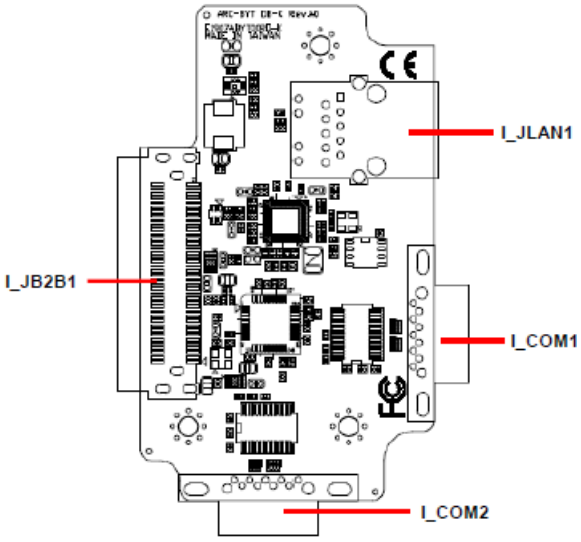
2.7.7 ARC-BYT DB-G



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

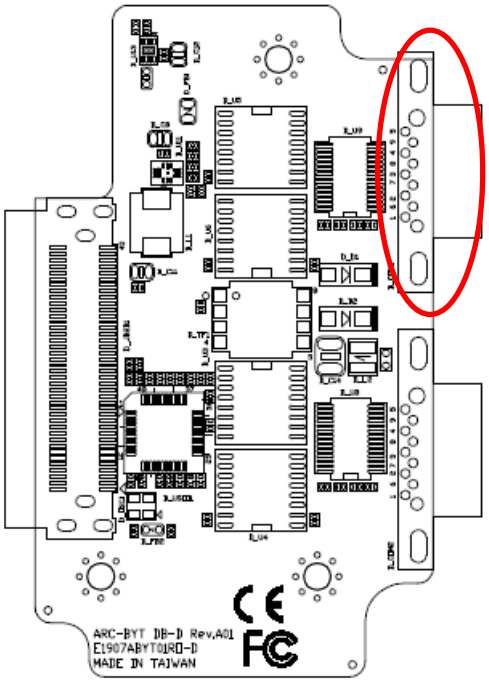
Connectors

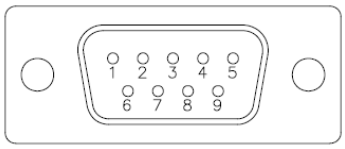
Label	Function	Note

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

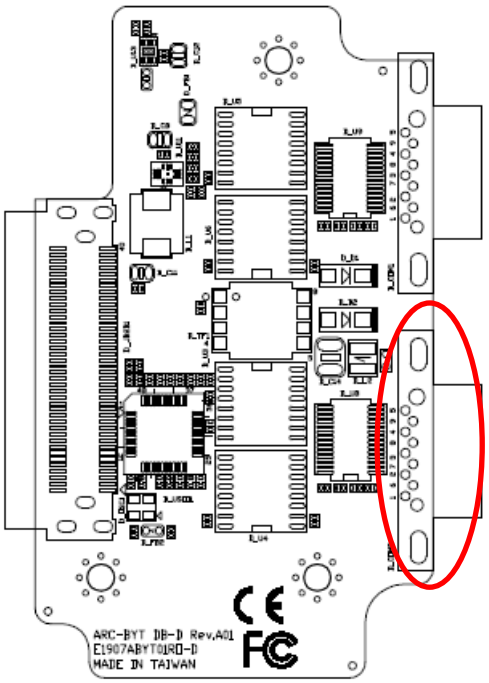
2.9.1 Serial Port 1 connector (D_COM1)

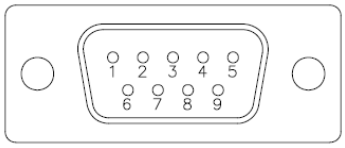




Signal	PIN	PIN	Signal
NDCD#_3_D	1	6	NDSR#_3_D
NRXD_3_D	2	7	NRTS#_3_D
NTXD_3_D	3	8	NCTS#_3_D
NDTR#_3_D	4	9	NRI#_3_D
GND	5		

2.9.2 Serial Port 2 connector (D_COM2)

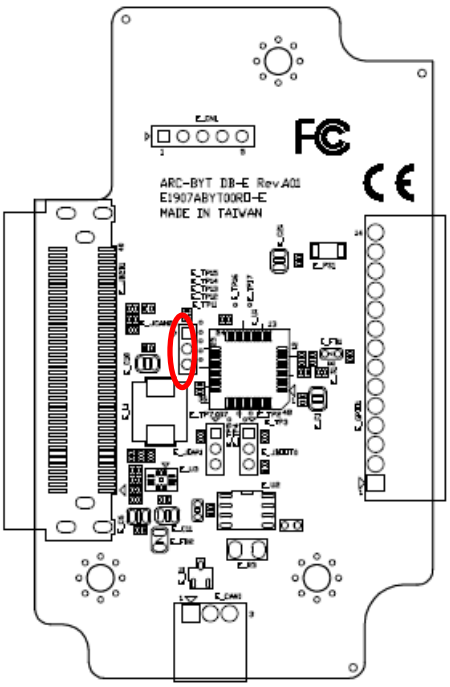




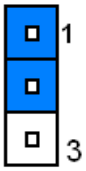
Signal	PIN	PIN	Signal
NDCD#_2_D	1	6	NDSR#_2_D
NRXD_2_D	2	7	NRTS#_2_D
NTXD_2_D	3	8	NCTS#_2_D
NDTR#_2_D	4	9	NRI#_2_D
GND	5		

2.10 ARC-BYT DB-E Jumpers & Connectors settings

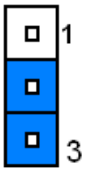
2.10.1 CAN2.0 Switch (E_JCAN20)



CAN2.0A (11-bit)*

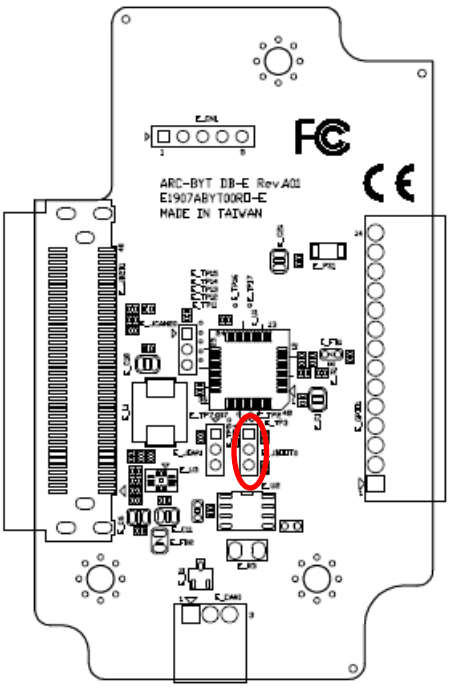


CAN2.0B (29-bit)

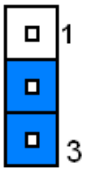


***Default**

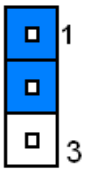
2.10.2 For user update FW (E_JBOOT0)



Default*

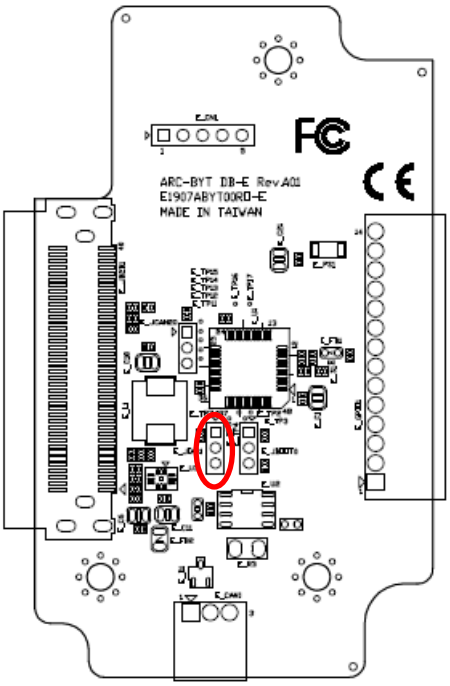


For user update FW

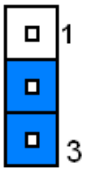


***Default**

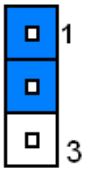
2.10.3 For user update FW (E_JIAP1)



Default*

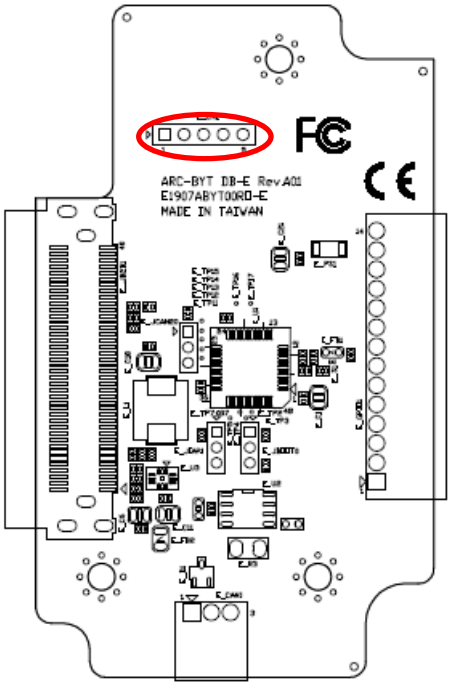


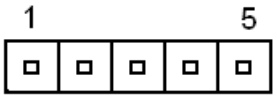
For user update FW



***Default**

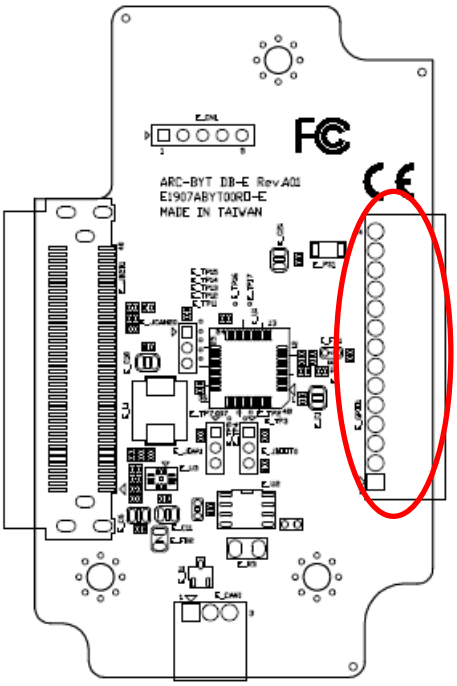
2.10.4 For user update FW (E_CN1)

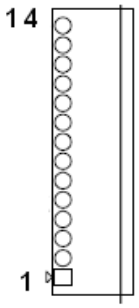




Signal	PIN
+3.3V	1
SWDIO	2
SWCLK	3
CAN_BUS_RESET#	4
GND	5

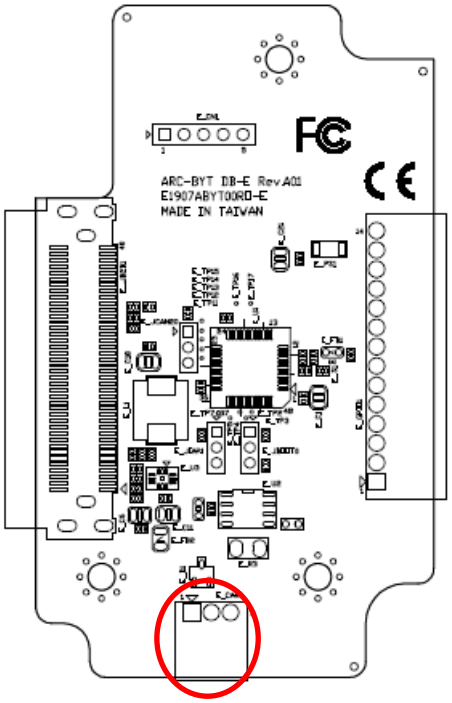
2.10.5 General purpose I/O connector (E_GPIO1)

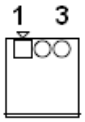




Signal	PIN
GND	14
+3.3V	13
DO5	12
DO4	11
DO3	10
DO2	9
DO1	8
DO0	7
DI5	6
DI4	5
DI3	4
DI2	3
DI1	2
DI0	1

2.10.6 CAN Bus connector (E_CAN1)

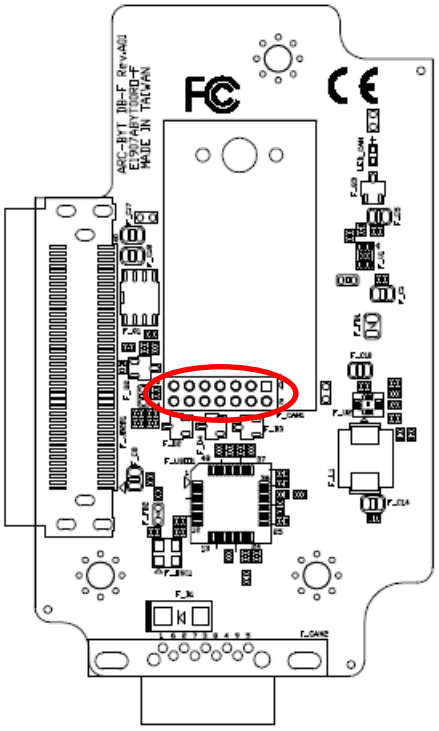


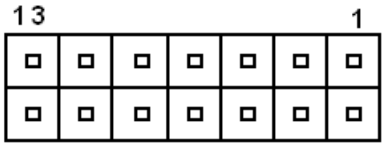


Signal	PIN
CANH	1
CANL	2
GND	3

2.11 ARC-BYT DB-F Connectors settings

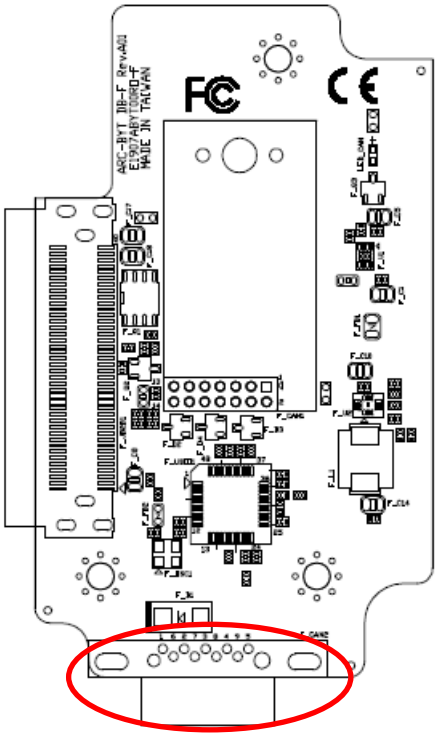
2.11.1 CAN Bus connector 1 (F_CAN1)

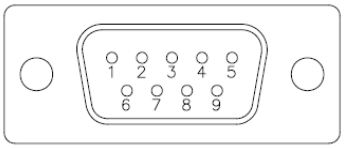




Signal	PIN	PIN	Signal
CAN_PWR	1	2	CAN_8
CAN_IND	3	4	CAN_9
GND	5	6	BAT_GND
CAN_WAKE	7	8	CAN_11
UART_RXD_1_F	9	10	CAN_12
UART_TXD_1_F	11	12	CAN_13
+5V	13	14	CAN_14

2.11.2 CAN Bus connector 2 (F_CAN2)

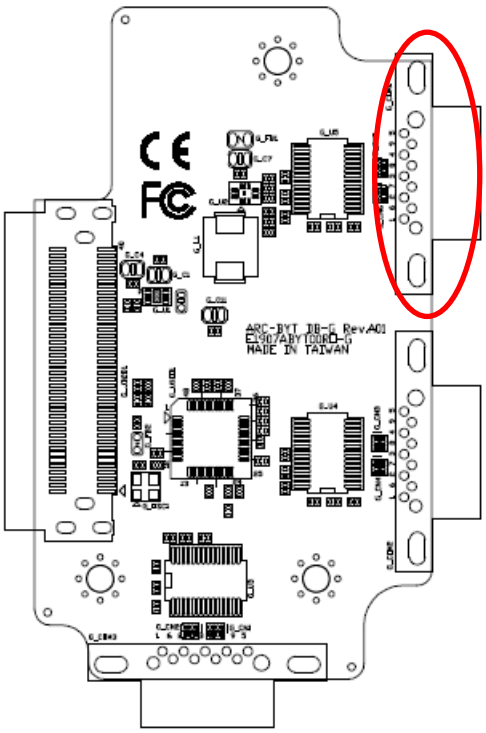


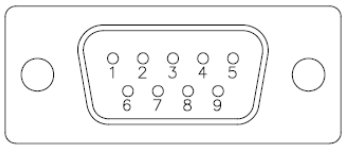


Signal	PIN	PIN	Signal
BAT_PWR	1	6	CAN_12
CAN_8	2	7	CAN_13
CAN_9	3	8	CAN_14
BAT_GND	4	9	NC
CAN_11	5		

2.12 ARC-BYT DB-G Connectors settings

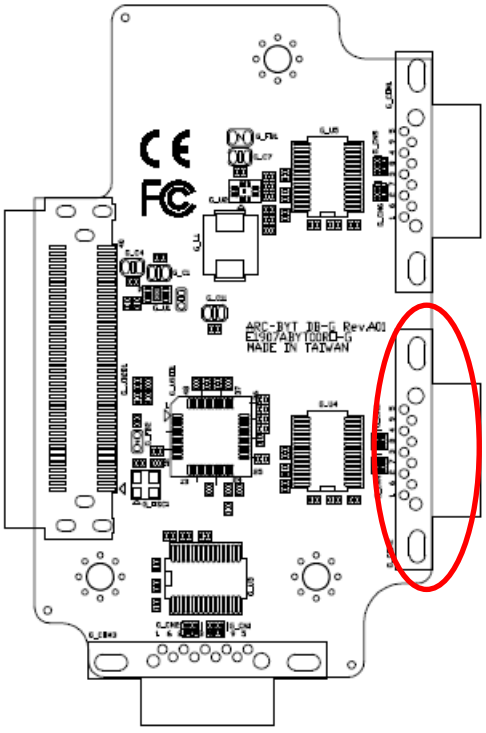
2.12.1 Serial Port 1 connector (G_COM1)

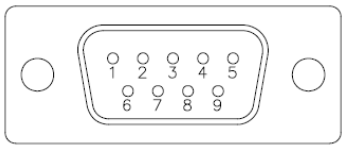




Signal	PIN	PIN	Signal
NDCD#_3_G	1	6	NDSR#_3_G
NRXD_3_G	2	7	NRTS#_3_G
NTXD_3_G	3	8	NCTS#_3_G
NDTR#_3_G	4	9	NRI#_3_G
GND	5		

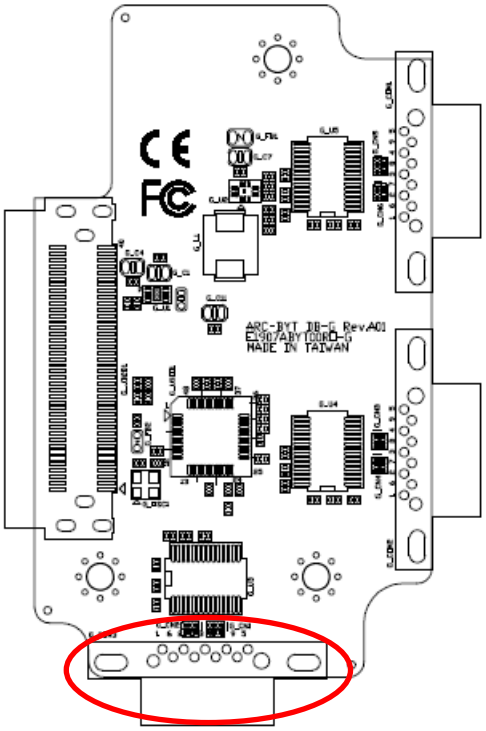
2.12.2 Serial Port 2 connector (G_COM2)

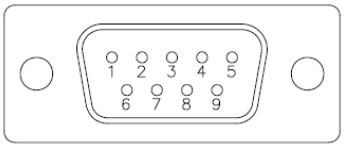




Signal	PIN	PIN	Signal
NDCD#_2_G	1	6	NDSR#_2_G
NRXD_2_G	2	7	NRTS#_2_G
NTXD_2_G	3	8	NCTS#_2_G
NDTR#_2_G	4	9	NRI#_2_G
GND	5		

2.12.3 Serial Port 3 connector (G_COM3)

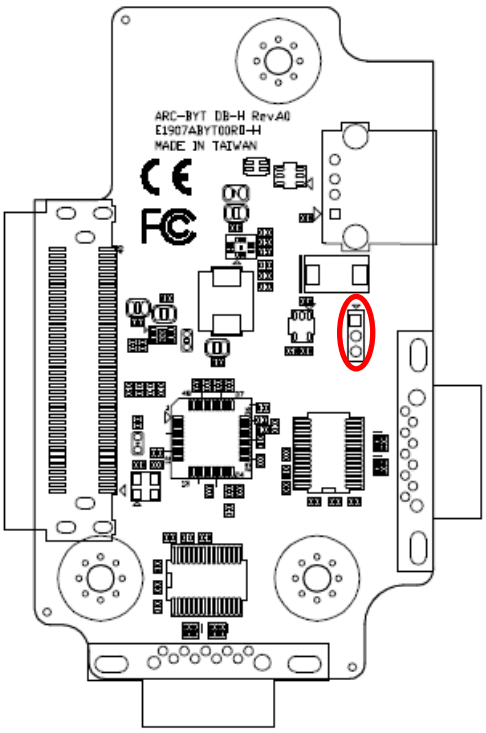




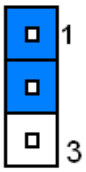
Signal	PIN	PIN	Signal
NDCD#_1_G	1	6	NDSR#_1_G
NRXD_1_G	2	7	NRTS#_1_G
NTXD_1_G	3	8	NCTS#_1_G
NDTR#_1_G	4	9	NRI#_1_G
GND	5		

2.13 ARC-BYT DB-H Jumpers settings

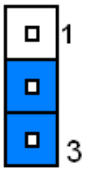
2.13.1 USB Power selector (H_USB_PWR_SEL1)



+5VSB*



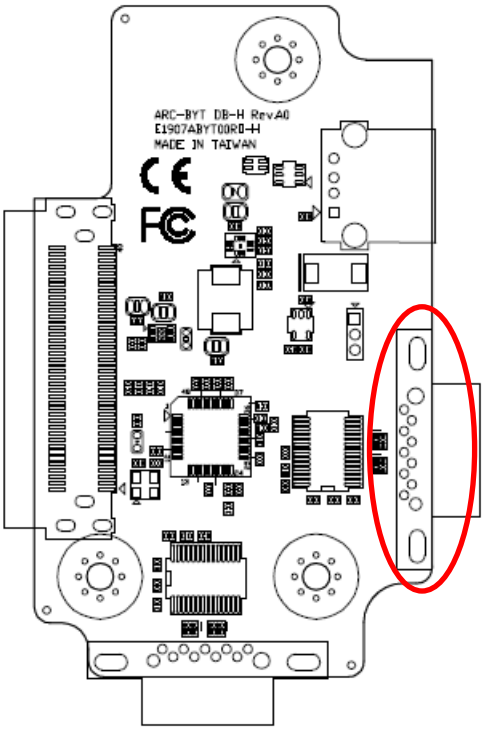
+5V

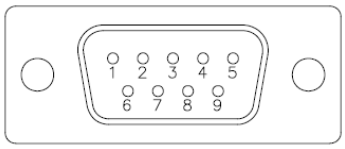


***Default**

2.14 ARC-BYT DB-H Connectors settings

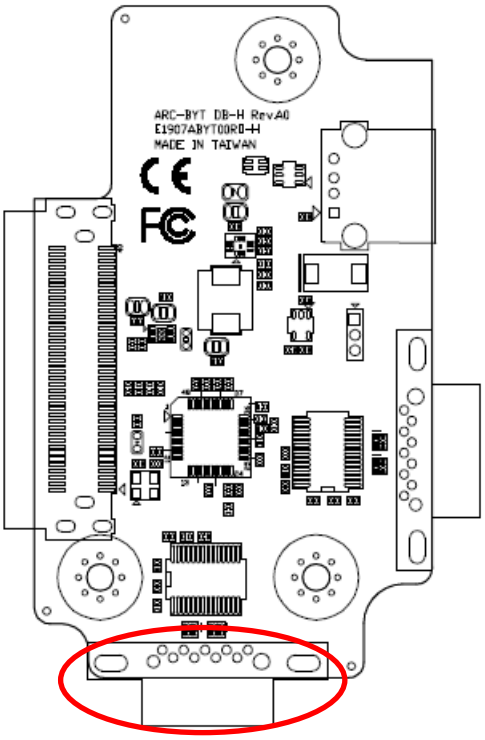
2.14.1 Serial Port 1 connector (H_COM1)

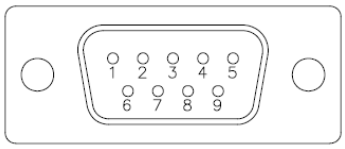




Signal	PIN	PIN	Signal
NDCD#_1_H	1	6	NDSR#_1_H
NRXD_1_H	2	7	NRTS#_1_H
NTXD_1_H	3	8	NCTS#_1_H
NDTR#_1_H	4	9	NRI#_1_H
GND	5		

2.14.2 Serial Port 2 connector (H_COM2)

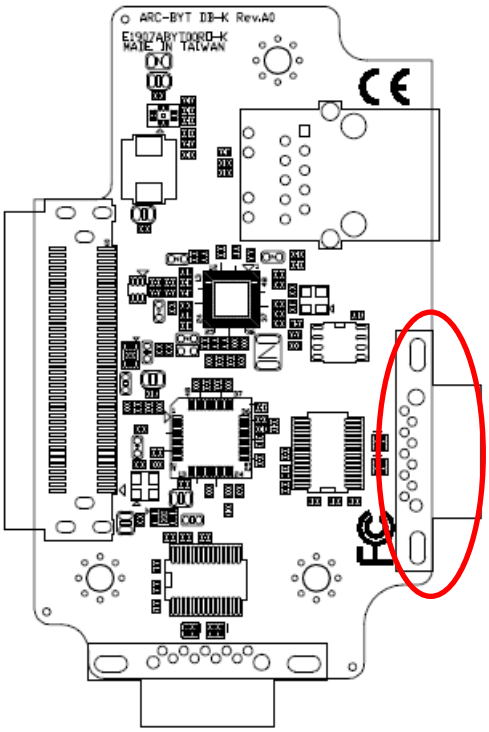


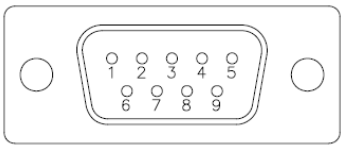


Signal	PIN	PIN	Signal
NDCD#_2_H	1	6	NDSR#_2_H
NRXD_2_H	2	7	NRTS#_2_H
NTXD_2_H	3	8	NCTS#_2_H
NDTR#_2_H	4	9	NRI#_2_H
GND	5		

2.15 ARC-BYT DB-K Connectors settings

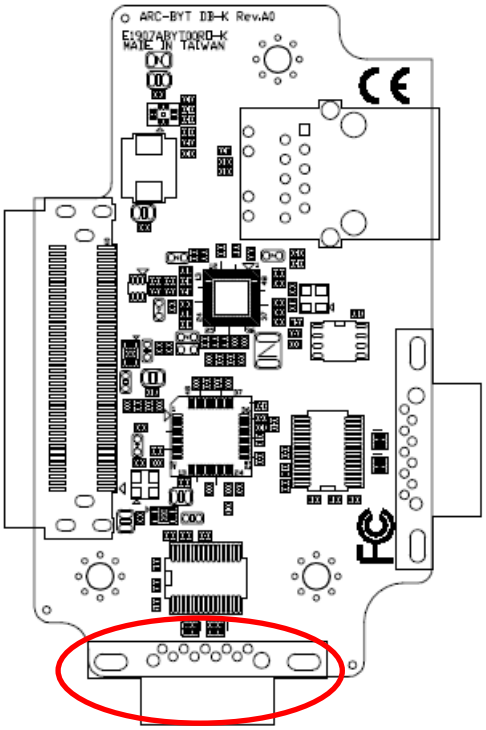
2.15.1 Serial Port 1 connector (I_COM1)

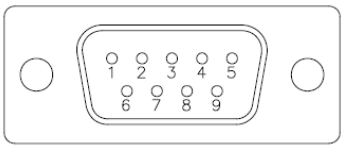




Signal	PIN	PIN	Signal
NDCD#_1_I	1	6	NDSR#_1_I
NRXD_1_I	2	7	NRTS#_1_I
NTXD_1_I	3	8	NCTS#_1_I
NDTR#_1_I	4	9	NRI#_1_I
GND	5		

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.

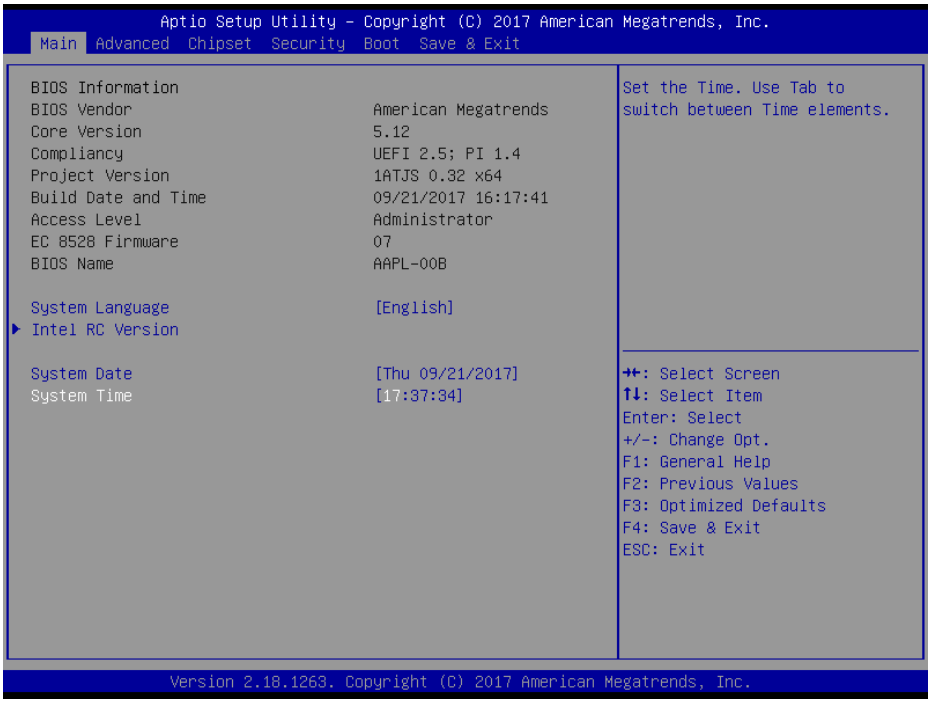
The best advice is to only alter settings which you thoroughly understand. To this end, we strongly recommend that you avoid making any changes to the chipset defaults. These defaults have been carefully chosen by both BIOS Vendor and your systems manufacturer to provide the absolute maximum performance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

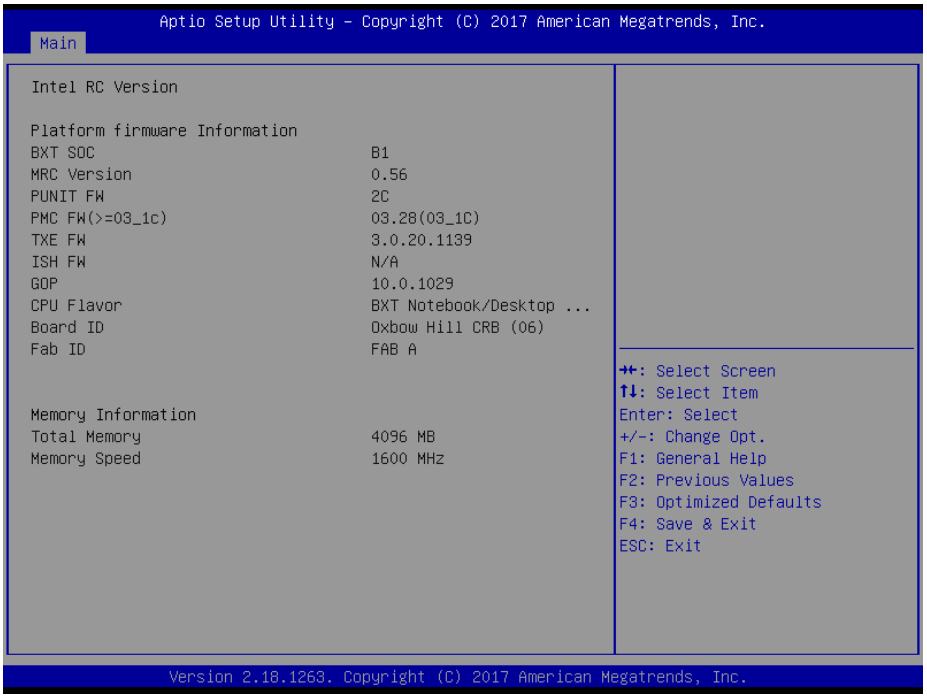
3.6 BIOS setup

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.

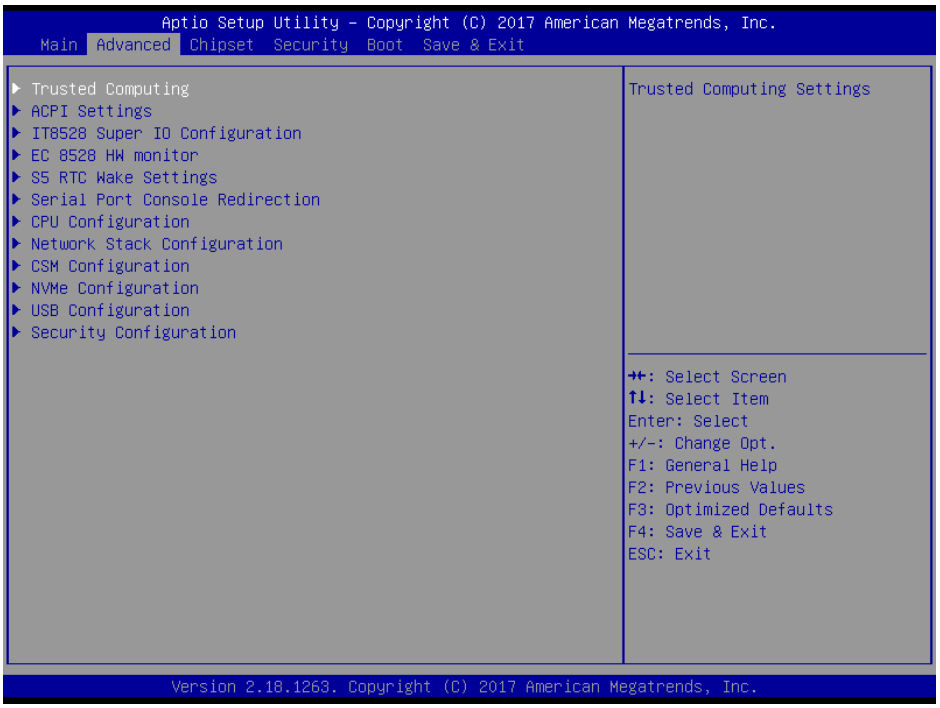
3.6.1.3 System Time

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

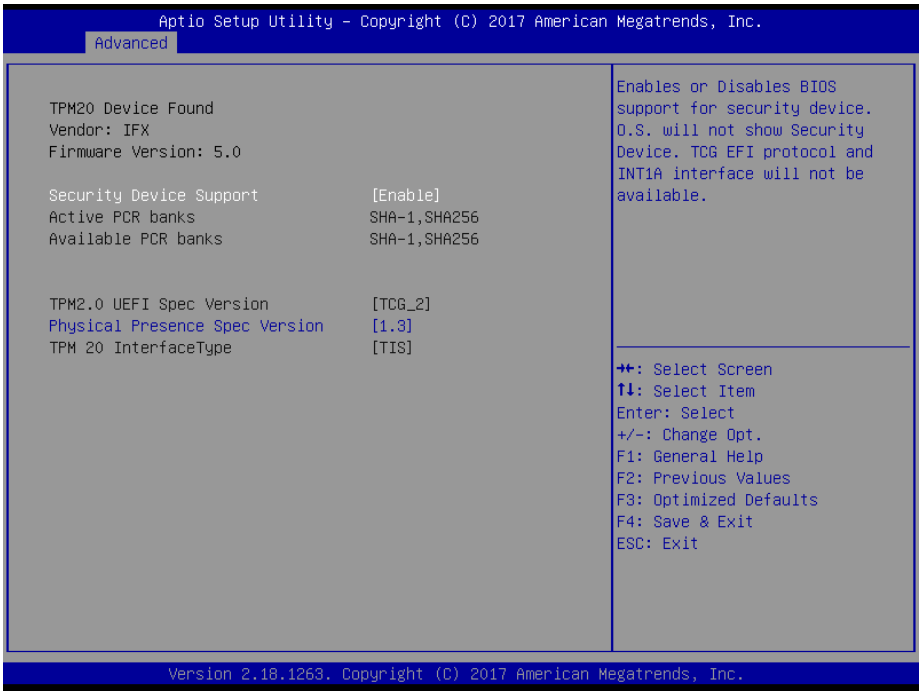
Note: The BIOS setup screens shown in this chapter are for reference purposes only, and may not exactly match what you see on your screen.
Visit the Avalue website (www.avalue.com) to download the latest product and BIOS information.

3.6.2 Advanced Menu

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

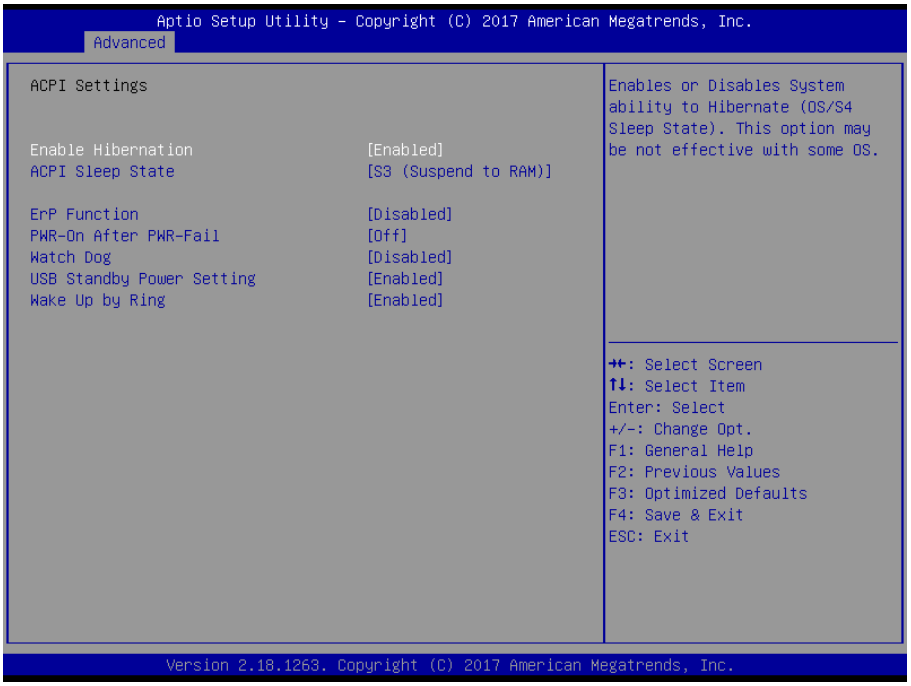


3.6.2.1 Trusted Computing



Item	Options	Description
Security Device Support	Disable, Enable**[Default]**	Enables or Disables BIOS support for security device. O.S. will not show Security Device. TCG EFI protocol and INT1A interface will not be available.
Physical Presence Spec Version	1.2 1.3**[Default]**	Select to Tell O.S. to support PPI Spec Version 1.2 or 1.3 Note some HCK tests might not support 1.3.

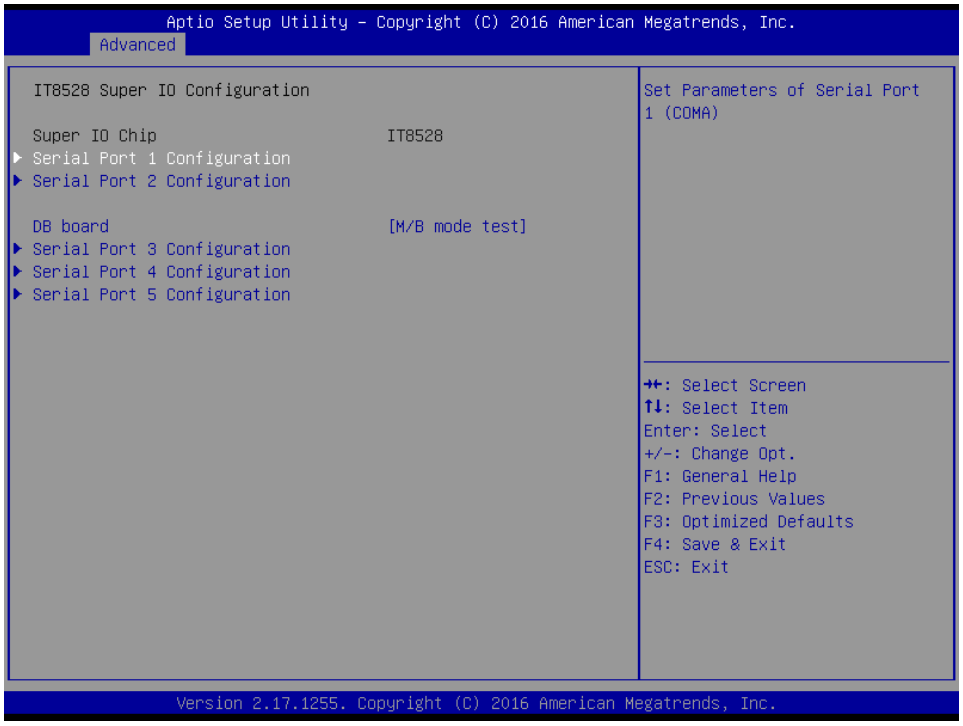
3.6.2.2 APCI Settings



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.
Wake Up by Ring	Disabled Enabled**[Default]**,	Wake Up by Ring from S3/S4/S5.

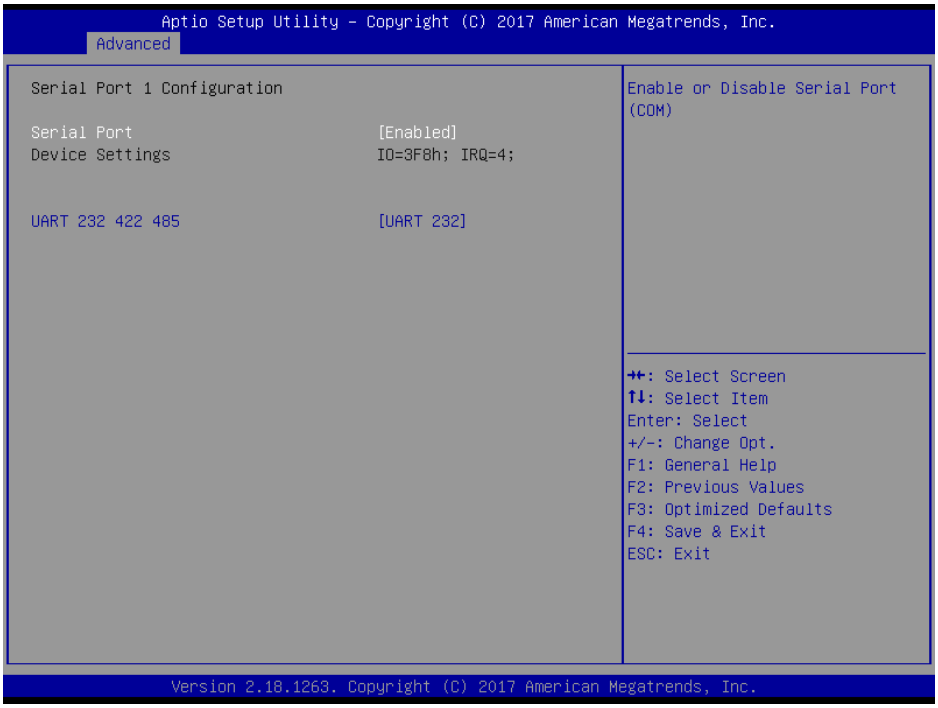
3.6.2.3 IT8528 Super IO Configuration

You can use this item to set up or change the IT8528 Super IO configuration for serial ports. Please refer to 3.6.2.3.1~ 3.6.2.3.5 for more information.



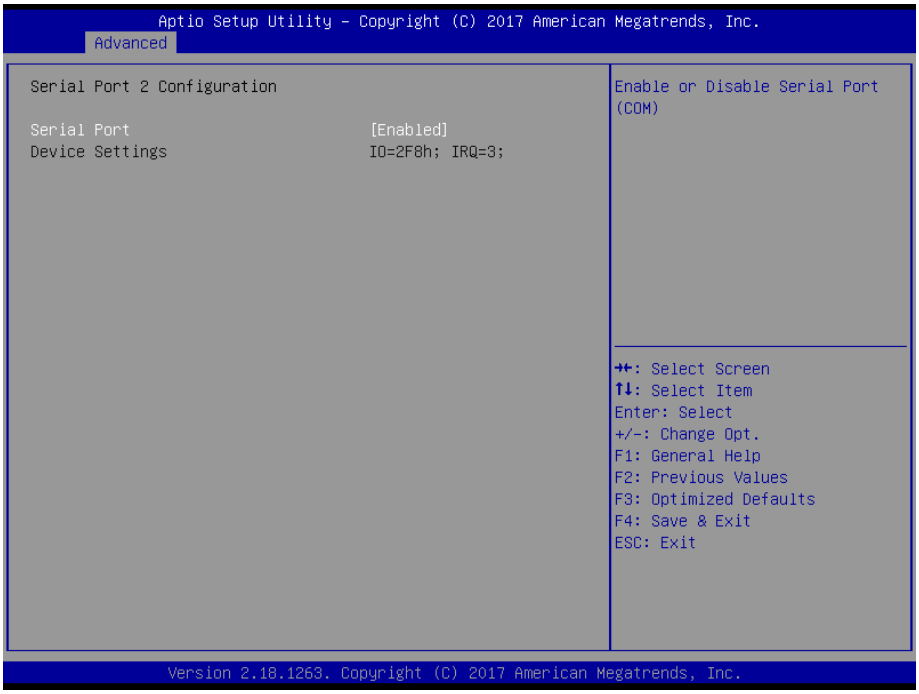
Item	Options	Description
DB board	DB-A/C/E/J DB-B DB-F 1COM DB-D/H/K 2COM DB-G 3COM M/B mode test**[Default]**,	DB board A-K. DA-A/B/C/E/J w/o UART DB-G w/t 3UART DB-D/H/K w/t 2UART DB-F w/t 1UART.
Serial Port 1 Configuration	Set Parameters of Serial Port 1 (COMA).	
Serial Port 2 Configuration	Set Parameters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

3.6.2.3.1 Serial Port 1 Configuration



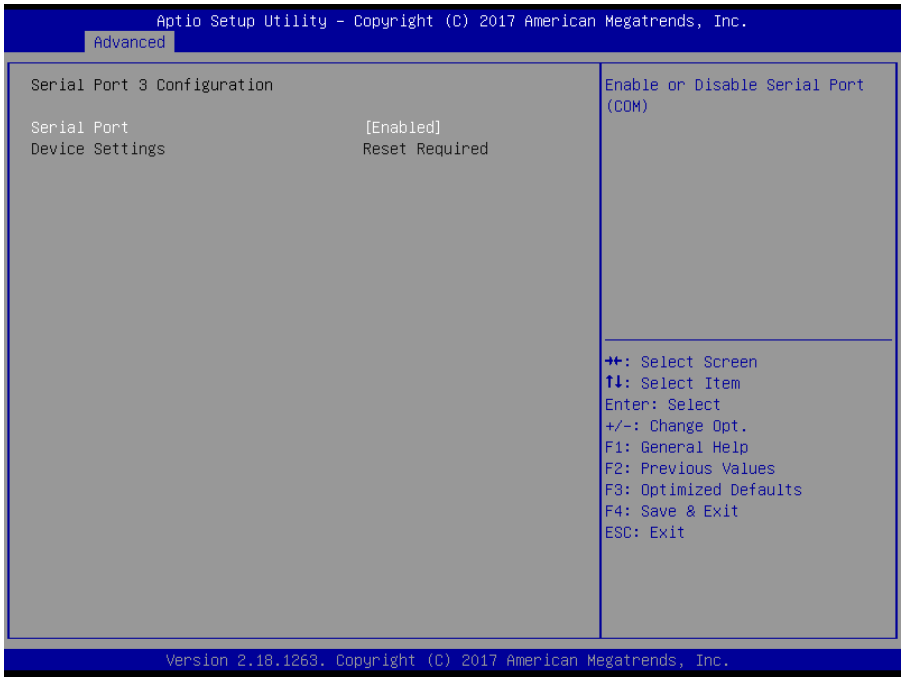
Item	Option	Description
Serial Port	Enabled**[Default]**, Disabled	Enable or Disable Serial Port (COM).
UART 232 422 485	UART 232**[Default]** UART 422 UART 485	Change the Serial Port

3.6.2.3.2 Serial Port 2 Configuration



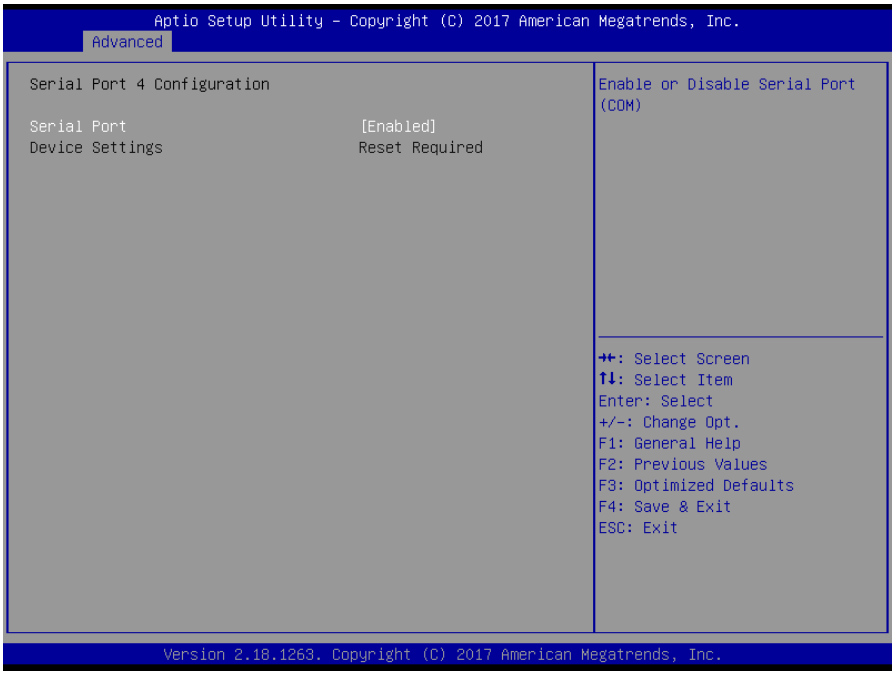
Item	Option	Description
Serial Port	Enabled**[Default]**, Disabled	Enable or Disable Serial Port (COM).

3.6.2.3.3 Serial Port 3 Configuration



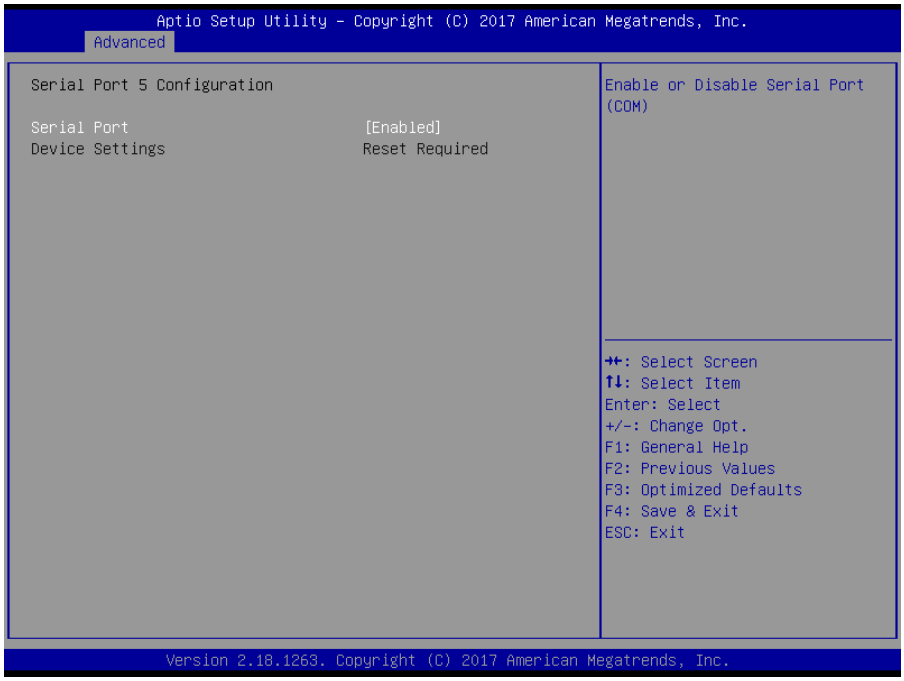
Item	Option	Description
Serial Port	Enabled**[Default]**, Disabled	Enable or Disable Serial Port (COM).

3.6.2.3.4 Serial Port 4 Configuration



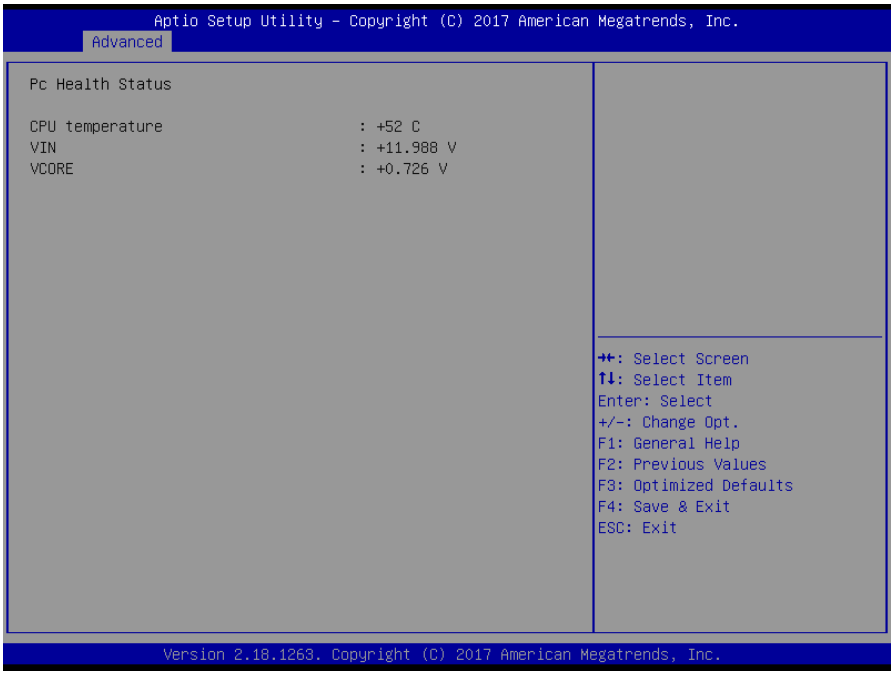
Item	Option	Description
Serial Port	Enabled**[Default]**, Disabled	Enable or Disable Serial Port (COM).

3.6.2.3.5 Serial Port 5 Configuration

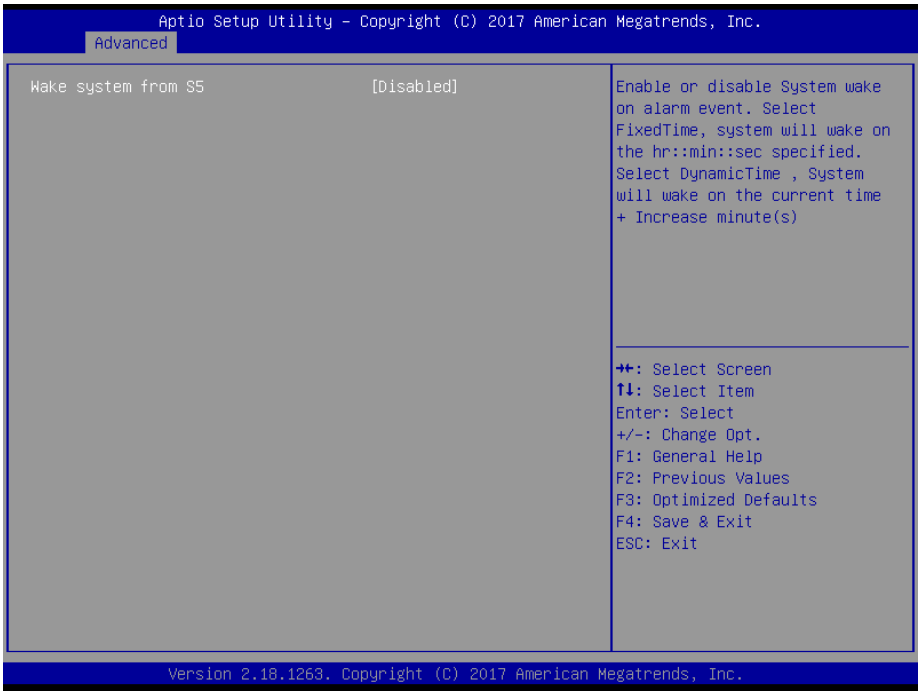


Item	Option	Description
Serial Port	Enabled**[Default]**, Disabled	Enable or Disable Serial Port (COM).

3.6.2.4 H/W Monitor

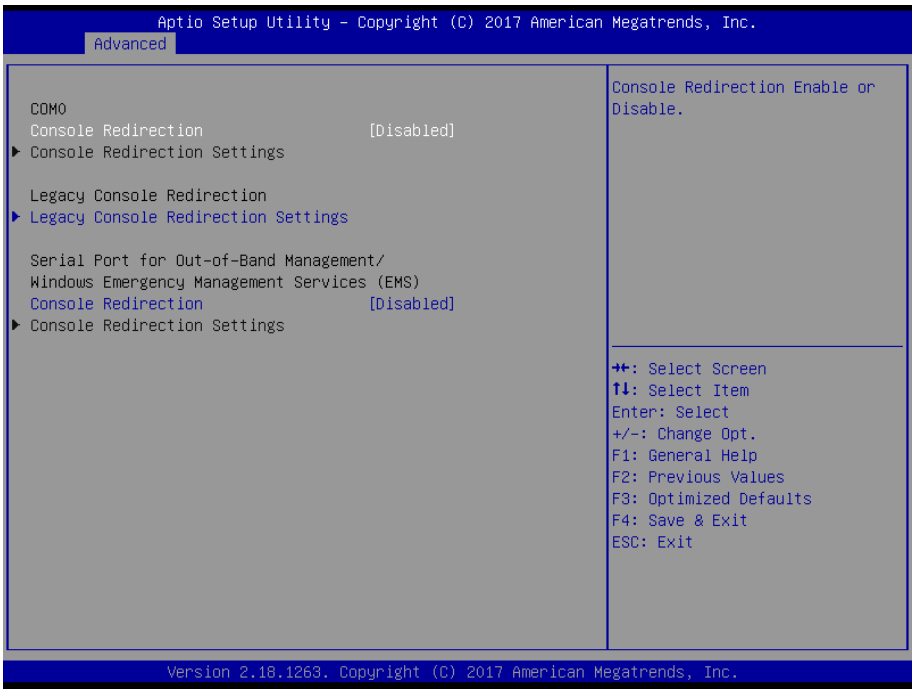


3.6.2.5 S5 RTC Wake Settings



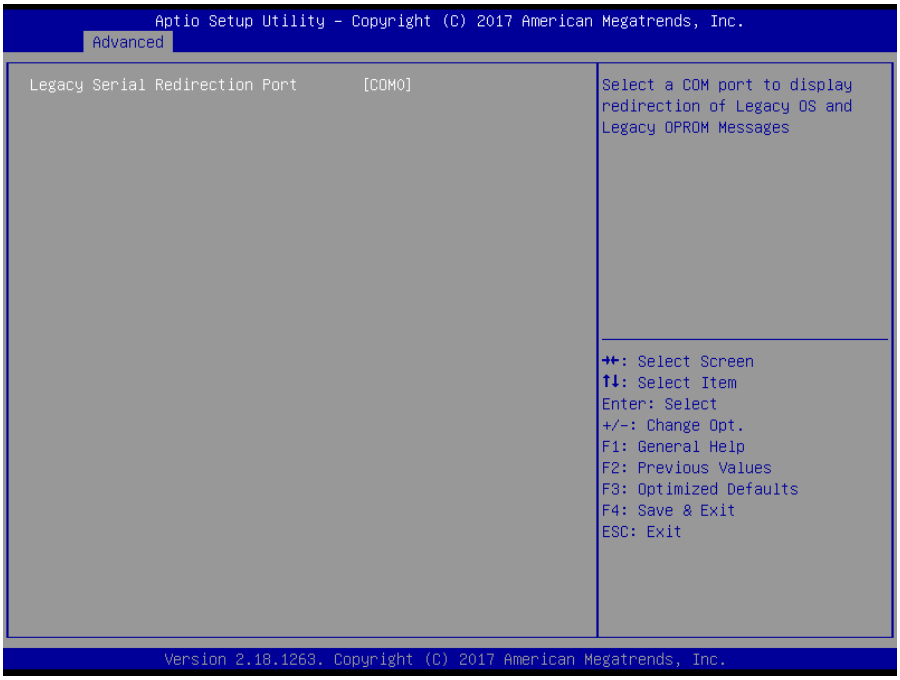
Item	Options	Description
Wake system from S5	Disabled**[Default]**, Fixed Time Dynamic Time	Enable or disable System wake on alarm event. Select Fixed Time, system will wake on the hr::min::sec specified. Select Dynamic Time, System will wake on the current time + Increase minute(s).

3.6.2.6 Serial Port Console Redirection



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

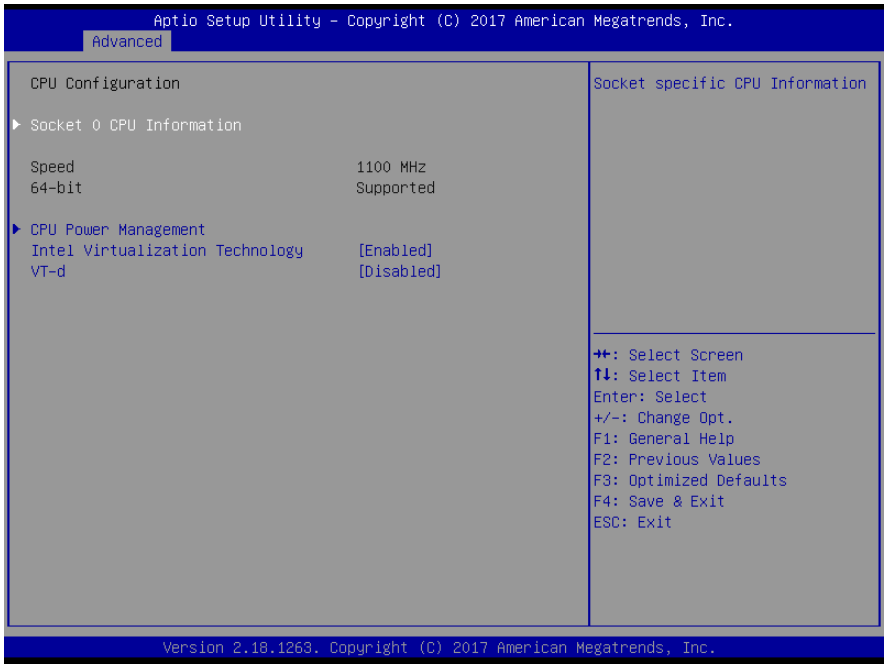
3.6.2.6.1 Legacy Console Redirection Settings



Item	Option	Description
Legacy Serial Redirection Port	COM0**[Default]**,	Select a COM port to display redirection of Legacy OS and Legacy OPROM Messages.

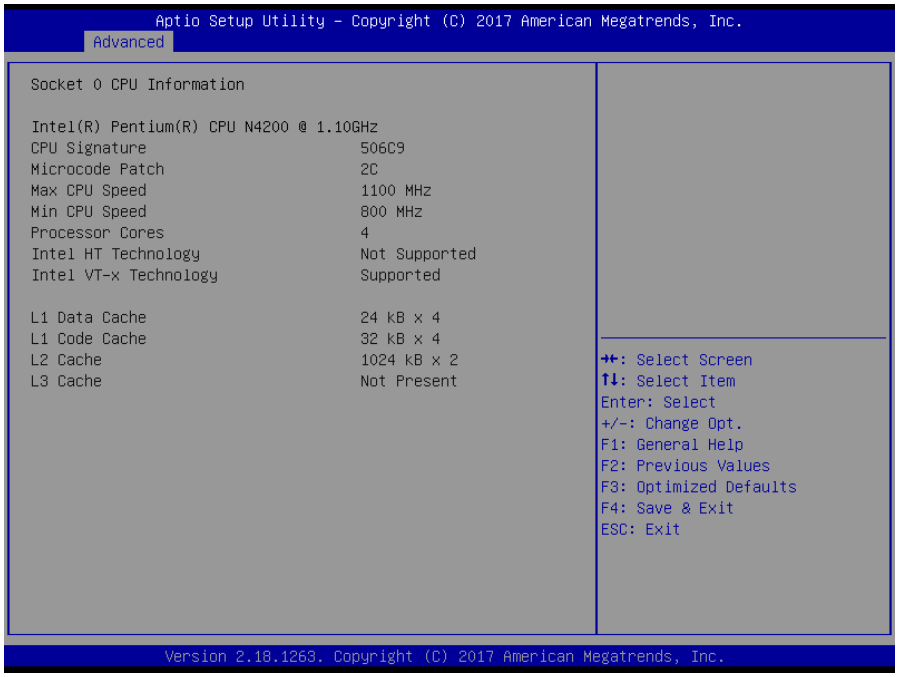
3.6.2.7 CPU Configuration

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

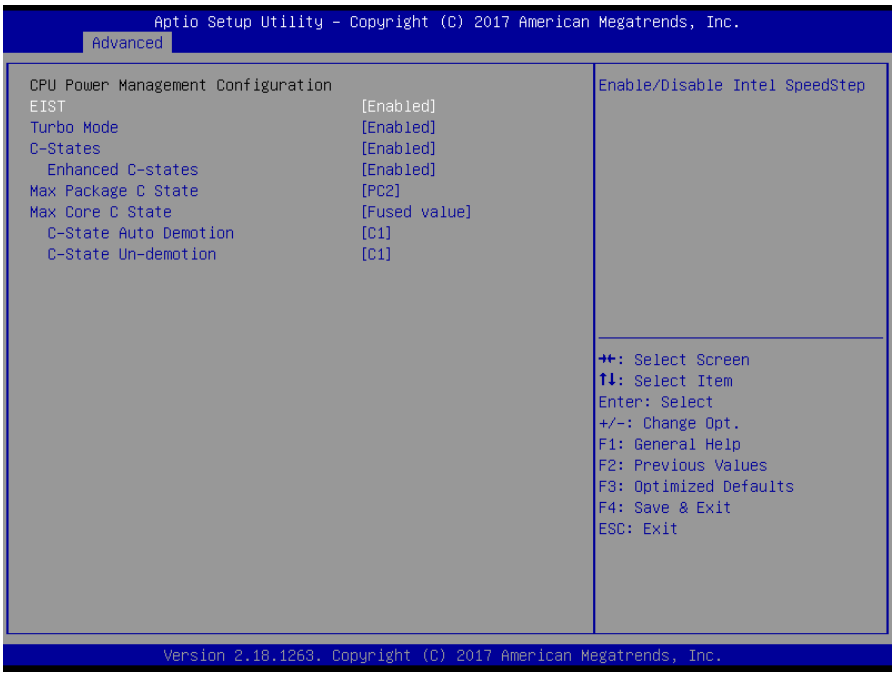


Item	Options	Description
Intel Virtualization Technology	Disabled, Enabled**[Default]**	When enabled, a VMM can utilize the additional hardware capabilities provided by Vanderpool Technology.
VT-d	Disabled**[Default]**, Enabled	Enable/Disable CPU VT-d.

3.6.2.7.1 Socket 0 CPU Information

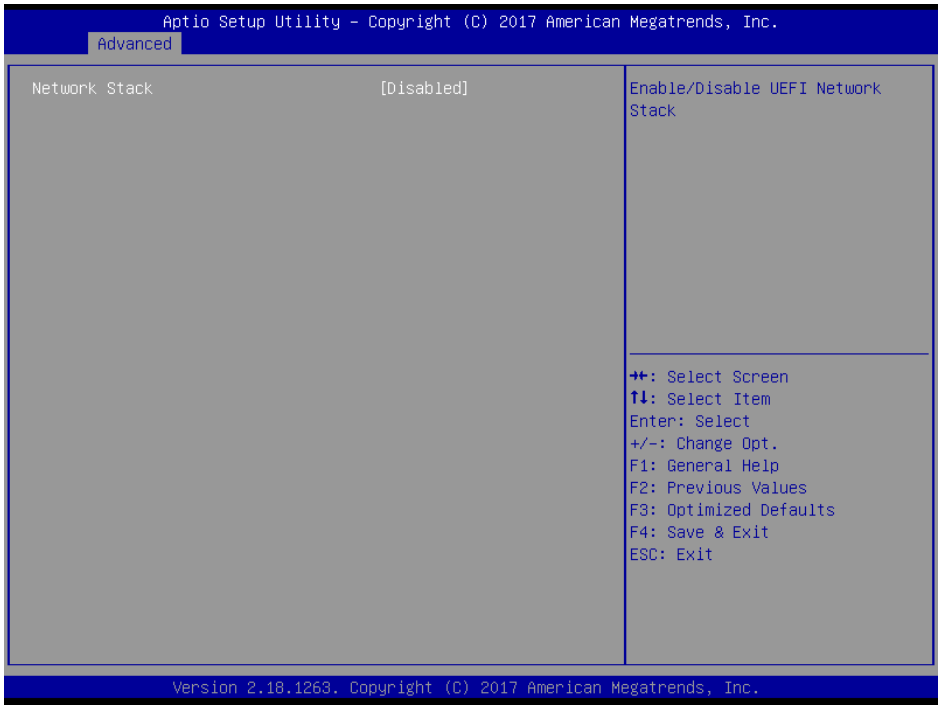


3.6.2.7.2 CPU Power Management Configuration



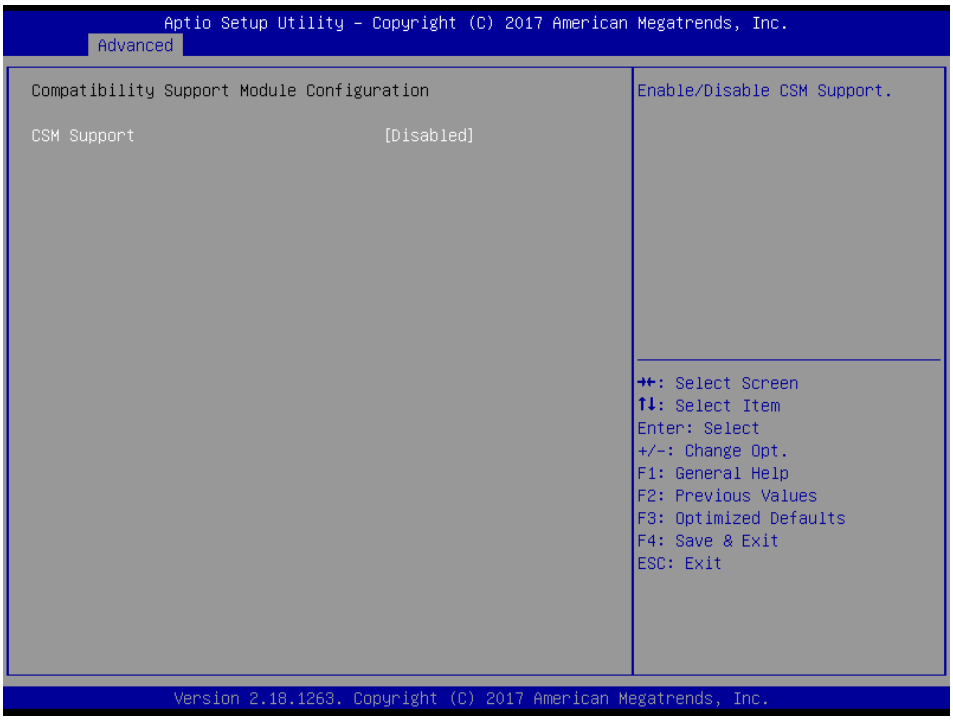
Item	Options	Description
EIST	Disabled, Enabled**[Default]**	Enable/Disable Intel SpeedStep.
Turbo Mode	Disabled, Enabled**[Default]**	Turbo Mode.
C-States	Disabled, Enabled**[Default]**	Enable/Disable C States.
Enhanced C-states	Disabled, Enabled**[Default]**	Enable/Disable C1E. When enabled, CPU will switch to minimum speed when all cores enter C-State.
Max Package C State	PC2**[Default]** PC1 C0	Controls the Max Package C State that the processor will support.
Max Core C State	Fused value**[Default]** Core C10 Core C9 Core C8 Core C7 Core C6 Core C1 Unlimited	This option controls the Max Core C State that cores will support.
C-State Auto Demotion	Disabled, C1**[Default]**	Configure C-State Auto Demotion.
C-State Un-demotion	Disabled, C1**[Default]**	Configure C-State Un-demotion.

3.6.2.8 Network Stack Configuration



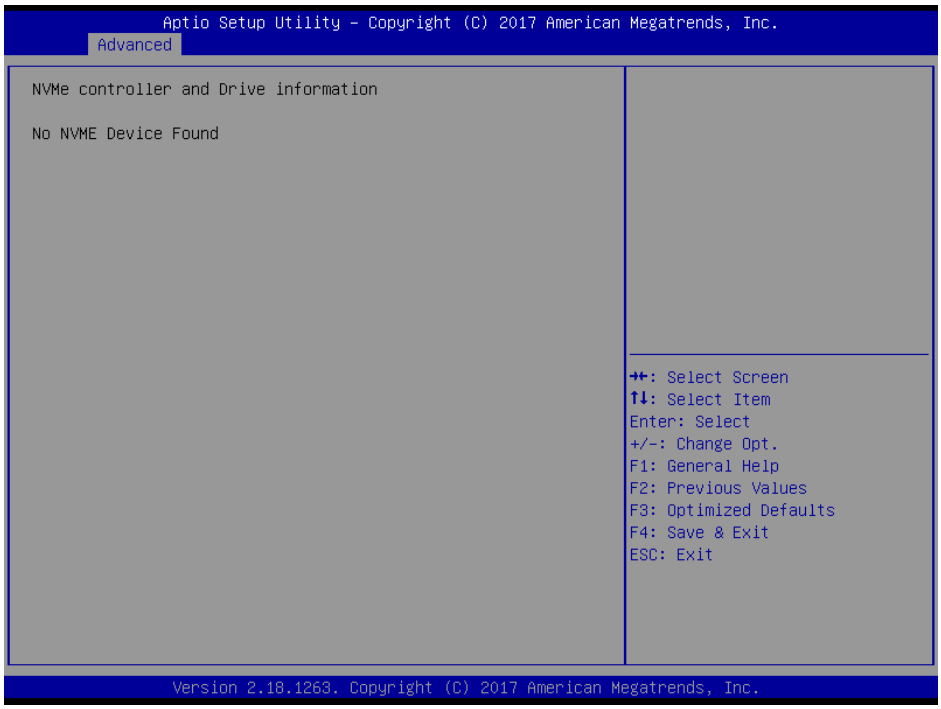
Item	Options	Description
Network Stack	Enabled Disabled**[Default]**	Enable/Disable UEFI Network Stack.

3.6.2.9 CSM Configuration



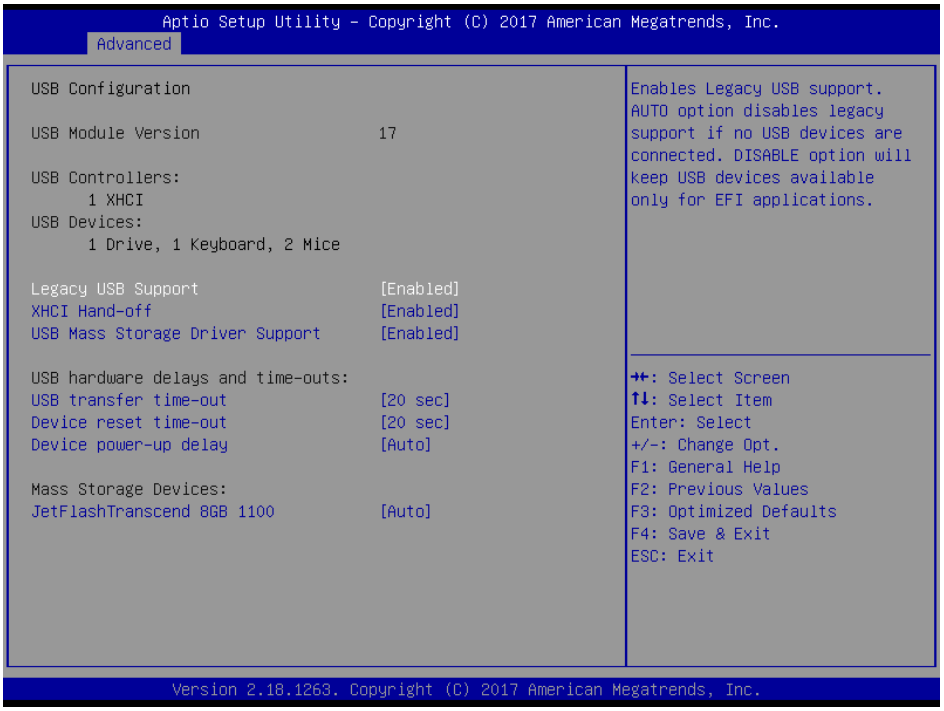
Item	Options	Description
CSM Support	Enabled Disabled**[Default]**	Enable/Disable CSM Support.

3.6.2.10 NVMe Configuration



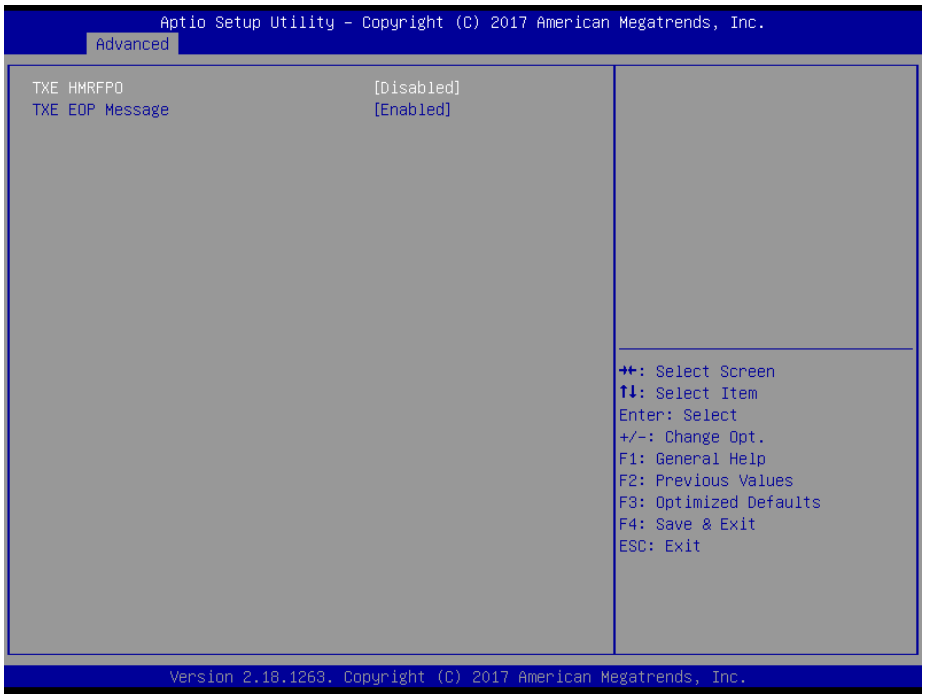
3.6.2.11 USB Configuration

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



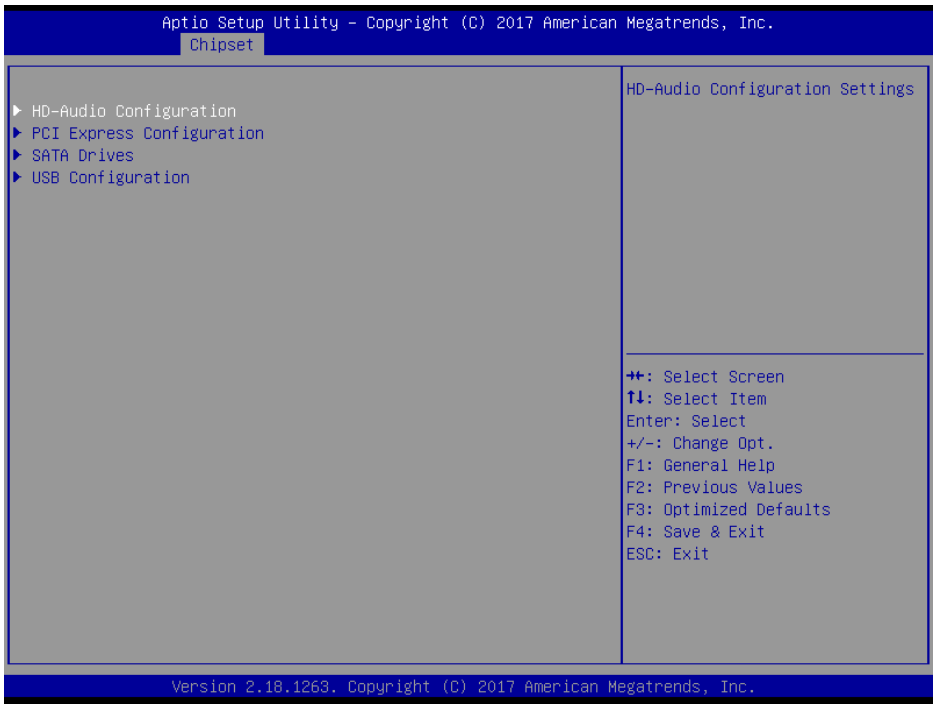
Item	Options	Description
Legacy USB Support	Enabled**[Default]** Disabled Auto	Enables Legacy USB support. AUTO option disables legacy support if no USB devices are connected. DISABLE option will keep USB devices available only for EFI applications.
XHCI Hand-off	Enabled**[Default]** Disabled	This is 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.
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.
Mass Storage Devices	Auto**[Default]** Floppy Forced FDD Hard Disk CD-ROM	Mass storage device emulation type. ‘AUTO’ enumerates devices according to their media format. Optical drives are emulated as ‘CDROM’, drives with no media will be emulated according to a drive type.

3.6.2.12 Security Configuration

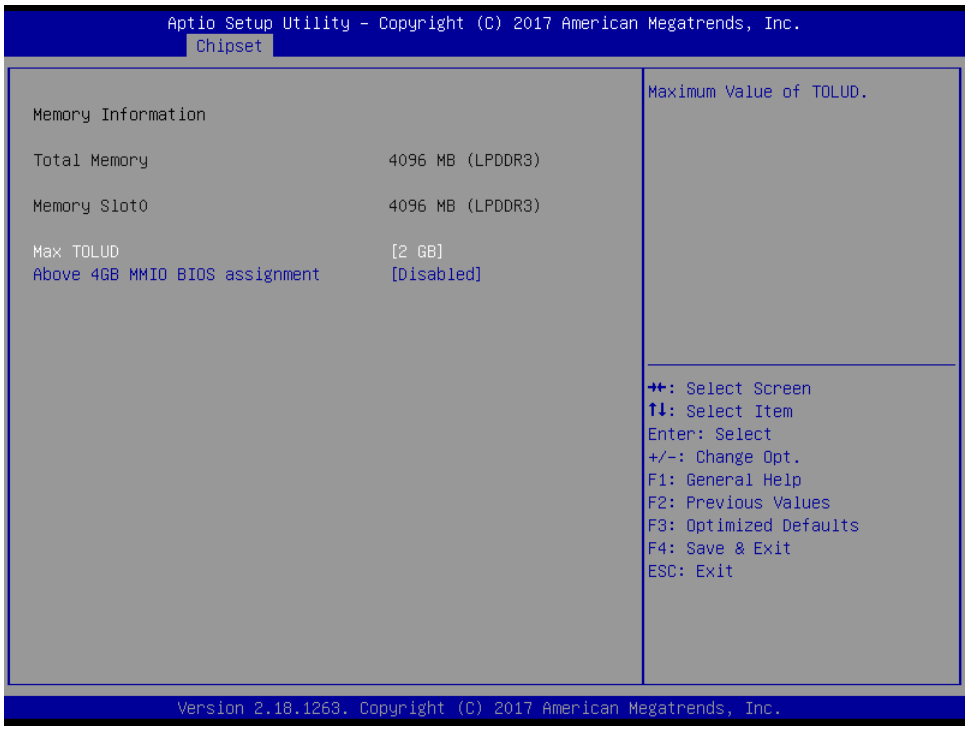


Item	Options	Description
TXE HMRFPO	Enabled Disabled**[Default]**	TXE HMRFPO.
TXE EOP Message	Enabled**[Default]** Disabled	Send EOP Message Before Enter OS.

3.6.3 Chipset

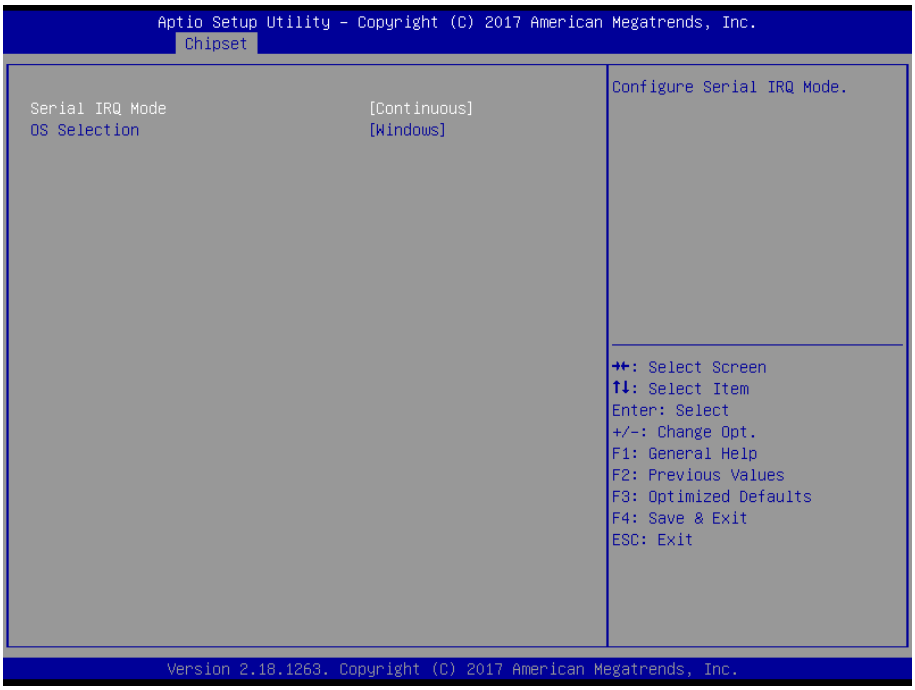


3.6.3.1 North Bridge



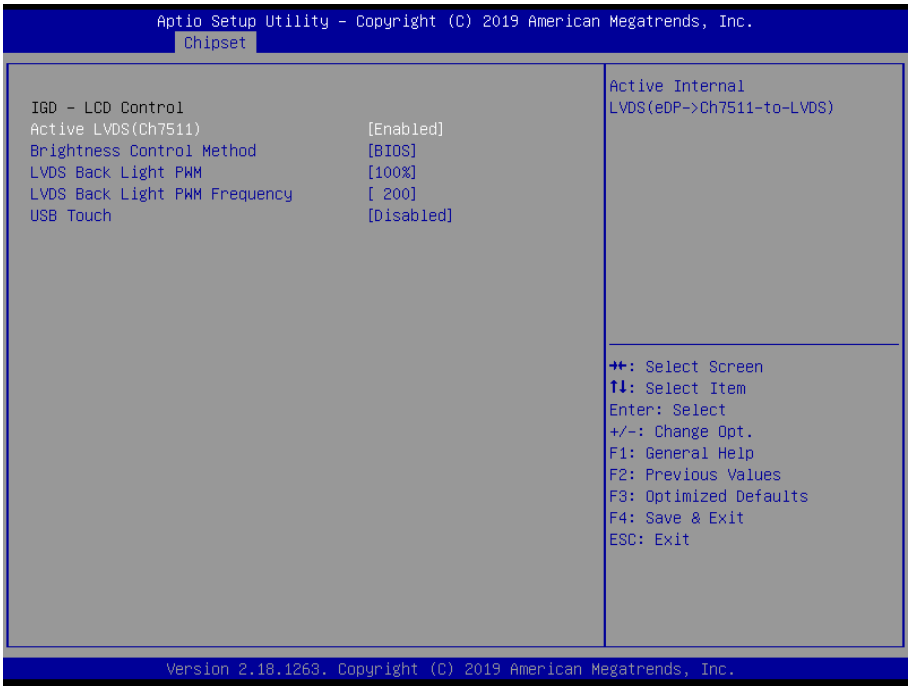
Item	Option	Description
Max TOLUD	2 GB**[Default]** 2.25 GB 2.5 GB 2.75 GB	Maximum Value of TOLUD.
Above 4GB MMIO BIOS assignment	Enabled Disabled**[Default]**	Enable/Disable above 4GB MemoryMappedIO BIOS assignment. This is disabled automatically when Aperture Size is set to 2048MB.

3.6.3.2 South Bridge



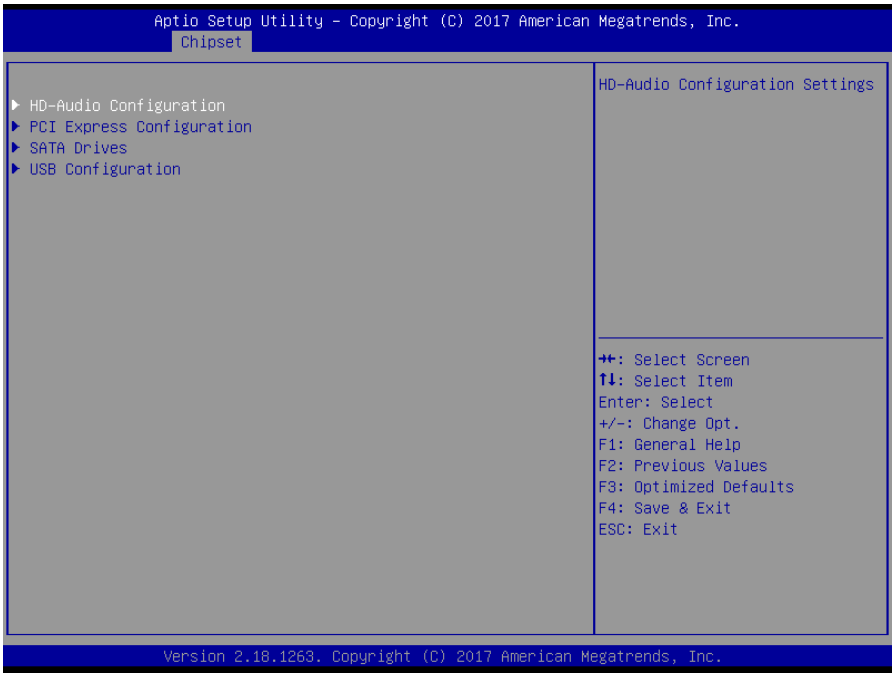
Item	Option	Description
Serial IRQ Mode	Quiet Continuous**[Default]**	Configure Serial IRQ Mode.
OS Selection	Windows**[Default]** Android Intel Linux	Select the target OS.

3.6.3.3 Uncore Configuration

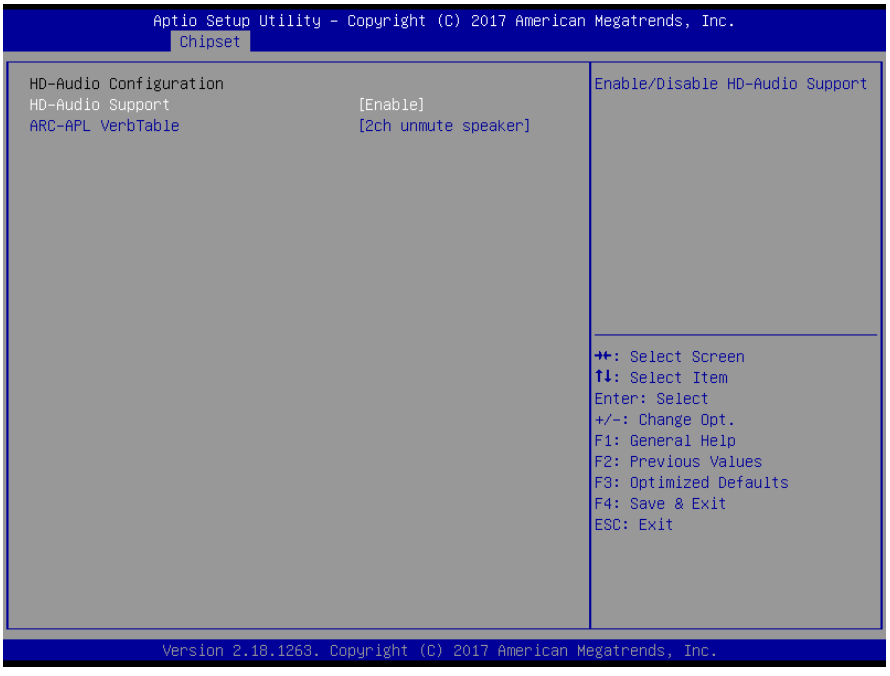


Item	Option	Description
Active LVDS (Ch7511)	Disabled**[Default]** Enabled	Active Internal LVDS(eDP->Ch7511-to-LVDS).
Brightness Control Method	BIOS**[Default]** BR Button VR OS Driver	LVDS Brightness Control Method. 1.BIOS 2.Brightness Button 3.Variable Resistor 4.OS Driver.
LVDS Back Light PWM	00% 25% 50% 75% 100%**[Default]**	Select LVDS back light PWM duty.
LVDS Back Light PWM Frequency	200**[Default]** 300 400 500 700 1k 2k 3k 5k 10k 20k	Select LVDS back light PWM Frequency.
USB Touch	Disabled**[Default]** Enabled	Enable or Disable USB Touch.

3.6.3.4 South Cluster Configuration

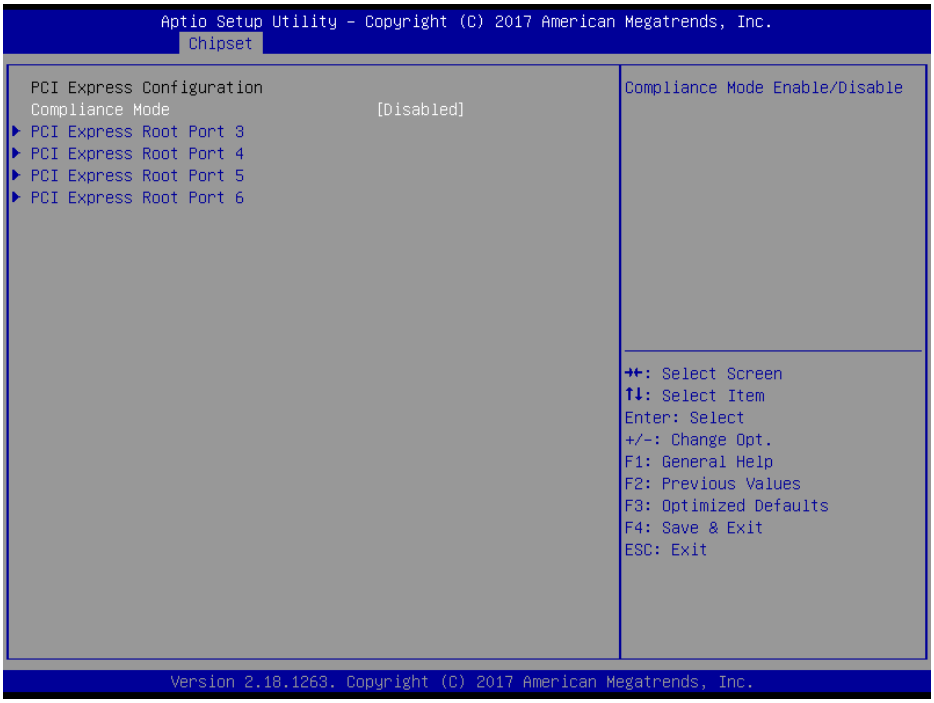


3.6.3.4.1 HD-Audio Configuration



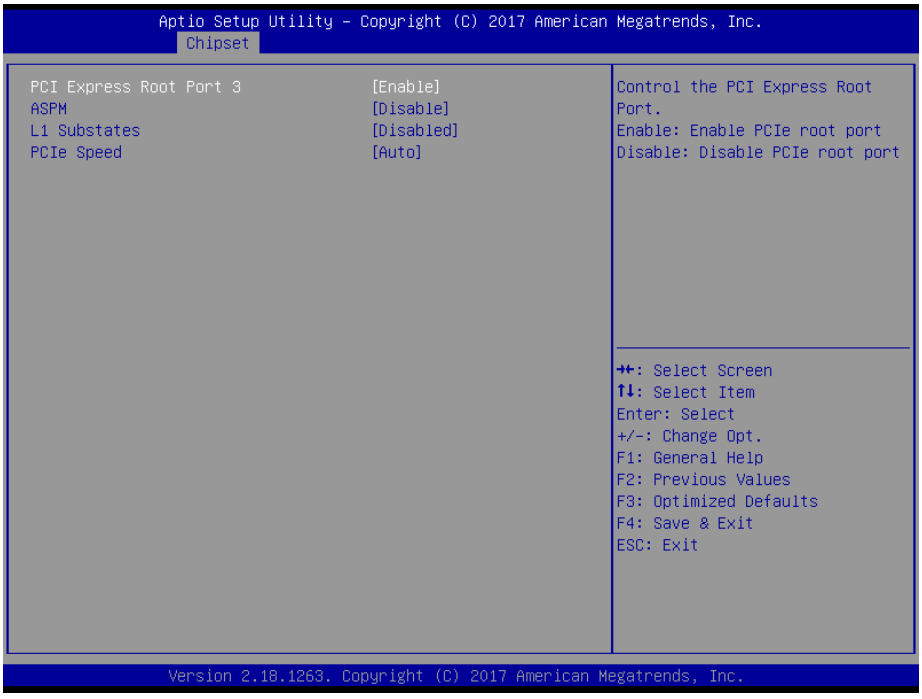
Item	Option	Description
HD-Audio Support	Disable**[Default]**, Enable	Enable/Disable HD-Audio Support.
ARC-APL VerbTable	5.1ch 2ch unmute speaker**[Default]**	ARC-APL VerbTable.

3.6.3.4.2 PCI Express Configuration



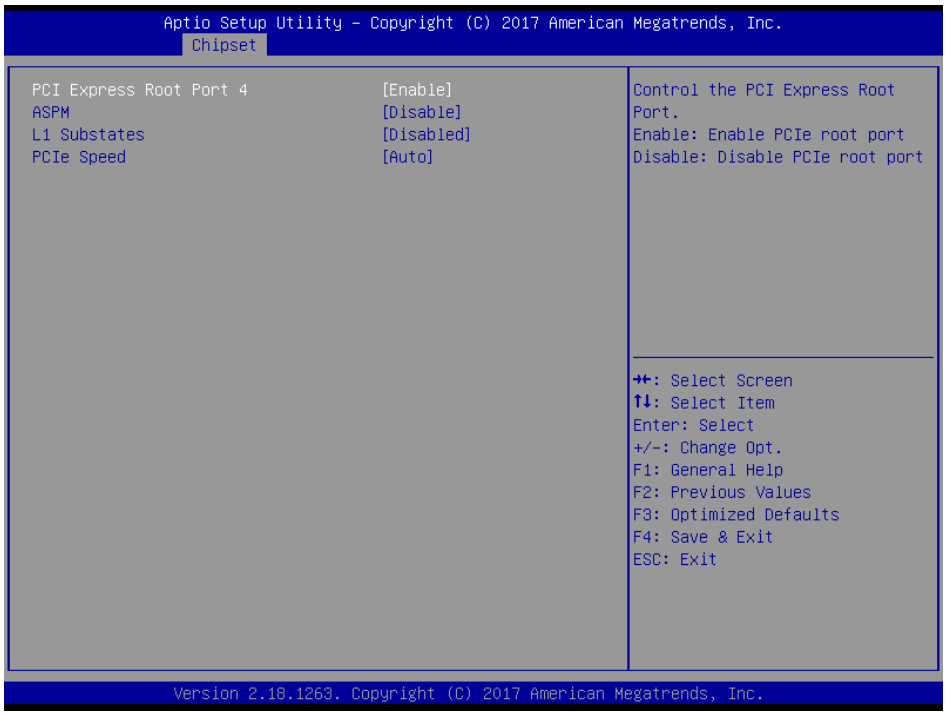
Item	Option	Description
Compliance Mode	Disable**[Default]**, Enable	Compliance Mode Enable/Disable.

3.6.3.4.2.1 PCI Express Root Port 3



Item	Option	Description
PCI Express Root Port 3	Disable Enable**[Default]**	Control the PCI Express Root Port. Enable: Enable PCIe root port Disable: PCIe root port.
ASPM	Disable**[Default]** L0s L1 L0sL1 Auto	PCI Express Active State Power Management settings.
L1 Substates	Disabled**[Default]** L1.1 L1.2 L1.1 & L1.2	PCI Express L1 Substates settings.
PCIe Speed	Auto**[Default]** Gen 1 Gen 2	Configure PCIe Speed.

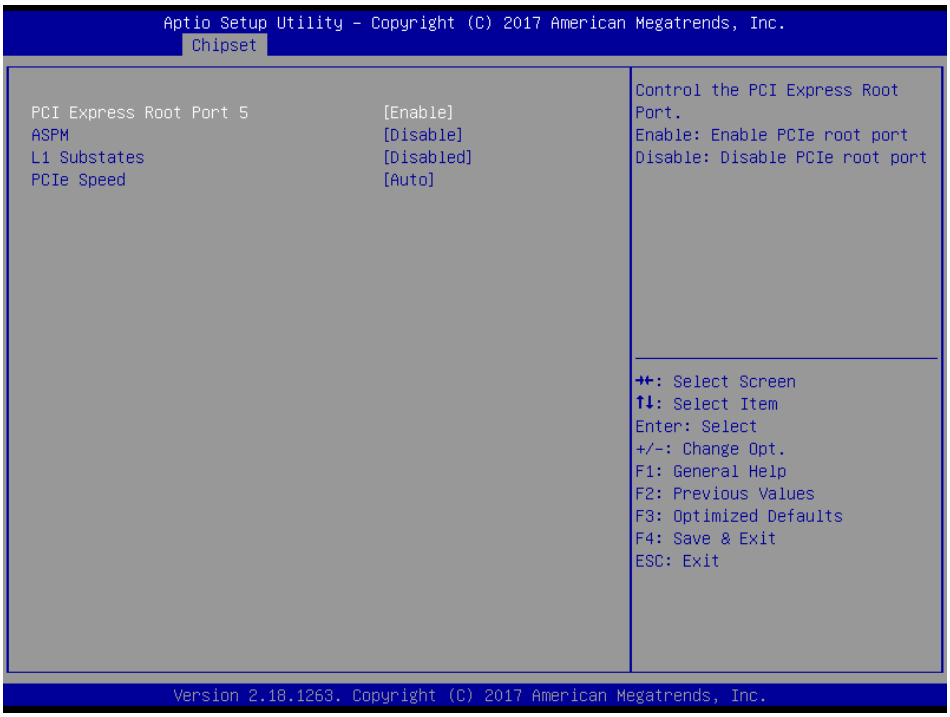
3.6.3.4.2.2 PCI Express Root Port 4



Item	Option	Description
PCI Express Root Port 4	Disable Enable**[Default]**	Control the PCI Express Root Port. Enable: Enable PCIe root port Disable: PCIe root port.
ASPM	Disable**[Default]** L0s L1 L0sL1 Auto	PCI Express Active State Power Management settings.

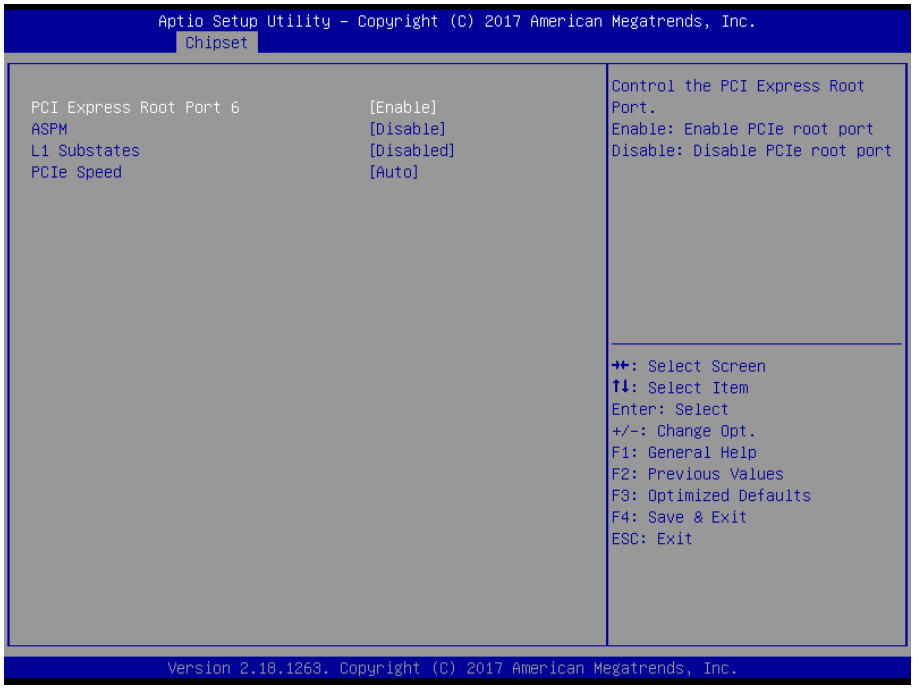
L1 Substates	Disabled**[Default]** L1.1 L1.2 L1.1 & L1.2	PCI Express L1 Substates settings.
PCIe Speed	Auto**[Default]** Gen 1 Gen 2	Configure PCIe Speed.

3.6.3.4.2.3 PCI Express Root Port 5



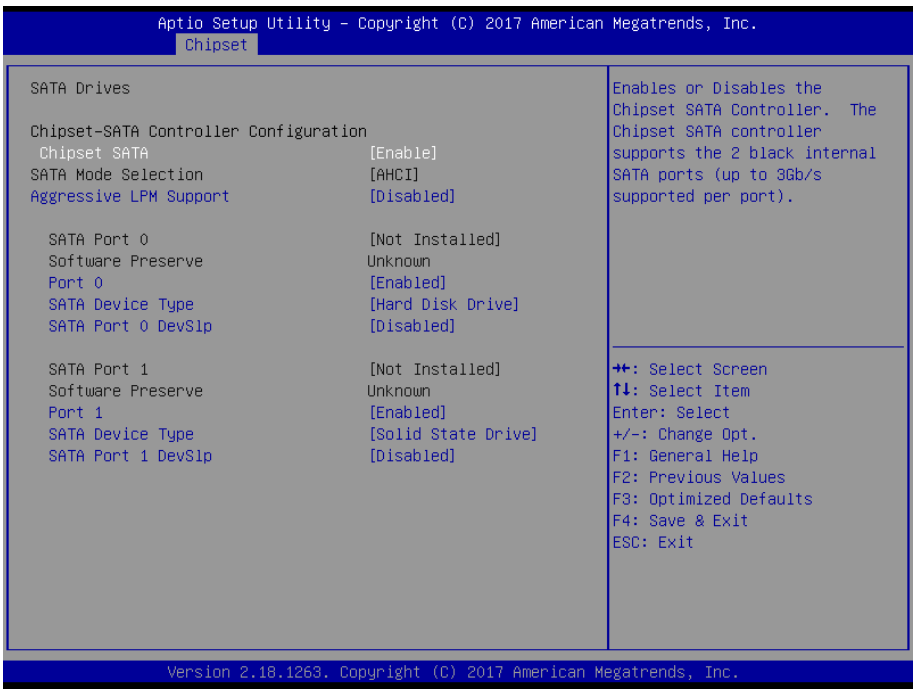
Item	Option	Description
PCI Express Root Port 5	Disable Enable**[Default]**	Control the PCI Express Root Port. Enable: Enable PCIe root port Disable: PCIe root port.
ASPM	Disable**[Default]** L0s L1 L0sL1 Auto	PCI Express Active State Power Management settings.
L1 Substates	Disabled**[Default]** L1.1 L1.2 L1.1 & L1.2	PCI Express L1 Substates settings.
PCIe Speed	Auto**[Default]** Gen 1 Gen 2	Configure PCIe Speed.

3.6.3.4.2.4 PCI Express Root Port 6



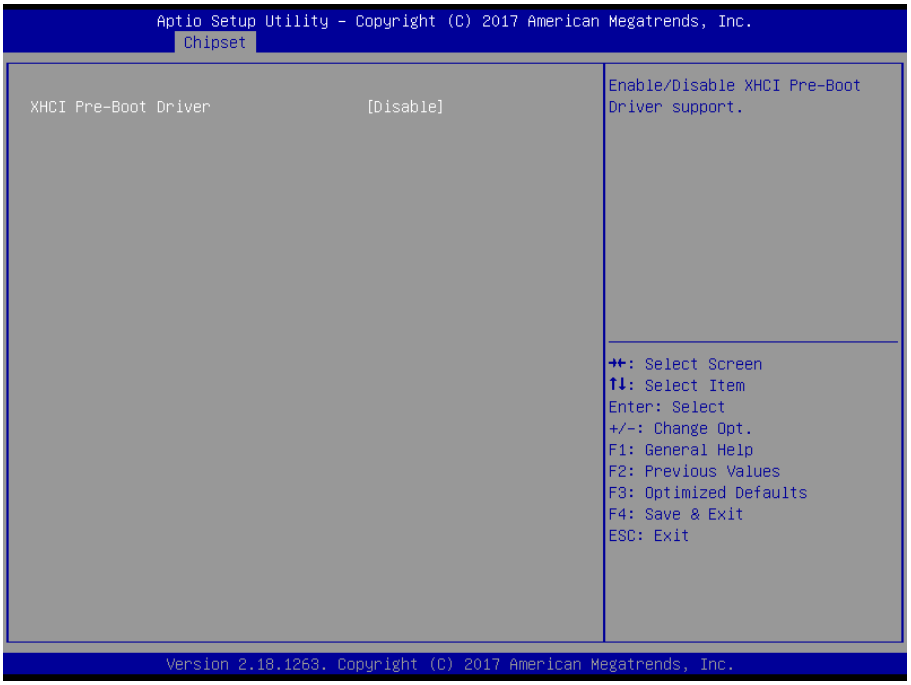
Item	Option	Description
PCI Express Root Port 6	Disable Enable**[Default]**	Control the PCI Express Root Port. Enable: Enable PCIe root port Disable: PCIe root port.
ASPM	Disable**[Default]** L0s L1 L0sL1 Auto	PCI Express Active State Power Management settings.
L1 Substates	Disabled**[Default]** L1.1 L1.2 L1.1 & L1.2	PCI Express L1 Substates settings.
PCIe Speed	Auto**[Default]** Gen 1 Gen 2	Configure PCIe Speed.

3.6.3.4.4 SATA Drives



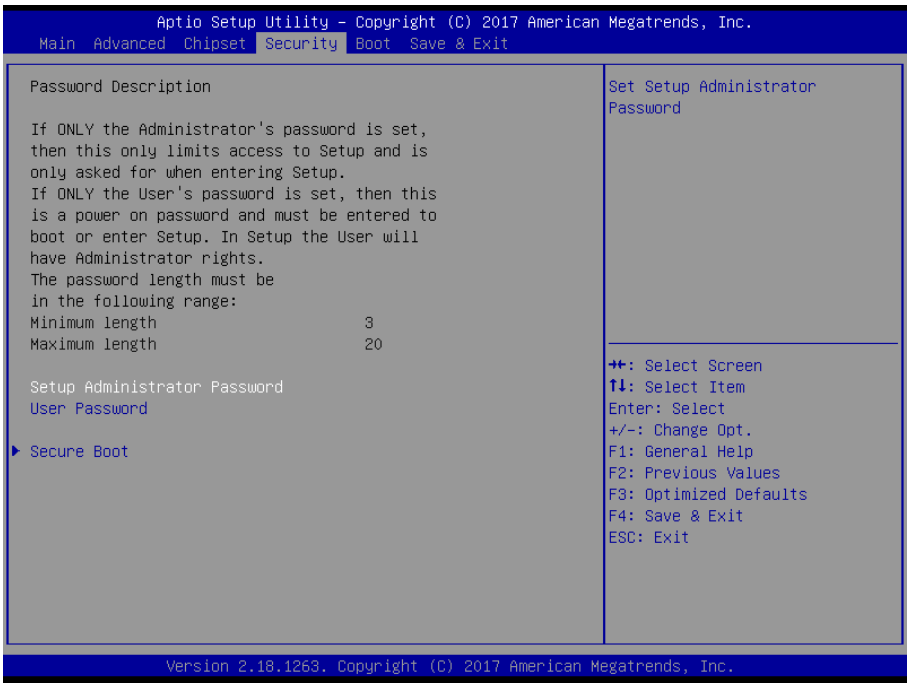
Item	Option	Description
Chipset SATA	Enable**[Default]**, Disable	Enables or Disables the Chipset the SATA Controller. The Chipset SATA controller supports the 2 black internal SATA ports (up to 3Gb/s supported per port).
Aggressive LPM Support	Disabled**[Default]** Enabled	Enable PCH to aggressively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

3.6.3.4.3 USB Configuration



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

3.6.4 Security



- **Administrator Password**

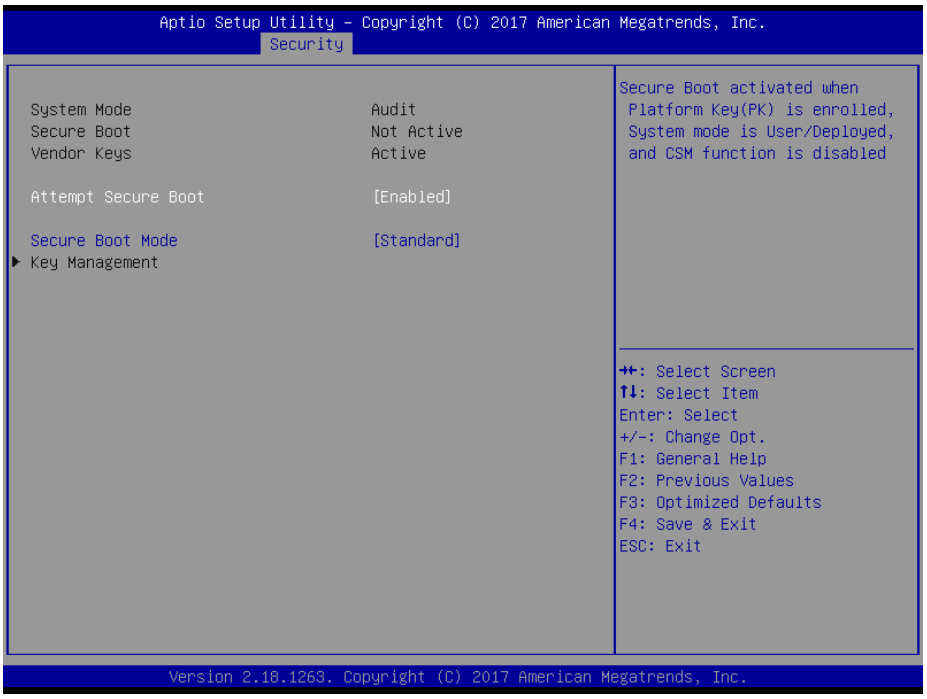
Set setup Administrator Password

- **User Password**

Set User Password

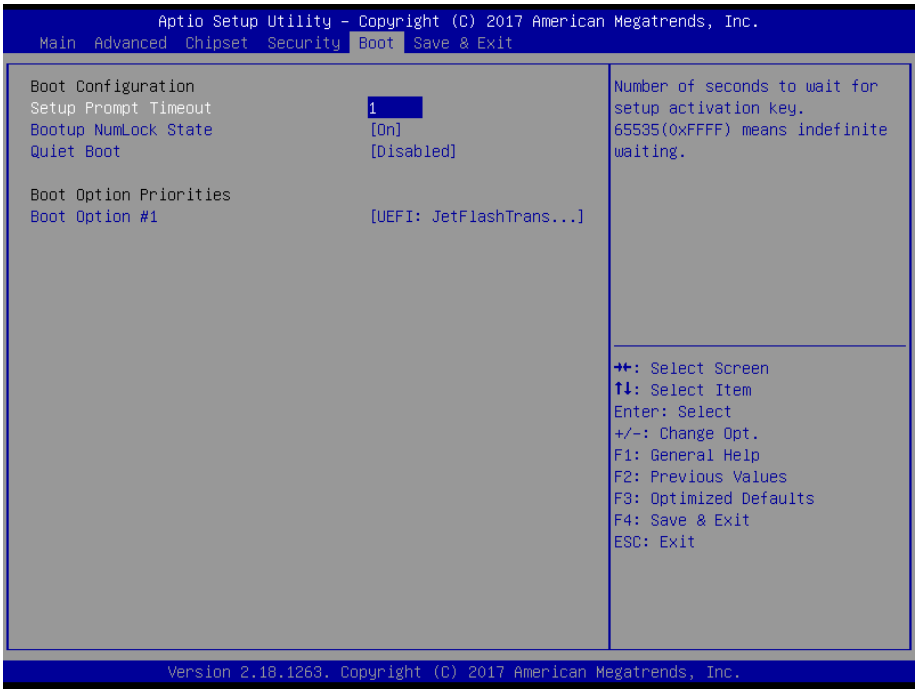
3.6.4.1 Secure Boot menu





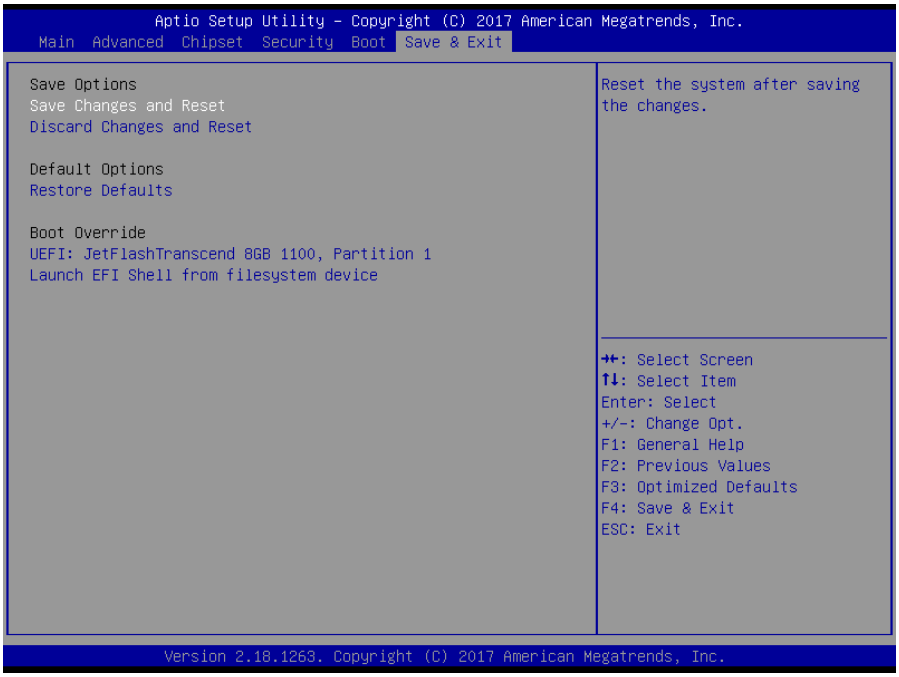
Item	Option	Description
Attempt Secure Boot	Disabled Enabled**[Default]**	Secure Boot activated when Platform Key(PK) is enrolled, System mode is User/Deployes, and CSM function is disabled.
Secure Boot Mode	Disabled**[Default]** Enabled	Secure Boot Mode – Custom_Standard, Set UEFI Secure Boot Mode to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

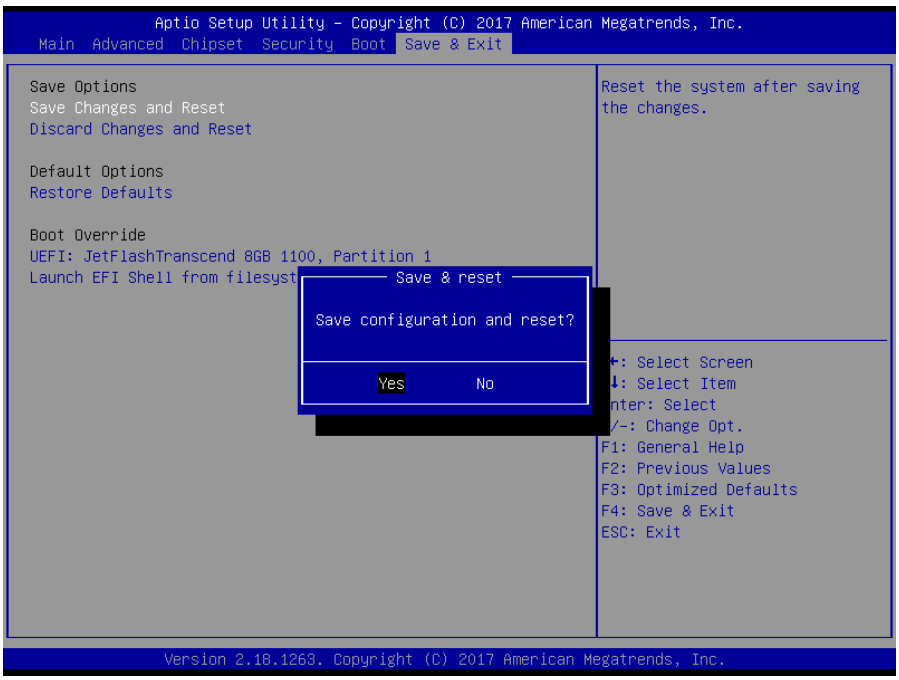
3.6.5 Boot



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
Boot Option #1	Set the system boot order.	

3.6.6 Save and exit





3.6.6.1 Save Changes and Reset

Reset the system after saving the changes.

3.6.6.2 Discard Changes and Reset

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

3.6.6.3 Restore Defaults

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

3.6.6.4 Launch EFI Shell from filesystem device

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

4. Maintenance & Troubleshooting

System Maintenance Introduction

If the components of the product fail they must be replaced.

Please contact the system reseller or vendor to purchase the replacement parts. Please follow the safety precautions outlined in the sections that follow

General Safety Precautions

Please ensure the following safety precautions are adhered to at all times.

1. Follow the electrostatic precautions outlined below whenever the device is opened.
2. Make sure the power is turned off and the power cord is disconnected whenever the product is being installed, moved or modified.
3. To prevent the risk of electric shock, make sure power cord is unplugged from wall socket. To fully disengage the power to the unit, please disconnect the power cord from the AC outlet. Refer servicing to qualified service personnel. The AC outlet shall be readily available and accessible.
4. Do not apply voltage levels that exceed the specified voltage range. Doing so may cause fire and/or an electrical shock. Use a power cord that matches the voltage of the power outlet, which has been approved and complies with the safety standard of your particular country.
5. Electric shocks can occur if the product chassis is opened when it is running. To avoid risk of electric shock, this device must only be connected to a supply mains with protective earth.
6. Do not drop or insert any objects into the ventilation openings of the product.
7. If considerable amounts of dust, water, or fluids enter the device, turn off the power supply immediately, unplug the power cord, and contact your dealer or the nearest service center.
8. This equipment is not suitable for use in locations where children are likely to be present.
9. DO NOT:

- Drop the device against a hard surface.
- Strike or exert excessive force onto the LCD panel.
- Touch any of the LCD panels with a sharp object.
- In a site where the ambient temperature exceeds the rated temperature.

Anti-Static Precautions

WARNING:
Failure to take ESD precautions during the installation of the product may result in permanent damage to the product and severe injury to the user.

Electrostatic discharge (ESD) can cause serious damage to electronic components, including the product. Dry climates are especially susceptible to ESD. It is therefore critical that whenever the product is opened and any of the electrical components are handled, the following anti-static precautions are strictly adhered to.

- Wear an anti-static wristband: Wearing a simple anti-static wristband can help to prevent ESD from damaging any electrical component.
- Self-grounding: Before handling any electrical component, touch any grounded conducting material. During the time the electrical component is handled, frequently touch any conducting materials that are connected to the ground.
- Use an anti-static pad: When configuring or working with an electrical component, place it on an anti-static pad. This reduces the possibility of ESD damage.
- Only handle the edges of the electrical component. When handling the electrical component, hold the electrical component by its edges. Please ensure the following safety precautions are adhered to at all times.

Maintenance and Cleaning

When maintaining or cleaning the product, please follow the guidelines below.

WARNING:

- For safety reasons, turn-off the power and unplug the panel PC before cleaning.
- If you dropped any material or liquid such as water onto the panel PC when cleaning, unplug the power cable immediately and contact your dealer or the nearest service center. Always make sure your hands are dry when unplugging the power cable.

Maintenance and Cleaning

Prior to cleaning any part or component of the product, please read the details below.

- Except for the LCD panel, never spray or squirt liquids directly onto any other components. To clean the LCD panel, gently wipe it with a piece of soft dry cloth or a slightly moistened cloth.
- The interior of the device does not require cleaning. Keep fluids away from the device interior.
- Be cautious of all small removable components when vacuuming the device.
- Never drop any objects or liquids through the openings of the device.
- Be cautious of any possible allergic reactions to solvents or chemicals used when cleaning the device.
- Avoid eating, drinking and smoking within vicinity of the device.

Cleaning Tools

Some components in the panel PC may only be cleaned using a product specifically designed for the purpose. In such case, the product will be explicitly mentioned in the cleaning tips. Below is a list of items to use when cleaning the panel PC.

- Cloth: Although paper towels or tissues can be used, a soft, clean piece of cloth is recommended when cleaning the device.
- Water or rubbing alcohol: A cloth moistened with water or rubbing alcohol can be used to clean the device.
- Using solvents: The use of solvents is not recommended when cleaning the device as they may damage the plastic parts.
- Vacuum cleaner: Using a vacuum specifically designed for computers is one of the best methods of cleaning the device. Dust and dirt can restrict the airflow in the device and cause its circuitry to corrode.
- Cotton swabs: Cotton swaps moistened with rubbing alcohol or water are excellent tools for wiping hard to reach areas.
- Foam swabs: Whenever possible, it is best to use lint free swabs such as foam swabs for cleaning.

Basic Troubleshooting

PEI Beep Codes

# of Beeps	Description
1	Memory not Installed
2	Recovery started
3	Typically for development use. The beep code is generated when DXEIPL PPI or DXE Core is not found.
4	Recovery failed
4	S3 Resume failed
7	Typically for development use. The beep code is generated when platform cannot be reset because reset PPI is not available.

DXE Beep Codes

# of Beeps	Description
1	Invalid password
4	Typically for development use. The beep code is generated when some of the Architectural Protocols are not available.
5	No Console Input or Output Devices are found
5	No Console Input Devices are found
6	Flash update is failed
7	Typically for development use. The beep code is generated when platform cannot be reset because reset protocol is not available.
8	Platform PCI resource requirements cannot be met

5. Product Application

For detailed instructions on the operation of the Watchdog Timer and Digital I/O (DIO) features of this Panel PC, please refer to the comprehensive guide available in the "AvalueIOAPI" manual. Please reaching out to your respective distributors, Avalue technical support team, or Avalue customer service representatives for further information. Feel free to inquire about this supplementary resource to enhance your understanding of the Watchdog Timer and Digital I/O (DIO) Application for optimal utilization of your Panel PC.

6. Operating the Device

The Multi-Touch mode was pre-installed on the Panel PC and need tools for any customizations. Should you have specific requirements or encounter scenarios where a customized touch mode is necessary, we recommend reaching out to your local distributors, Avalue technical support team, or Avalue customer service representatives. These professionals can provide tailored guidance and assistance to address any unique needs related to Multi-Touch mode adjustments.