SLP-ZXE

Zhaoxin KX-6000 series BGA processor Expandable Slot PC

Quick Reference Guide

1st Ed –29 March 2024

Part No. E2017SLZEA0R

Document Amendment History

Revision	Date	By	Comment
1st	March 2024	Avalue	Initial Release

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

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 incorrectly 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 other 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 inflammable.

Content

1. Getting Started

1.1 Safety Precautions

Warning!

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

Caution!

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

1.2 Packing List

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

Item	Description	Q'ty
1	SLP-ZXE Zhaoxin KX-6000 series BGA processor Expandable Slot PC	1
2	Wallmount kit(screws & wallmount bracket)	1

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

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

System Information	
Processor	Zhaoxin E KX-6000 series 4 core BGA CPU
Platform Controller Hub	SoC
System Memory	2 x 260-pin DDR4 2400/2666MHz SO-DIMM socket, supports up to 32GB Max
I/O Chipset	ITE IT8528E
BIOS Information	ByoCore or AMI uEFI BIOS, 256Mbit SPI Flash ROM
Watchdog Timer	H/W Reset, 1sec. – 65535sec./min.1sec. or 1min. step
H/W Status Monitor	CPU temperature monitoring, Voltage monitoring, CPU fan speed control
TCM	Nationz (国民技术), Z32H330TC-SQN-611, SPI Interface TCM chip by BOM optional(default)
SBC	EMX-ZXEDP
Expansion	
mPCIe	1 x mini PCIe, support PCIe x 1/USB 2.0 Signal, no SATA signal
M.2	1 x M.2 Key B 3042/2242/2260, USB 3.0, SATA Signal with 1 x SIM card slot
PCIe	Daughter board (through PCIe*16 Gold Finger): Backplane A: 2 x PCI-e x16 slot for 2 x PCI-e x 8, 2 x PCI, 1 x 7+15 pin SATAIII + USB 3.0 Backplane B: 1 x PCI-e x 16 slot for 1 x PCI-e x 8, 2 x PCI-e x 4, 1 x PCI,1 x 7+15 pin SATAIII + USB 3.0
Storage	
M.2 (Signal)	1 x M.2 Key B 3042/2242/2260, SATA
2.5” Drive Bay	2 x 2.5” Drive Bay
Edge I/O (Front)	
USB Port	4 x USB 3.2 Gen1
COM Port	4 x RS-232
HDMI	2 x HDMI 1.4b
RJ-45	3 x RJ-45
Power Button	1 x Push Button for Power on/off
Wire-Control Power On/Off	2-Pin Terminal Block
LED Indicator	1 x Power LED(Blue) 1 x Storage LED (Red)

<table>
<tr><td>Antenna</td><td>2 x Antenna hole Mounting with Dust Protection Cover</td></tr>
<tr><td colspan="2">Display</td></tr>
<tr><td>Resolution</td><td>2 x HDMI 1.4b: 3840 x 2160 @ 30 Hz</td></tr>
<tr><td colspan="2">Ethernet</td></tr>
<tr><td>LAN Chipset</td><td>3 x Intel® I210AT PCI-e Gigabit Ethernet</td></tr>
<tr><td>Specification</td><td>10/100/1000 Base-Tx GbE compatible</td></tr>
<tr><td>LED Indicator</td><td>1G LAN Port (i210-AT)
<table>
<tr><th colspan="2">ACT/LINK</th><th colspan="2">SPEED</th></tr>
<tr><th>LED</th><th>Definition</th><th>LED</th><th>Definition</th></tr>
<tr><td>Light Off</td><td>No Link</td><td>Solid Orange</td><td>1G</td></tr>
<tr><td>Solid Yellow</td><td>Connection</td><td>Solid Green</td><td>100M</td></tr>
<tr><td>Flashing</td><td>Activity</td><td>Light Off</td><td>10M</td></tr>
</table></td></tr>
<tr><td colspan="2">Power Requirement</td></tr>
<tr><td>DC Input</td><td>DC in +12V ~ +24V</td></tr>
<tr><td>DC Input Connector</td><td>4-Pin Mini Dim connector</td></tr>
<tr><td>ACPI</td><td>Single power ATX Support S0, S3, S4, S5
ACPI 5.0 Compliant</td></tr>
<tr><td>Power Mode</td><td>AT/ATX (ATX is default setting)</td></tr>
<tr><td>Adapter</td><td>220W~250Wexternal AC-DC adapter for AC input (Optional)</td></tr>
<tr><td colspan="2">Mechanical & Environment</td></tr>
<tr><td>Operating Temp.</td><td>0°C ~ 55°C, ambient w/0.5m/s air flow (35W CPU + Fan)
0°C ~ 50°C, ambient w/0.5m/s air flow (35W CPU + Fanless)
MB: EMX-ZXEDP 6640A(Main)

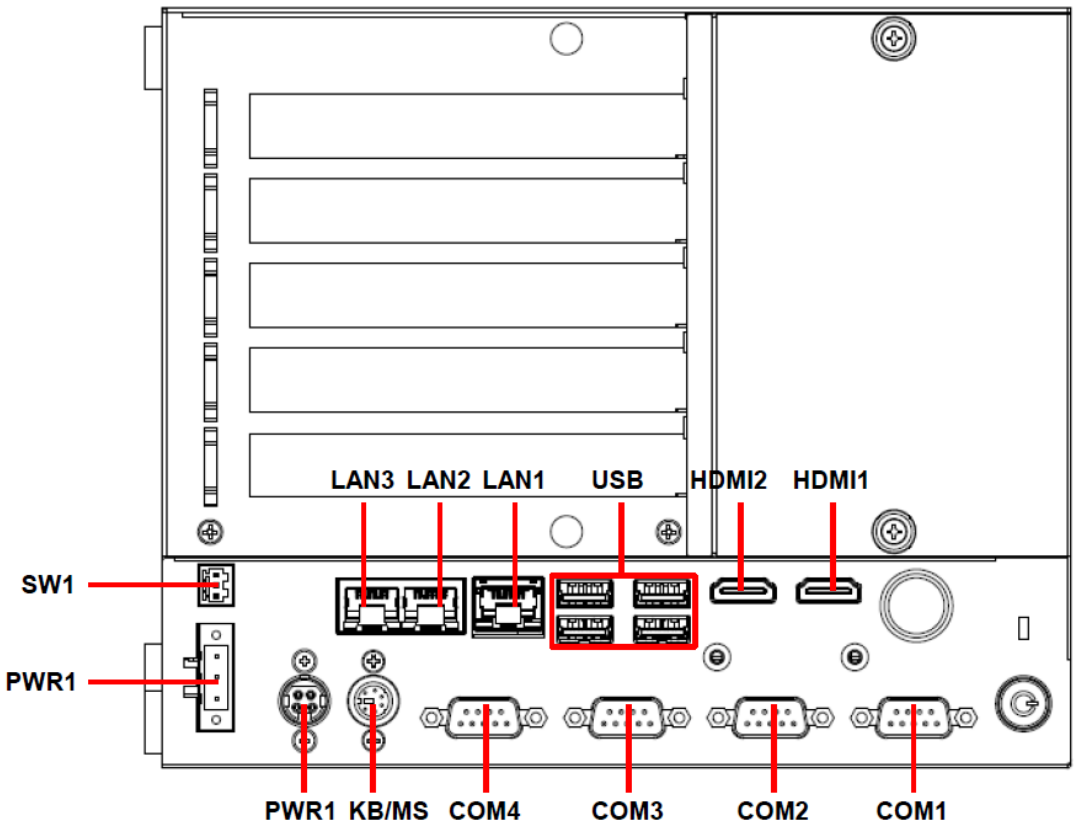
0°C ~ 60°C, ambient w/0.5m/s air flow (25W CPU + Fan)
0°C ~ 55°C, ambient w/0.5m/s air flow (25W CPU + Fanless)
MB: EMX-ZXEDP 6640MA(Second)
Only thermal/Power Consumption/Performance test</td></tr>
<tr><td>Storage Temp.</td><td>-40°C ~ 75°C (-40 ~ 167°F)</td></tr>
<tr><td>Operating Humidity</td><td>40°C @ 95% Relative Humidity, Non-condensing</td></tr>
<tr><td>Dimension (W*L*H)</td><td>182 x 221.8 x 220 mm</td></tr>
<tr><td>Weight</td><td>5.35KG</td></tr>
<tr><td colspan="2">Reliability</td></tr>
<tr><td>Vibration Test</td><td>Random Vibration Operation:
1. PSD: 0.03622G²/Hz, 1.5 Grms
2. operation mode</td></tr>
</table>

Vibration Test	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 :10 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
Shock Test	1. 1. Wave form：Half Sine wave. 2. Acceleration Rate：10g for operation mode 3. Duration Time：11ms 4. No. of Shock：Z axis 300 times 5. Test Axis: Z axis 6. Operation mode 7. Reference IEC 60068-2-29 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
Mounting Kit	Din Rail, Wallmount
Software Support	
OS Information	Win10，中标麒麟

Note: Specifications are subject to change without notice.

1.4 System Overview

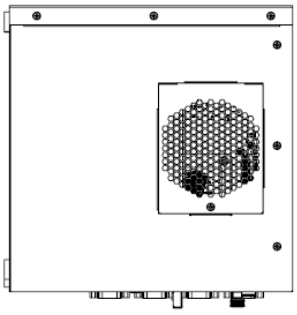
1.4.1 SLP-ZXE Rear View

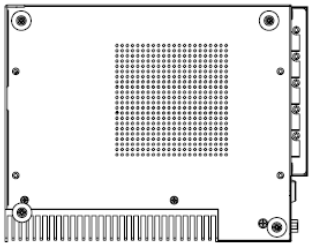


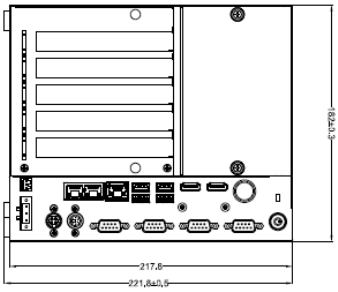
Connectors

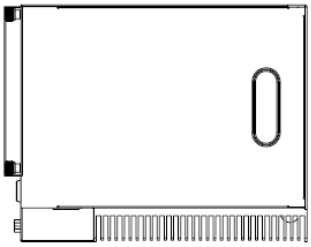
Label	Function	Note
HDMI1/2	HDMI connector 1/2	
USB	USB connector	
LAN1/2-3	RJ-45 Ethernet 1/2-3	
COM1/2	Serial Port 1 connector	5 x 2 header, pitch 2.00mm
COM3/4	Serial Port 3-6 connector	5 x 2 header, pitch 2.00mm
KB&MS	PS/2 keyboard & mouse header	4 x 2 header, pitch 2.00mm
PWR1	Power connector	2 x 2 wafer, pitch 4.20mm
PWR1	DC Input connector	3 x 1 wafer, pitch 5.08mm
SW1	Power Button connector	

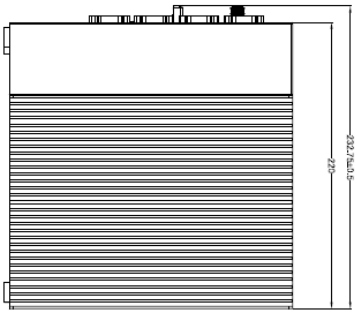
1.5 System Dimensions











(Unit: mm)

1.6 Operating Principle

(a) Installation:

- Take the device and accessories from package and put in the suitable place.
- Check the packing list (accessories).
- Connect the power cord to the device.
- Put the plug of power cord into receptacle of power source.
- Press power button “Power Icon” on the device to start the device.

(b) Installation for monitor:

- Plug in the monitor cable (HDMI or DP).

(c) Installation keyboard and mouse.

- Plug in mouse and keyboard.

(d) Operation for Turn ON the system

- Turn ON the system.
- Press the power ON/OFF icon firmly to turn power ON/OFF.
- The power ON/OFF LED will turn blue to indicate power is on.
- Check with the Icon behavior for power status.

2. Hardware Configuration

For advanced information, please refer to:

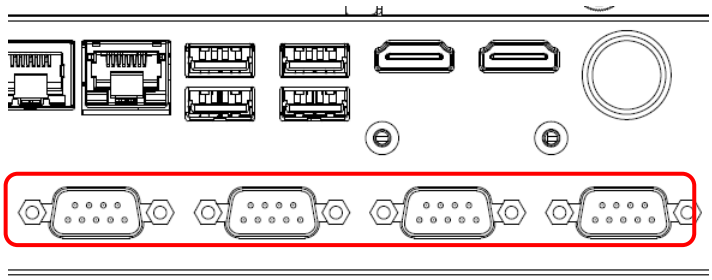
1- EMX-ZXEDP included in this manual.

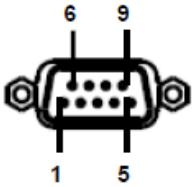
Note: If you need more information, please visit our website:

www.avalue.com

2.1 SLP-ZXE connector mapping

2.1.1 Serial Port 1~4 connector (COM1~4)





Pin	RS-232	RS-422	RS-485
1	DCD#	TXD422-	485DATA-
2	RXD	TXD422+	485DATA+
3	TXD	RXD422+	
4	DTR#	RXD422-	
5	GND		
6	DSR#		
7	RTS#		
8	CTS#		
9	RI#		

2.2 Powering On the System

WARNING:

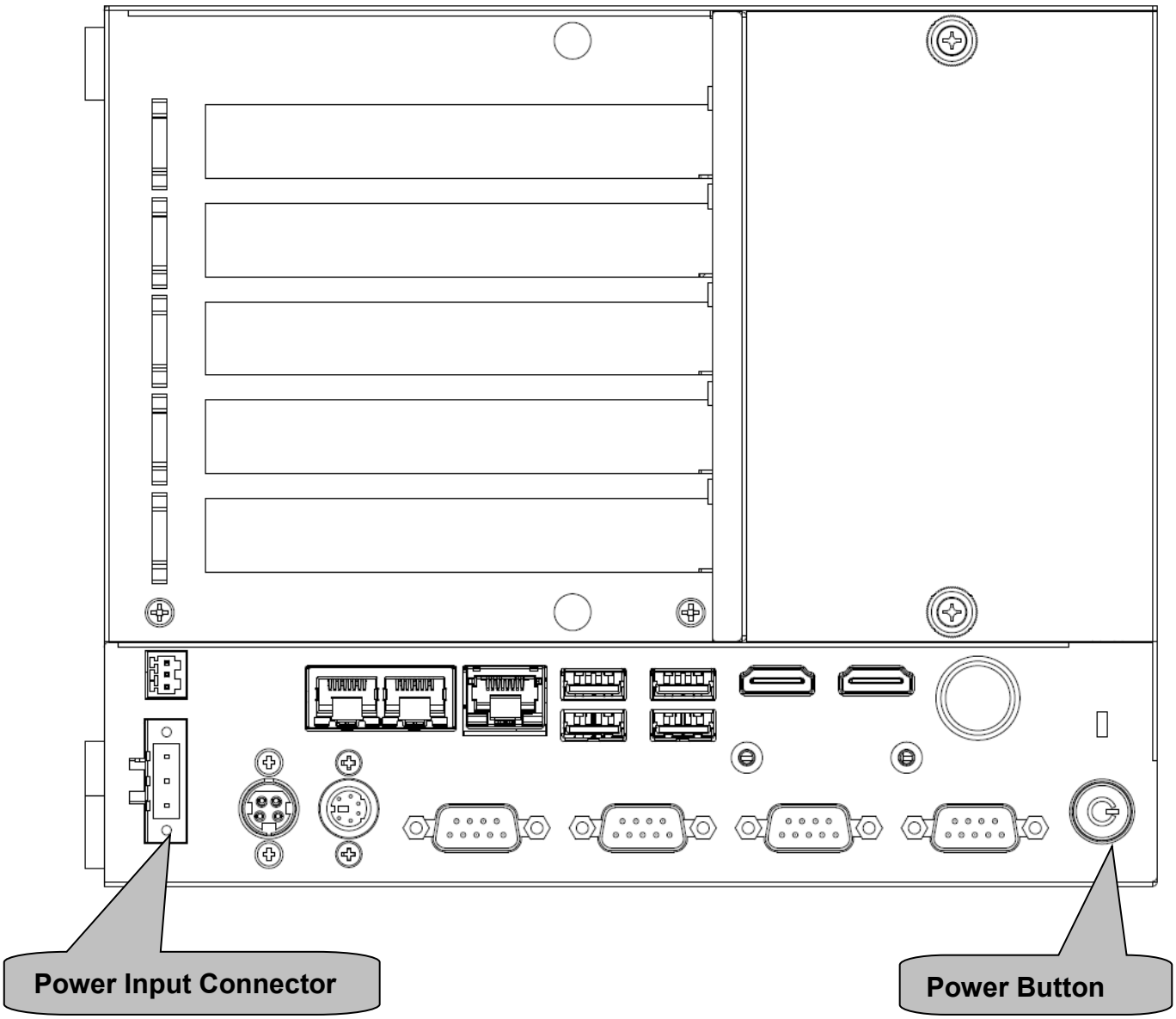
Make sure a power supply with the correct input voltage is being fed into the system. Incorrect voltages applied to the system may cause damage to the internal electronic components and may also cause injury to the user.

- Power on the system: press the power button for 3 seconds.
- Power off the system: press the power button for 6 seconds.
- The power of this system can be less than 250w 20A.

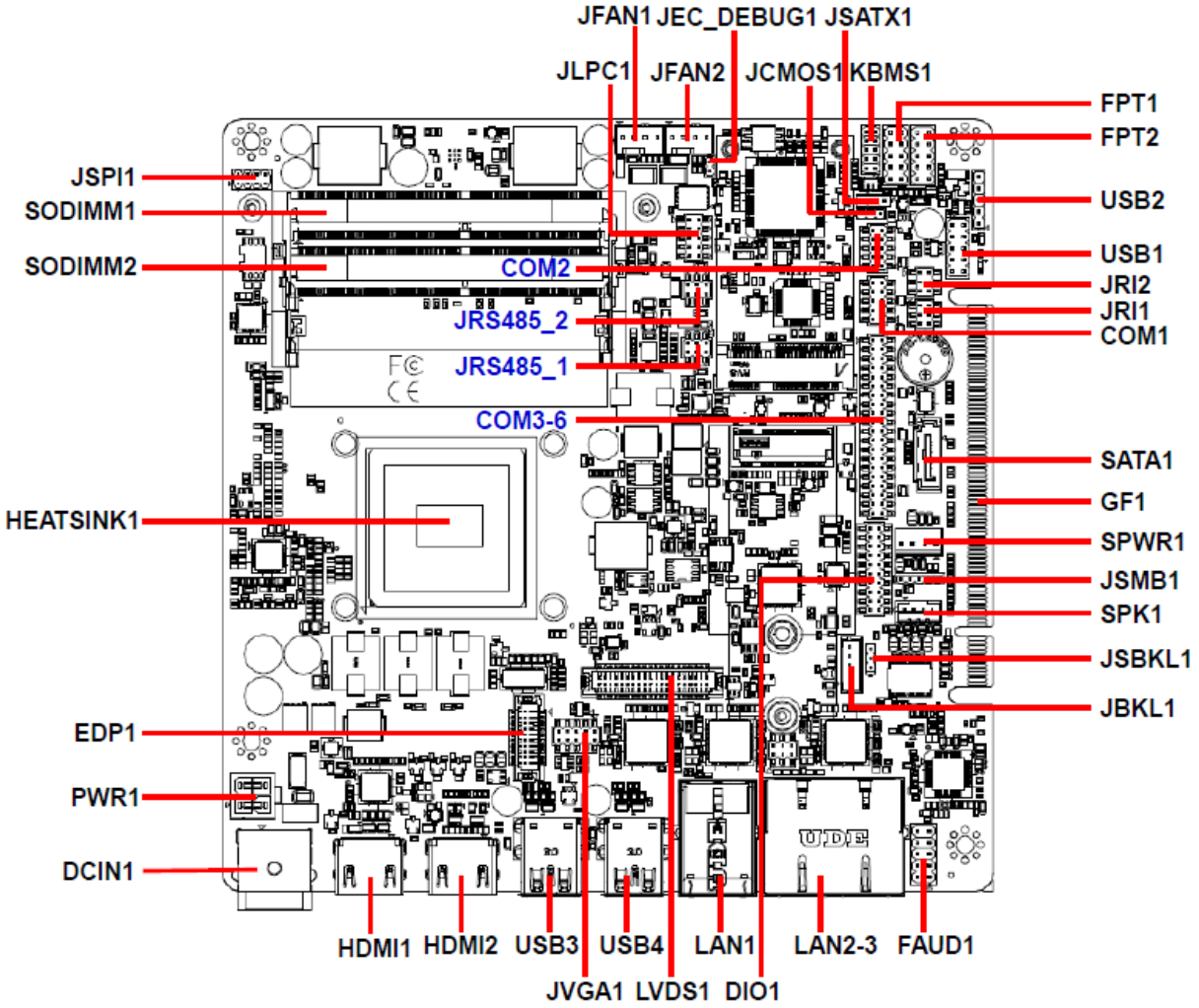
2.3 Connecting to Power Supply

There are two power connectors on the rear panel. Power 1 connector is a DIN connector block that supports ACC On signal. Power 2 connector is a 4-pin terminal that can directly connect to a power adapter. The supported power input voltages are:

- Power 1 (DIN connector)): 12 V ~ 28 V
- Power 2 (terminal block)): 12 V ~ 28 V


Power Input Connector
Power Button

2.4 EMX-ZXEDP Overviews



2.5 EMX-ZXEDP Jumper & Connector list

Jumpers

Label	Function	Note
JRI1/2	Serial port 1/2 pin9 signal select	3 x 2 header, pitch 2.00mm
JSATX1	AT/ATX Power Mode Select	3 x 1 header, pitch 2.54mm
JCMOS1	Clear CMOS	3 x 1 header, pitch 2.00mm
JSBKL1	LVDS Back Light power selection	3 x 1 header, pitch 2.00mm

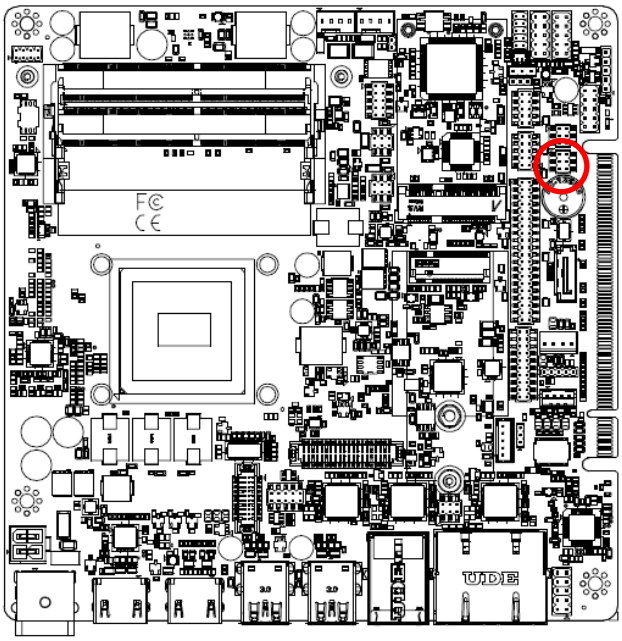
Connectors

Label	Function	Note
JFAN1/2	System fan connector 1/2 (with smart fan function supported)	4 x 1 wafer, pitch 2.54mm
JSPI1	Miscellaneous setting connector	4 x 2 header, pitch 2.00mm
JEC_DEBUG1	EC Debug	2 x 1 header, pitch 2.00 mm
COM1/2	Serial Port2 connector 1/2	5 x 2 header, pitch 2.00 mm
FAUD1	Front Audio connector	5 x 2 header, pitch 2.54mm
JDIO1	General purpose I/O connector	10 x 2 header, pitch 2.00mm
PWR1	Power connector	2 x 2 wafer, pitch 4.20mm
SPWR1	SATA Power connector 1	4 x 1 wafer, pitch 2.54mm
SPK1	Speaker connector	4 x 1 wafer, pitch 2.00 mm
JFP1/2	Front Panel connector1/2	5 x 2 header, pitch 2.54mm
KBMS1	PS/2 keyboard & mouse header	5 x 2 header, pitch 2.00 mm
LVDS1	LVDS connector	20 x 2 wafer, pitch 1.25mm
EDP1	eDP-Panel connector	10 x 2 wafer, pitch 1.25mm
COM3-6	Serial Port3-6 connector	20 x 2 header, pitch 2.00mm
USB1	USB connector 1	5 x 2 header, pitch 2.54mm
USB2	USB connector 2	5 x 1 header, pitch 2.54mm
JRS485_1/2	Serial Port2 RS485/422 Mode connector 1/2	3 x 2 header, pitch 2.00 mm
JLPC1	LPC connector	5 x 2 header, pitch 2.00mm
JSMB1	SMBus connector	5 x 1 header, pitch 2.00mm
JVGA1	VGA connector	3 x 2 header, pitch 2.00 mm

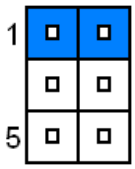
USB3/4	USB connector 3/4
SODIMM1/2	206-pin DDR4 SO-DIMM socket
LAN1/2-3	RJ-45 Ethernet 1/2-3
DCIN1	DC Power-in connector
HDMI1/2	HDMI connector 1/2
HEATSINK1	ZX-200 heatsink
GF1	Gold Finger
SIM1	SIM card slot

2.6 Setting Jumpers & Connectors

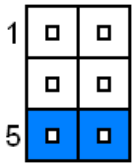
2.6.1 Serial port 1 pin9 signal select (JRI1)



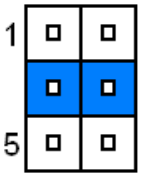
Ring*



+12V

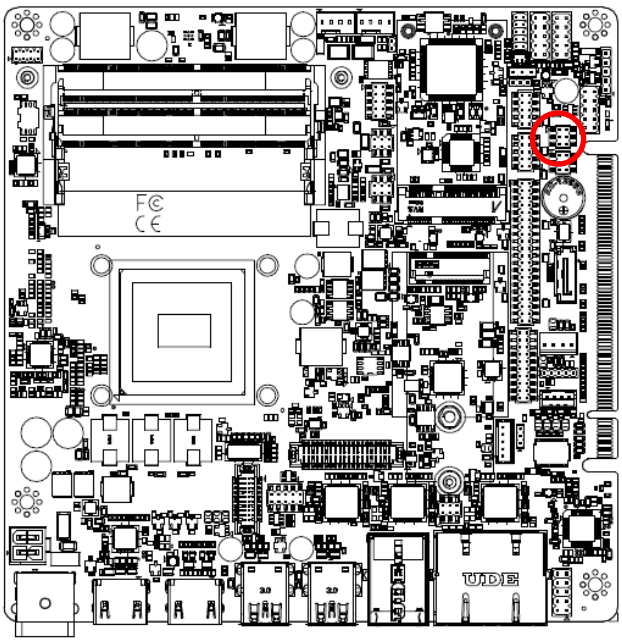


+5V

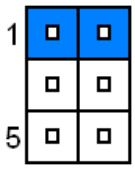


*** Default**

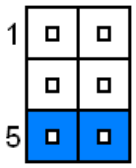
2.6.2 Serial port 1 pin9 signal select (JRI2)



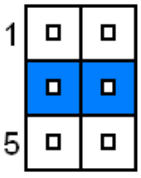
Ring*



+12V

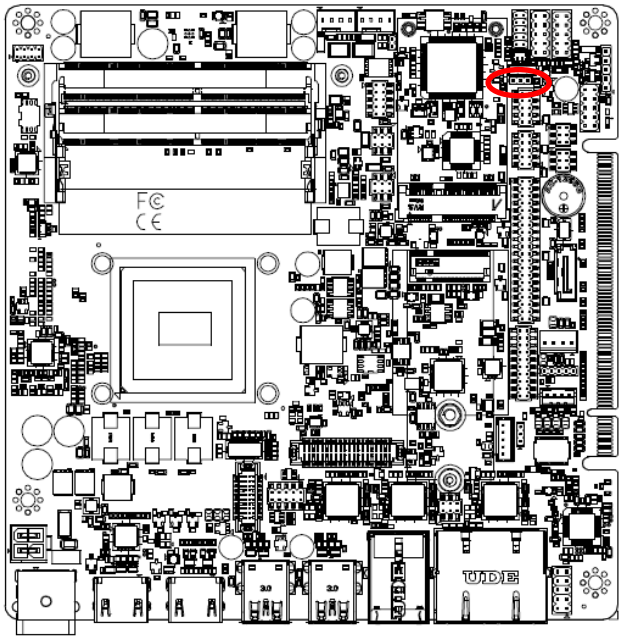


+5V

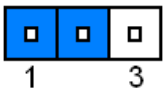


*** Default**

2.6.3 Clear CMOS (JCMOS1)



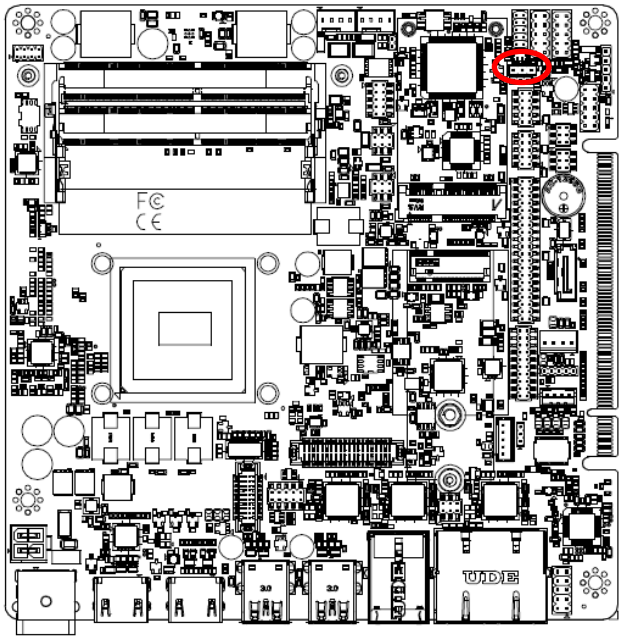
Protect*



Clear CMOS

*** Default**

2.6.4 AT/ATX Power Mode Select (JSATX1)

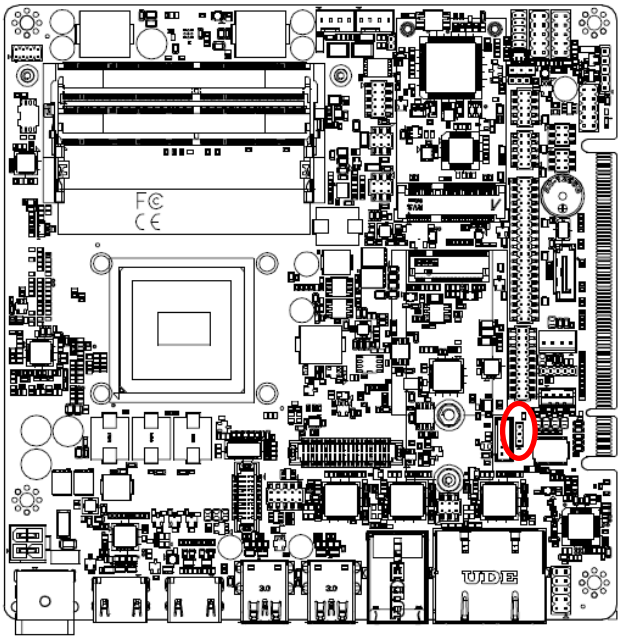


ATX*

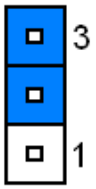
AT

*** Default**

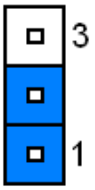
2.6.5 LVDS Back Light power selection (JSBKL1)



PWM Mode*

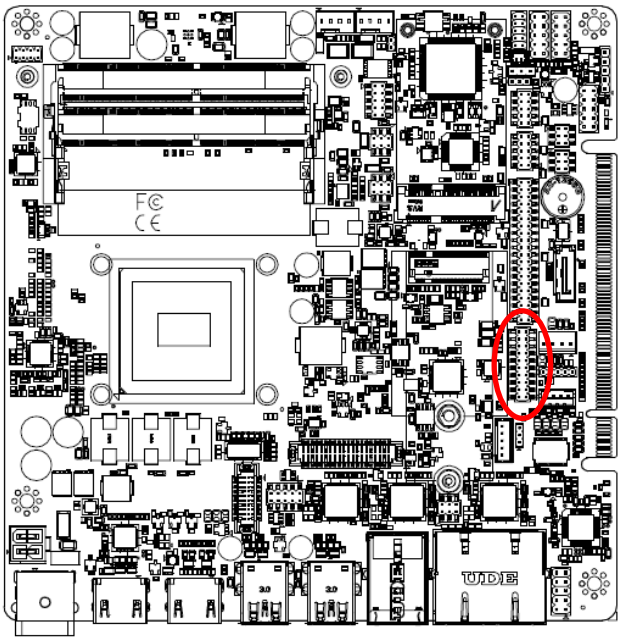


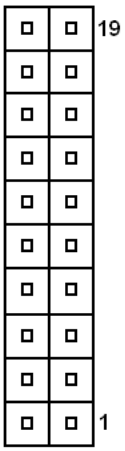
DC Mode



*** Default**

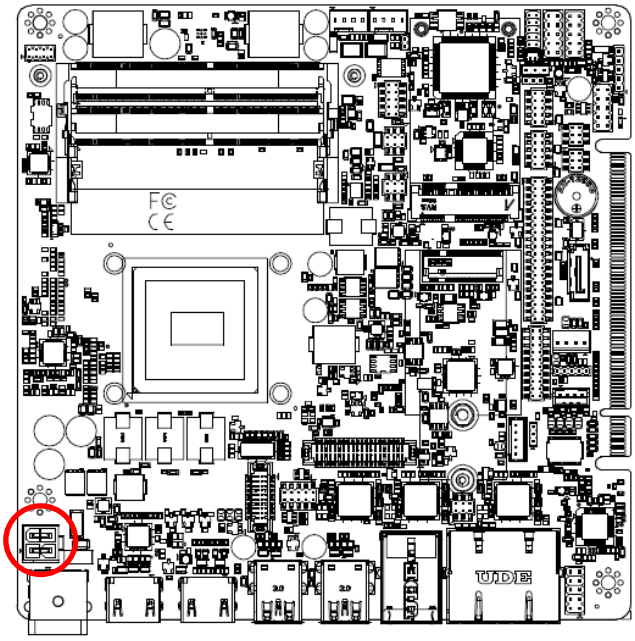
2.6.6 General purpose I/O connector (DIO1)

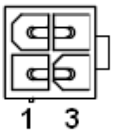




Signal	PIN	PIN	Signal
GND	20	19	GND
SMB_DATA_VCC	18	17	SMB_CLK_VCC
DO7	16	15	DI7
DO6	14	13	DI6
DO5	12	11	DI5
DO4	10	9	DI4
DO3	8	7	DI3
DO2	6	5	DI2
DO1	4	3	DI1
DO0	2	1	DI0

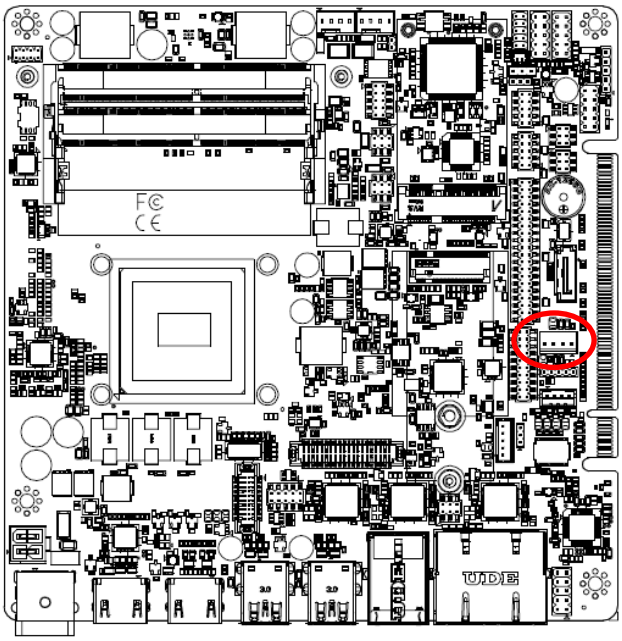
2.6.7 Power connector (PWR1)

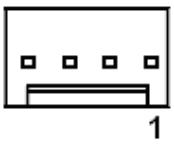




Signal	PIN	PIN	Signal
GND	2	4	+VDC12_26V
GND	1	3	+VDC12_26V

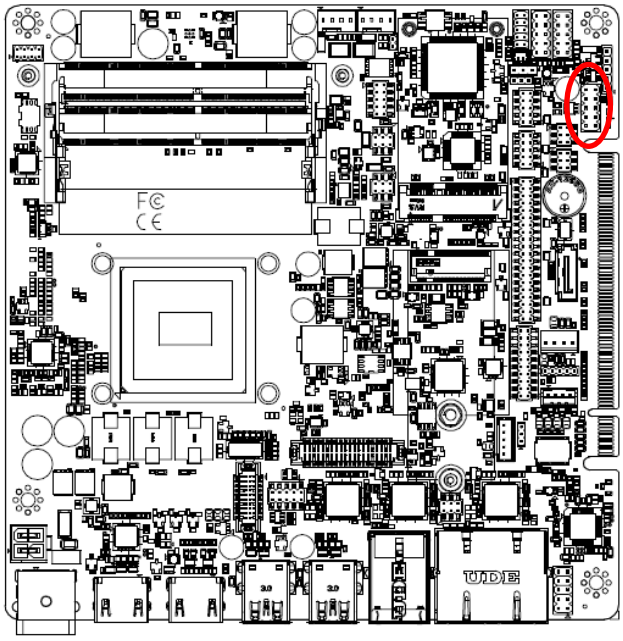
2.6.8 SATA Power connector (SPWR1)

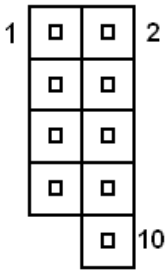




PIN	Signal
1	+V5S_SATA1
2	GND
3	GND
4	+V12S_SATA1

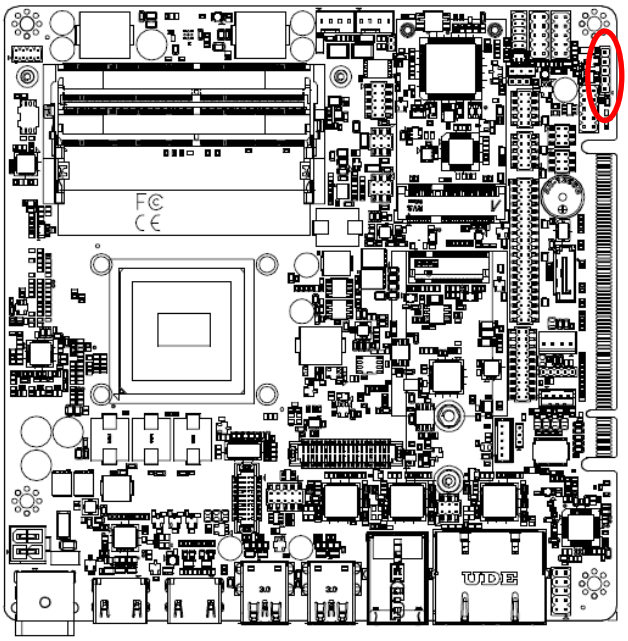
2.6.9 USB connector (USB1)

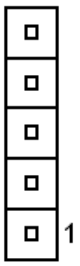




Signal	PIN	PIN	Signal
+V5A__HUB1-4	1	2	+V5A__HUB1-4
USB_PN0__R	3	4	USB_PN1__R
USB_PP0__R	5	6	USB_PP1_R
GND	7	8	GND
		10	NC

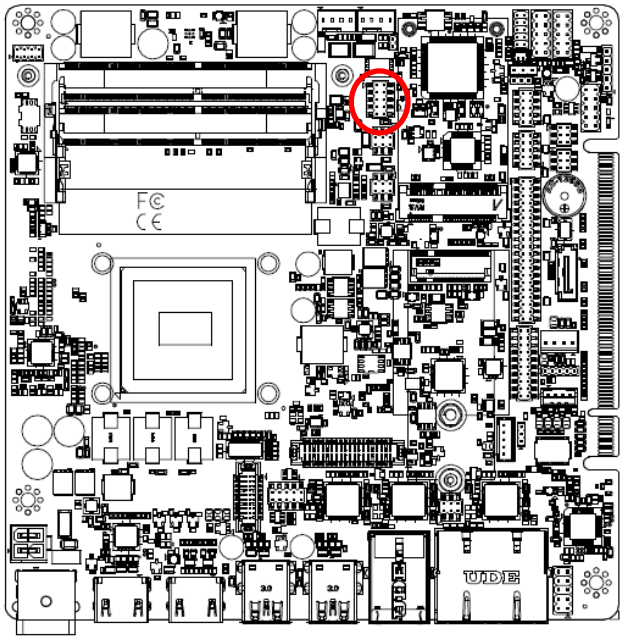
2.6.10 USB connector (USB2)

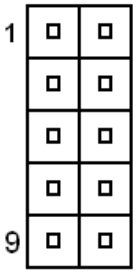




Signal	PIN
GND	5
GND	4
USB_PP2_R	3
USB_PN2__R	2
+V5A__HUB1-4	1

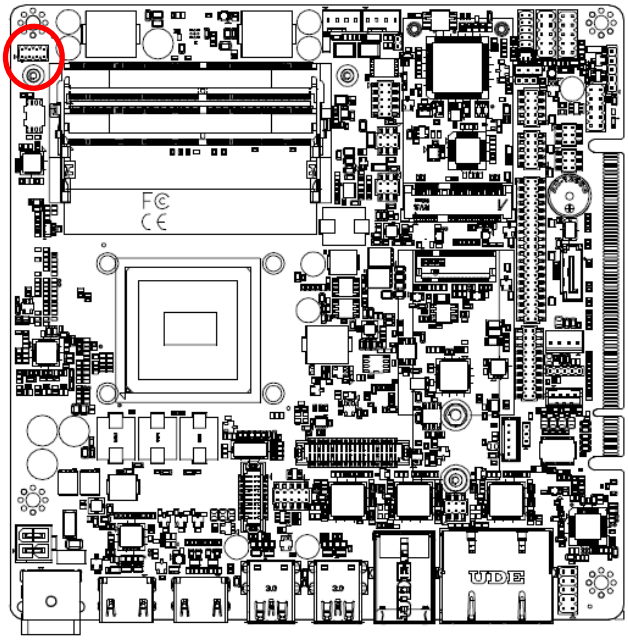
2.6.11 LPC connector (JLPC1)

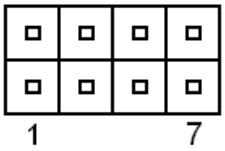




Signal	PIN	PIN	Signal
LPC_AD0	1	2	+3.3V
LPC_AD1	3	4	PCIRST#
LPC_AD2	5	6	LPC_LFRAME#
LPC_AD3	7	8	CLK_33M_LPC
LPC_SERIRQ	9	10	GND

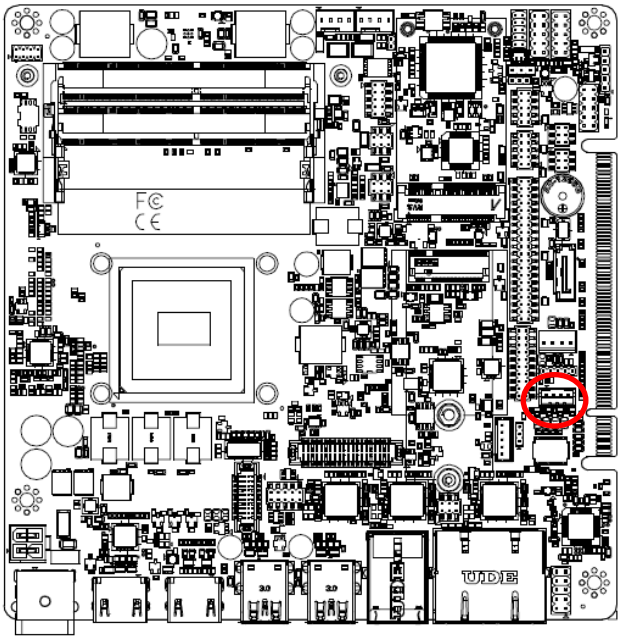
2.6.12 Miscellaneous setting connector (JSPI1)

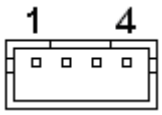




Signal	PIN	PIN	Signal
+ V3.3A_SPI	1	2	GND
SPI_CS0#	3	4	SPI_CLK
SPI_MISO	5	6	SPI_MOSI
SPI_HOLD#	7	8	SPI_WP#

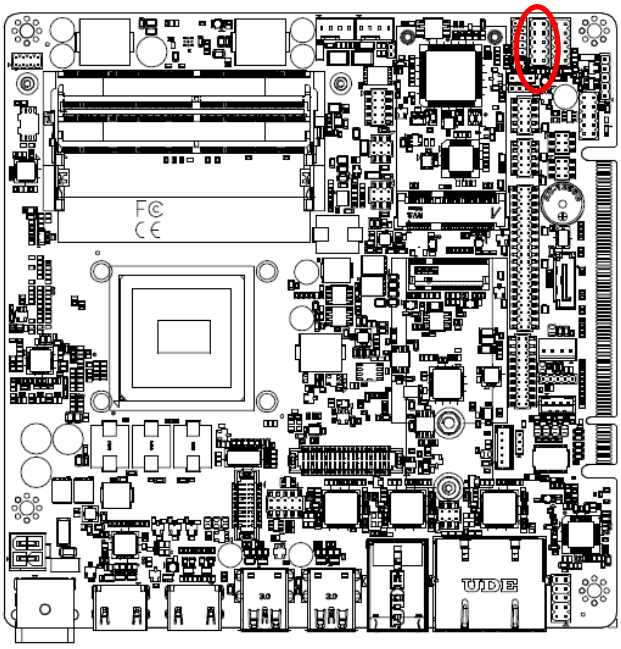
2.6.13 Speaker connector (SPK1)

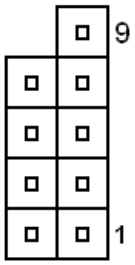




Signal	PIN
LSPK+	1
LSPK-	2
RSPK+	3
RSPK-	4

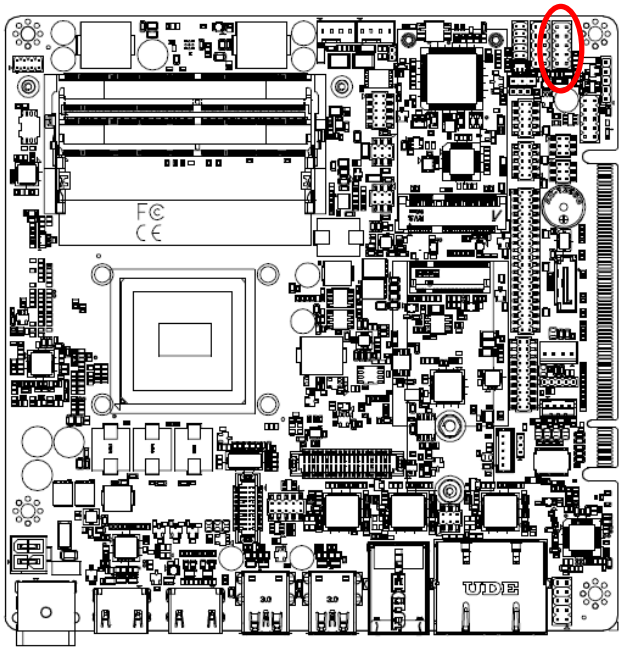
2.6.14 Front Panel connector (FPT1)

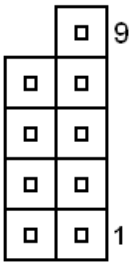




Signal	PIN	PIN	Signal
		9	NC
GND	8	7	GND
FP_PWR_BTN_EC#	6	5	EXT_SYSRST#
PWR_LED-	4	3	HDD_LED-
PWR_LED+	2	1	HDD_LED+

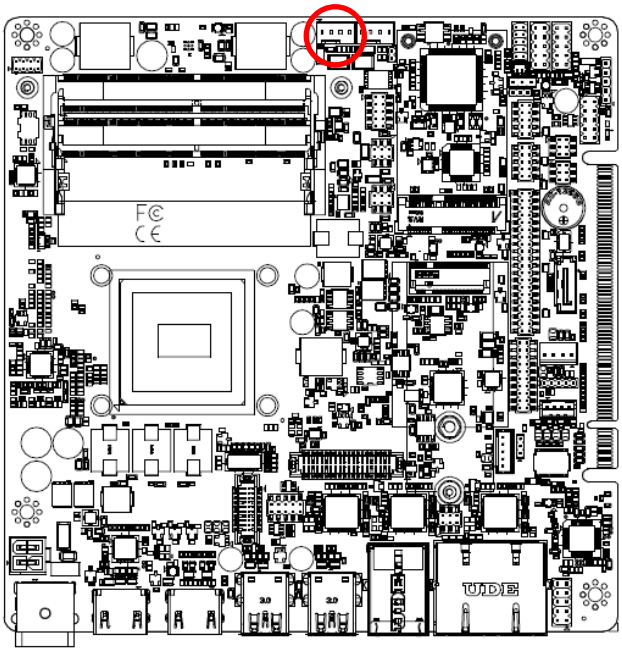
2.6.15 Front Panel connector (FPT2)

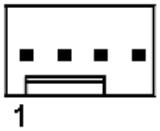




Signal	PIN	PIN	Signal
		9	NC
GND	8	7	SPKR-
BLK_BRI_DN#	6	5	NC
BLK_BRI_UP#	4	3	NC
BLK_VR_MOD	2	1	SPKR+

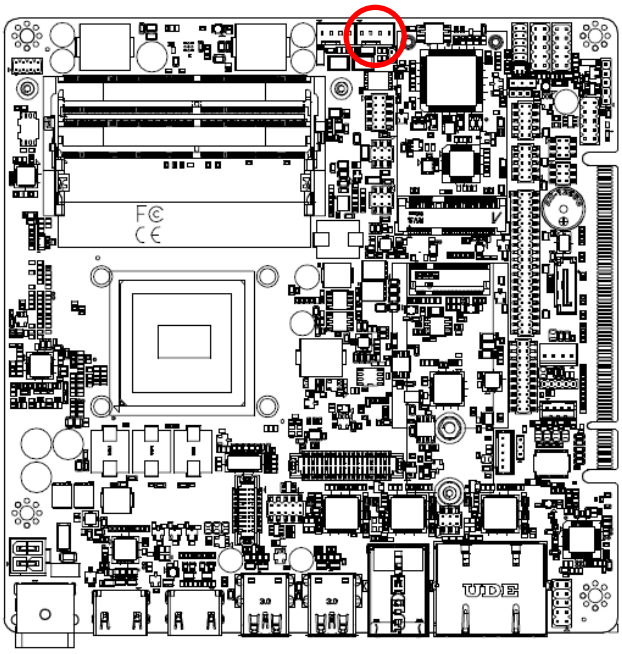
2.6.16 System fan connector 1 (JFAN1)

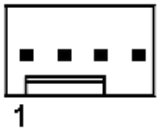




PIN	Signal
1	GND
2	+V12S_FAN1
3	CPUFANIN
4	FAN_PWM0

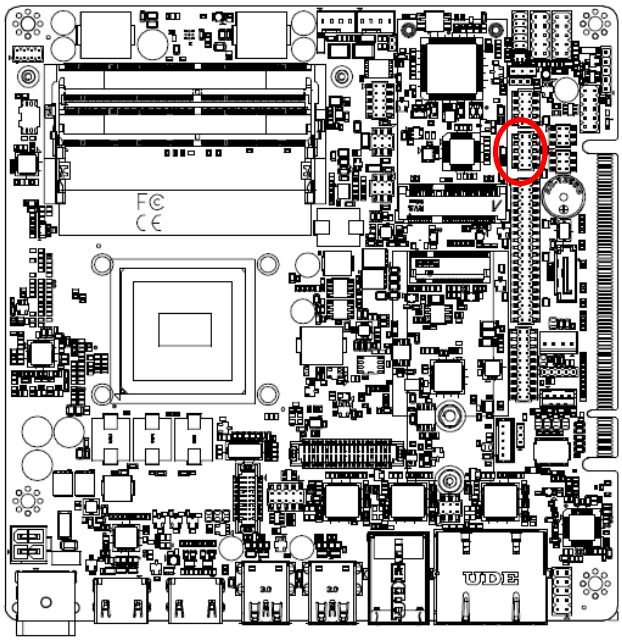
2.6.17 System fan connector 2 (JFAN2)

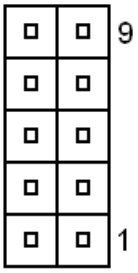




PIN	Signal
1	GND
2	+V12S_FAN2
3	SYSFANIN
4	FAN_PWM1

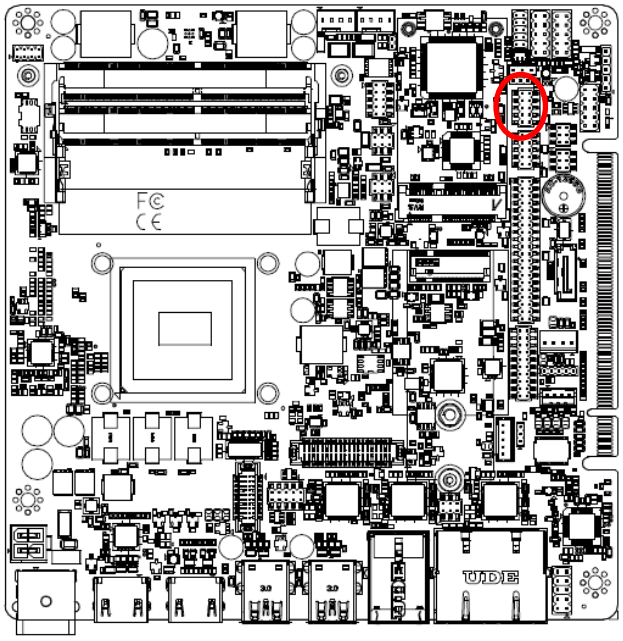
2.6.18 Serial port connector (COM1)

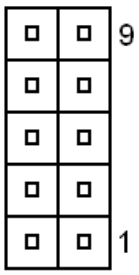




Signal	PIN	PIN	Signal
NC	10	9	COM_RI#_1
COM_CTS#_1	8	7	COM_RTS#_1
COM_DSR#_1	6	5	GND
COM_DTR#_1	4	3	COM_TXD_1
COM_RXD_1	2	1	COM_DCD#_1

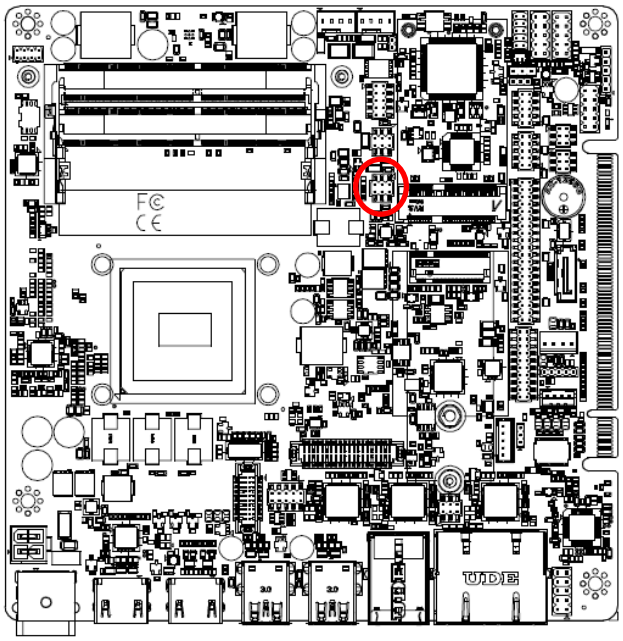
2.6.19 Serial port connector (COM2)

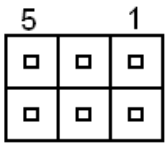




Signal	PIN	PIN	Signal
NC	10	9	COM_RI#_2
COM_CTS#_2	8	7	COM_RTS#_2
COM_DSR#_2	6	5	GND
COM_DTR#_2	4	3	COM_TXD_2
COM_RXD_2	2	1	COM_DCD#_2

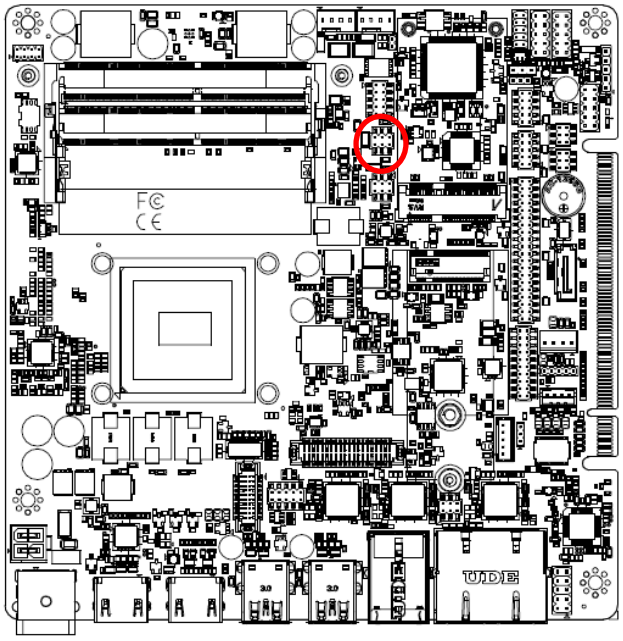
2.6.20 Serial Port2 RS485/422 Mode connector (JRS485_1)

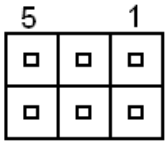




Signal	PIN	PIN	Signal
485_422TX1-	1	2	422RX1-
485_422TX1+	3	4	422RX1+
+5V	5	6	GND

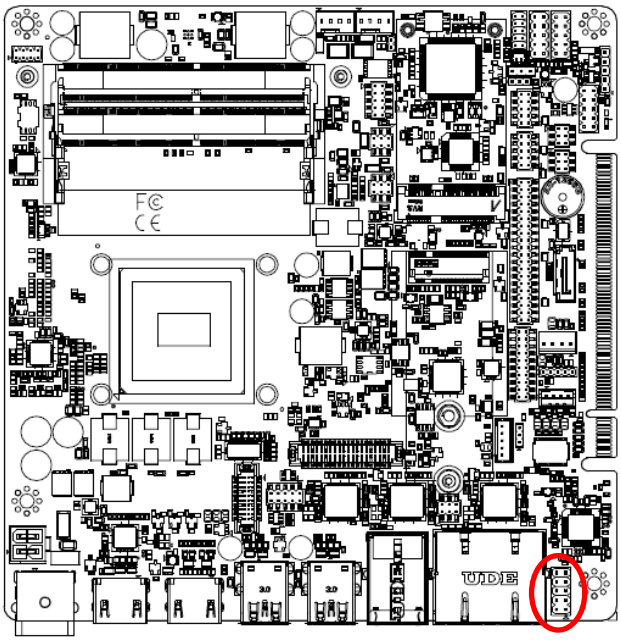
2.6.21 Serial Port2 RS485/422 Mode connector (JRS485_2)

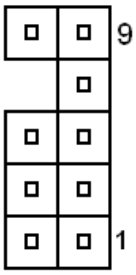




Signal	PIN	PIN	Signal
485_422TX2-	1	2	422RX2-
485_422TX2+	3	4	422RX2+
+5V	5	6	GND

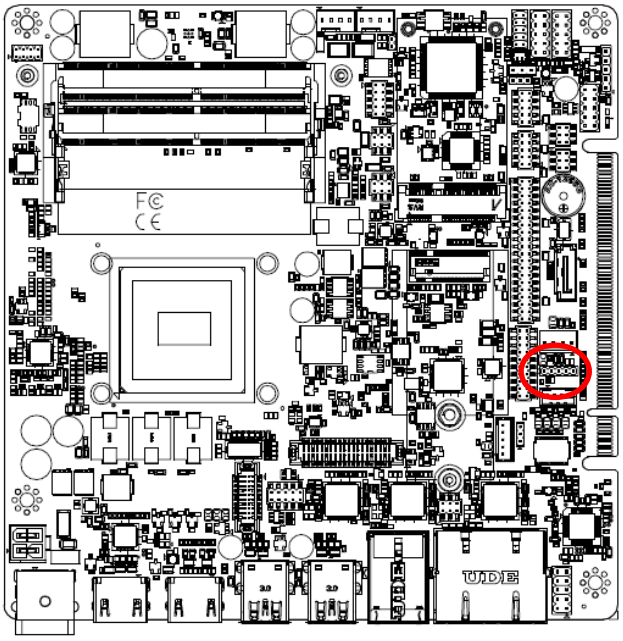
2.6.22 Front Audio connector (FAUD1)





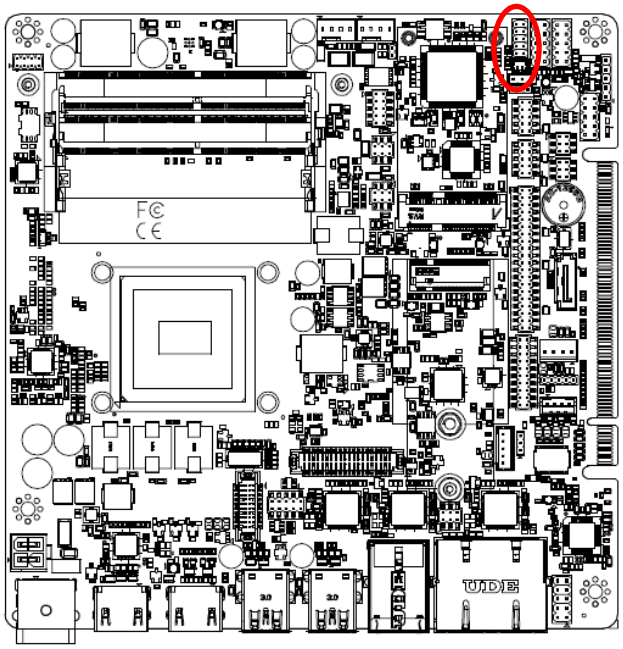
Signal	PIN	PIN	Signal
LINEOUT1 _JD	10	9	LINEOUT_L
		7	GND
MIC1_JD	6	5	LINEOUT_R
ACZ_DET#	4	3	MIC1_RIN
GND	2	1	MIC1_LIN

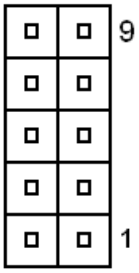
2.6.23 SMBus connector (JSMB1)



Signal	PIN
+SMB_3.3V	1
SMBALRT#_S	2
SMB_CLK_S	3
SMB_DATA_S	4
GND	5

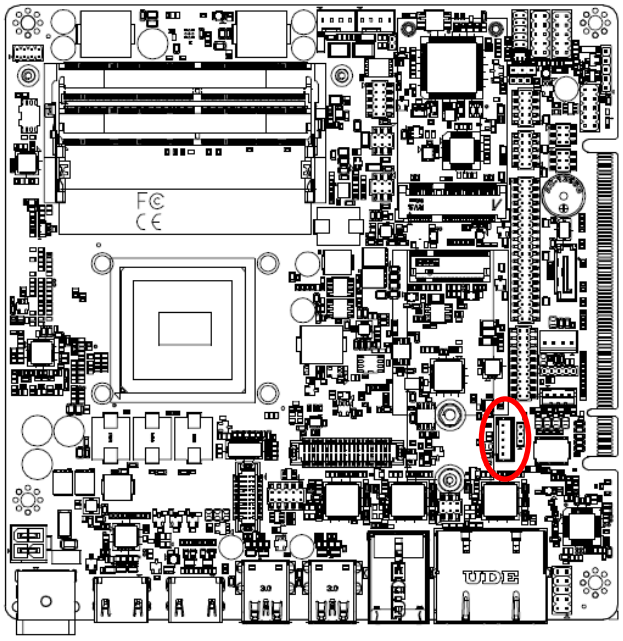
2.6.24 PS/2 keyboard & mouse header (KBMS1)

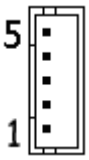




Signal	PIN	PIN	Signal
NC	10	9	NC
NC	8	7	NC
MSCLK	6	5	MSDAT
+V5A_KBMS	4	3	GND
KBCLK	2	1	KBDAT

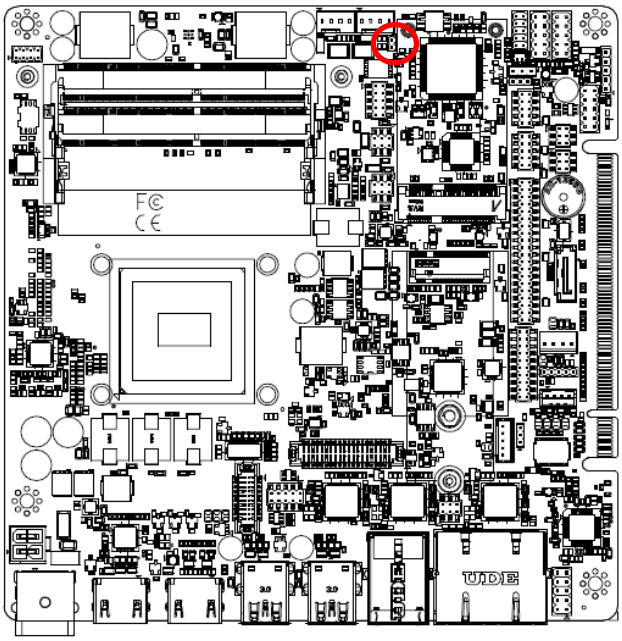
2.6.25 LCD Inverter connector (JBKL1)

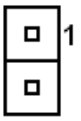




Signal	PIN
+5V	5
LVDS_BKLTCTL	4
LVDS_BKLT_EN	3
GND	2
+V12S_INV	1

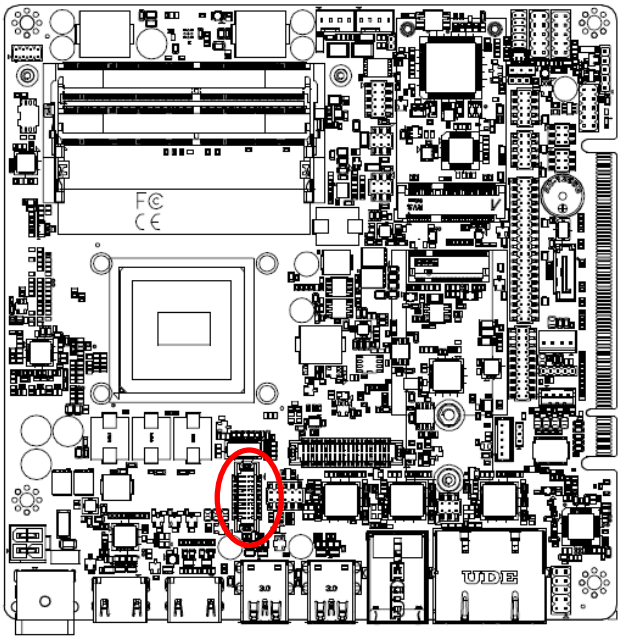
2.6.26 EC Debug (JEC_DEBUG1)

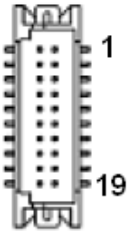




Signal	PIN
EC_SMCLK	1
EC_SMDAT	2

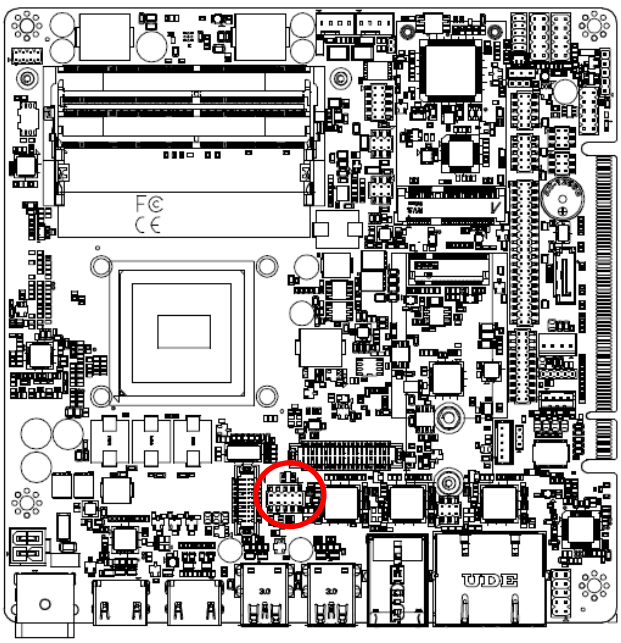
2.6.27 eDP-Panel connector (EDP 1)

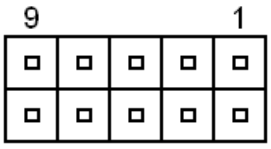




Signal	PIN	PIN	Signal
GND	1	2	GND
EDP_PanelTXN0	3	4	EDP_PanelTXN3
EDP_PanelTXP0	5	6	EDP_PanelTXP3
GND	7	8	NC
EDP_PanelTXN1	9	10	GND
EDP_PanelTXP1	11	12	EDP_PanelAUXN
GND	13	14	EDP_PanelAUXP
EDP_PanelTXN2	15	16	GND
EDP_PanelTXP2	17	18	EDP_Panel_HPD
EDP_VCC_PAL	19	20	EDP_VCC_PAL

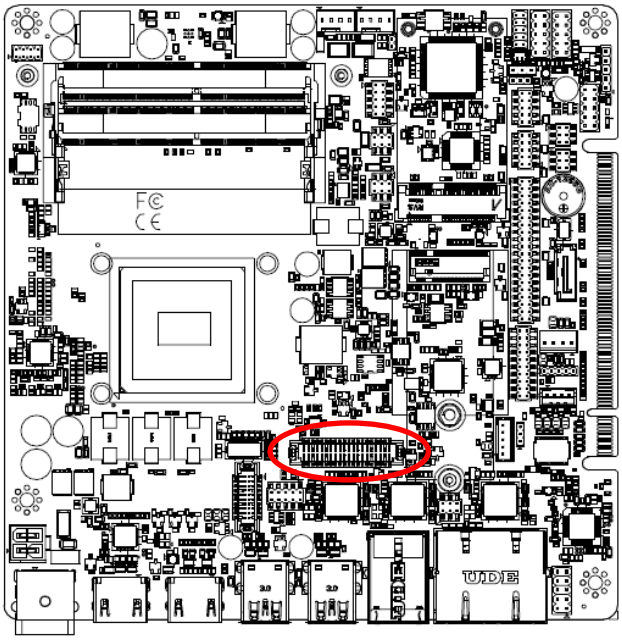
2.6.28 JVGA1 connector (JVGA1)

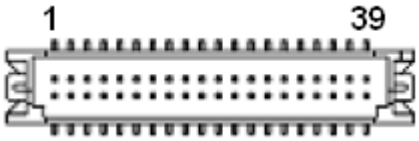




Signal	PIN	PIN	Signal
CRT_Z_RED	1	2	+V5S_VGA
CRT_Z_GREEN	3	4	GND
CRT_Z_BLUE	5	6	CRT_Z_DDC_CLK
GND	7	8	CRT_Z_DDC_DATA
CRT_Z_VSYNC	9	10	CRT_Z_HSYNC

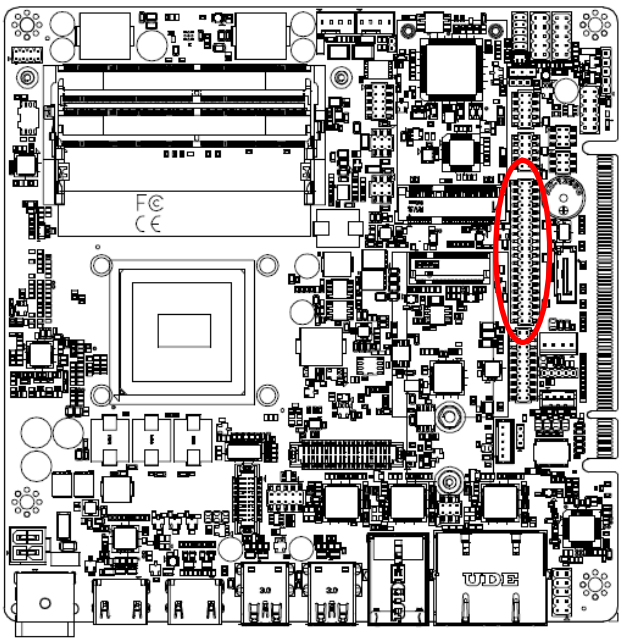
2.6.29 LVDS connector (LVDS1)

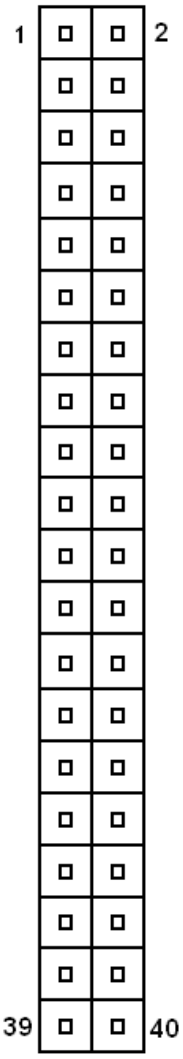




Signal	PIN	PIN	Signal
+V3.3S_LVDS	1	2	+V5S_LVDS
+V3.3S_LVDS	3	4	+V5S_LVDS
NC	5	6	NC
GND	7	8	GND
LVDS_DATA1_P	9	10	LVDS_DATA0_P
LVDS_DATA1_N	11	12	LVDS_DATA0_N
GND	13	14	GND
LVDS_DATA3_P	15	16	LVDS_DATA2_P
LVDS_DATA3_N	17	18	LVDS_DATA2_N
GND	19	20	GND
LVDS_DATA5_P	21	22	LVDS_DATA4_P
LVDS_DATA5_N	23	24	LVDS_DATA4_N
GND	25	26	GND
LVDS_DATA7_P	27	28	LVDS_DATA6_P
LVDS_DATA7_N	29	30	LVDS_DATA6_N
GND	31	32	GND
LVDS_CLK2_P	33	34	LVDS_CLK1_P
LVDS_CLK2_N	35	36	LVDS_CLK1_N
GND	37	38	GND
+V12S_LVDS	39	40	+V12S_LVDS

2.6.30 Serial Port3-6 connector (COM3-6)



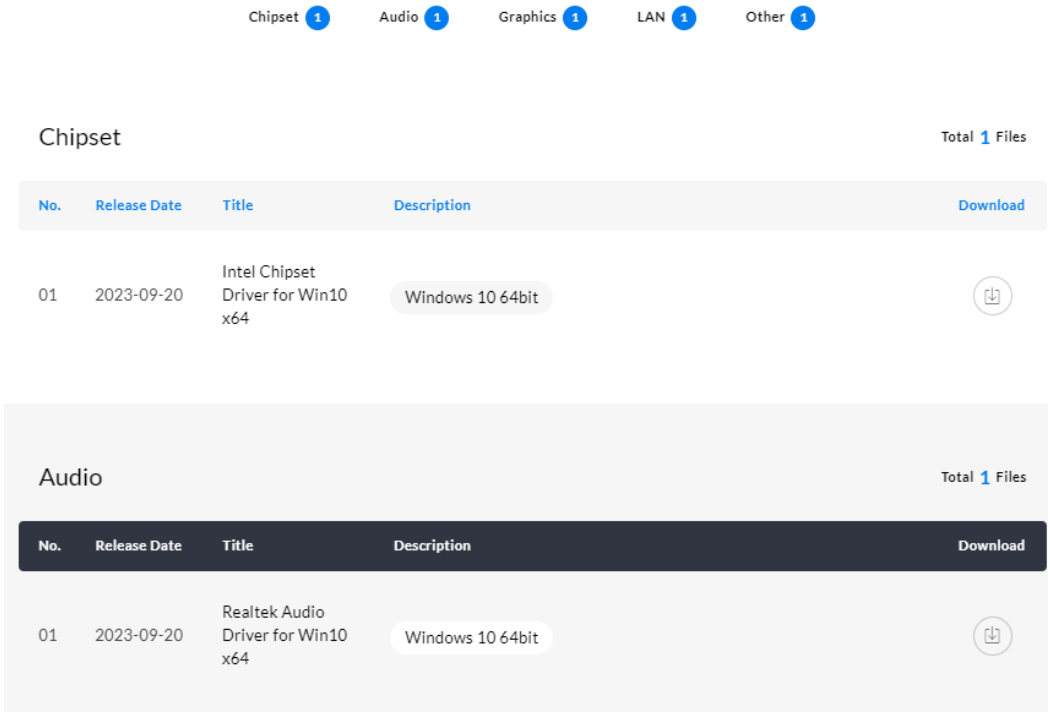


Signal	PIN	PIN	Signal
COM_DCD_3	1	2	COM_RXD_3
COM_TXD_3	3	4	COM_DTR#_3
GND	5	6	COM_DSR#_3
COM_RTS#_3	7	8	COM_CTS#_3
COM_RI#_3	9	10	NC
COM_DCD_4	11	12	COM_RXD_4
COM_TXD_4	13	14	COM_DTR#_4
GND	15	16	COM_DSR#_4
COM_RTS#_4	17	18	COM_CTS#_4
COM_RI#_4	19	20	NC
COM_DCD_5	21	22	COM_RXD_5
COM_TXD_5	23	24	COM_DTR#_5
GND	25	26	COM_DSR#_5
COM_RTS#_5	27	28	COM_CTS#_5
COM_RI#_5	29	30	NC
COM_DCD_6	31	32	COM_RXD_6
COM_TXD_6	33	34	COM_DTR#_6
GND	35	36	COM_DSR#_6
COM_RTS#_6	37	38	COM_CTS#_6
COM_RI#_6	39	40	NC

3. Drivers Installation

All the drivers are available on Avalue Downloads Area (https://www.avaluetech.com/en/support/download). Type the model name and press Enter to find all the relevant software, utilities, and documentation.

Note:
The panel PC with projected capacitive type touchscreen and Windows 10 (or later) OS does not require touch driver installation. This is because there is a HID touch digitizer built-in driver in Windows 10 or later.

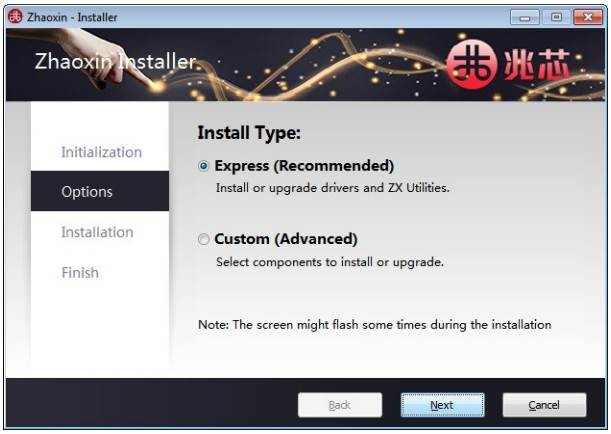


Note: Installation procedures and screen shots in this section are for your reference and may not be exactly the same as shown on your screen.

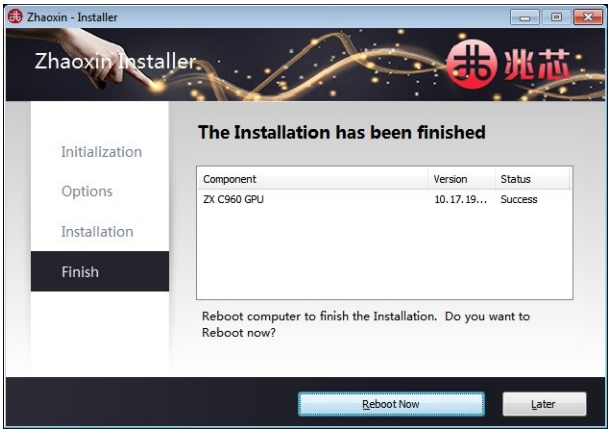
3.1 Install VGA Driver

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

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



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

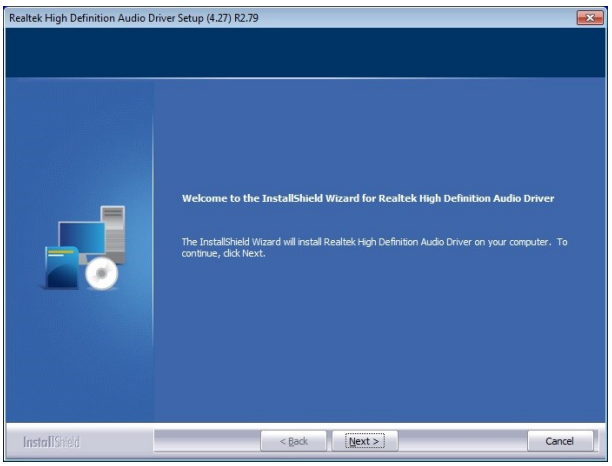


Step 2. Click **Reboot Now**.

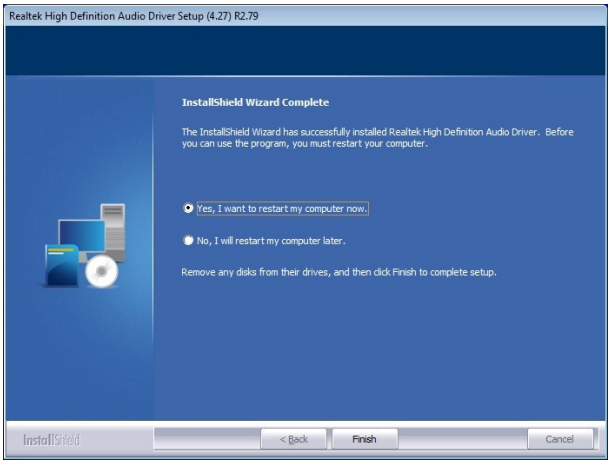
3.2 Install Audio Driver

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

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



Step1. Click **Next** to Install.

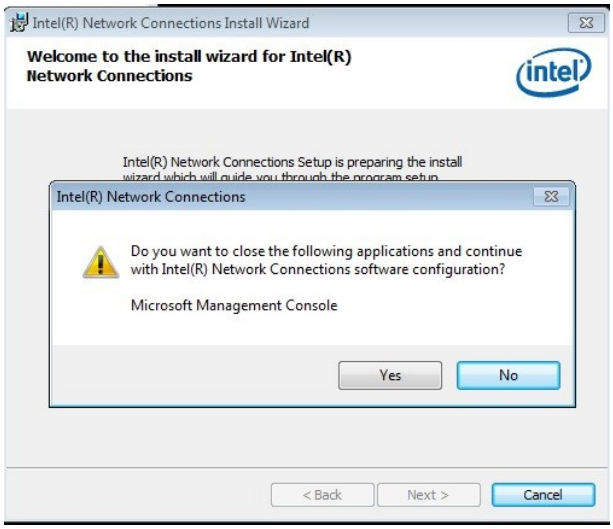


Step 2. Select **Finish** to complete Installation.

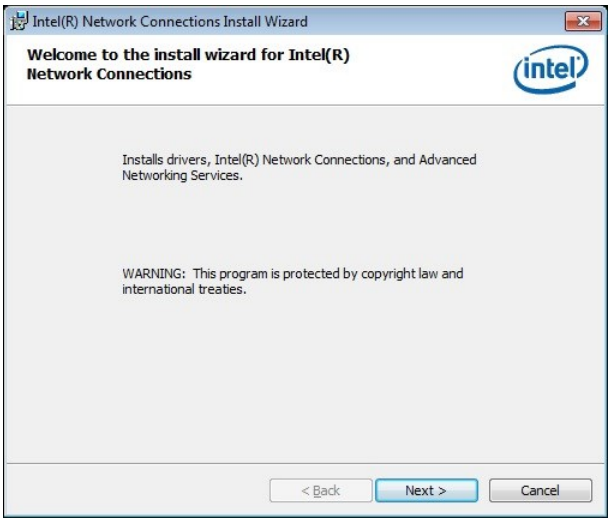
3.3 Install LAN Driver

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

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

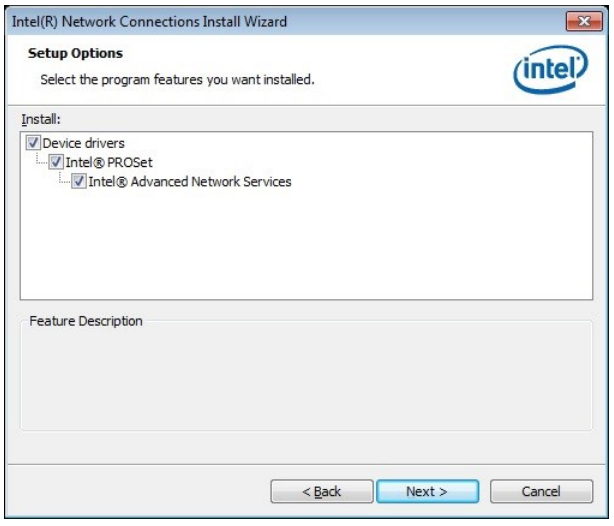


Step 1. Click **No**.

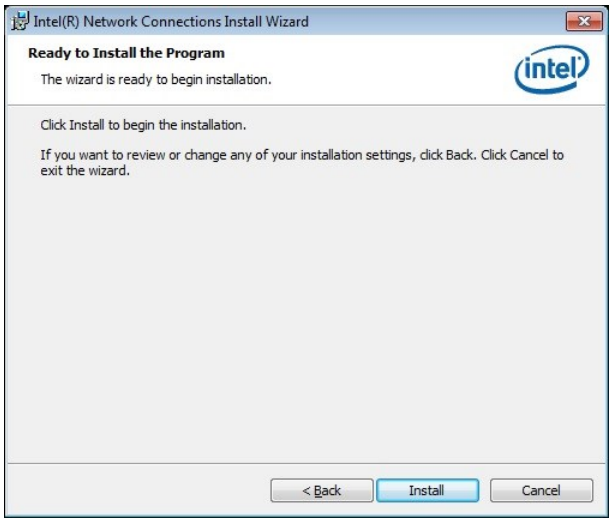


Step 2. Click **Next** to continue installation.

Step 3. Click **Next**.



Step 4. Click **Next**.

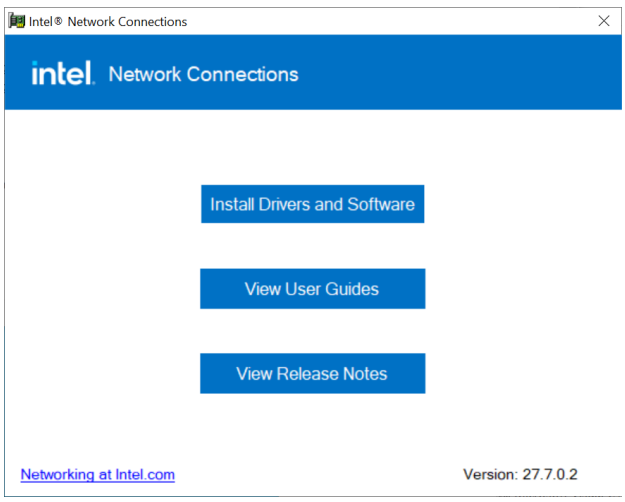


Step 5. Click **Install**.

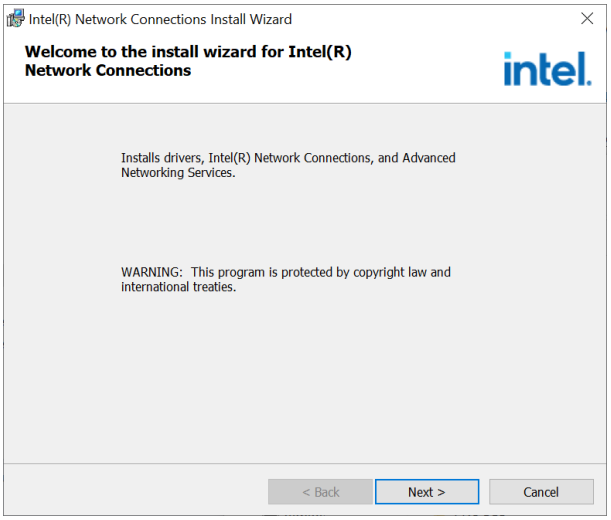
3.4 Install LAN Driver

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

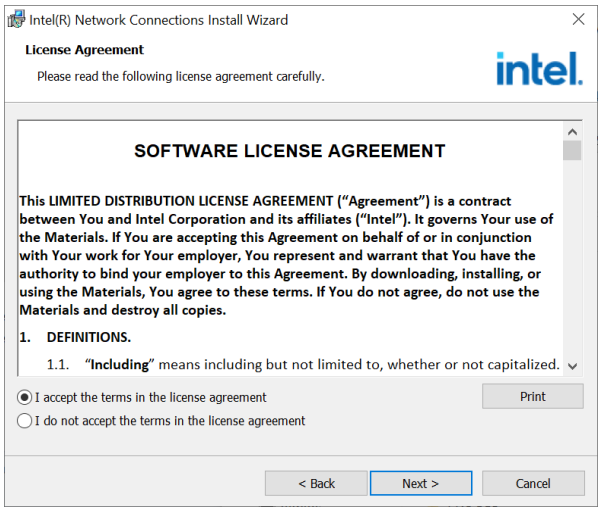
Note: The installation procedures and screen shots in this section are based on Windows 11 operation system.



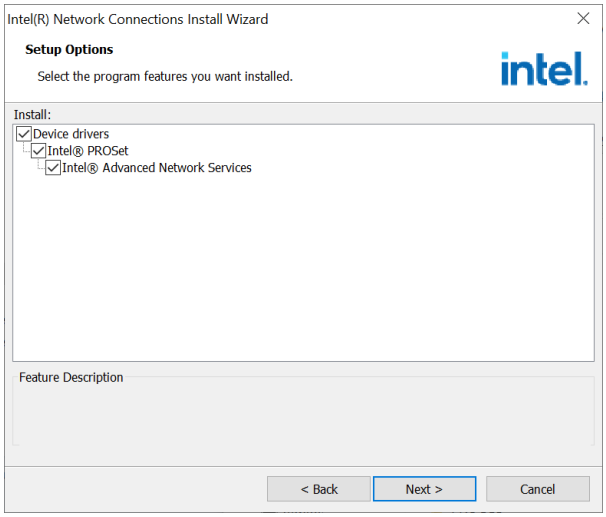
Step 1. Click **Install Drivers and Software** to continue installation.



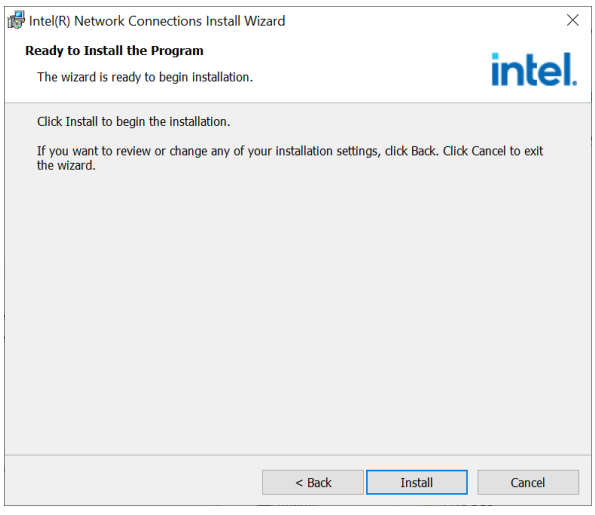
Step 2. Click **Next**.



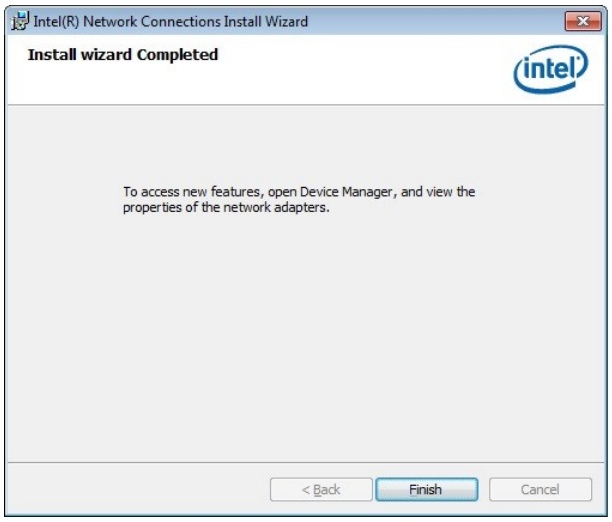
Step 3. Click **Next**.



Step 4. Click **Next**.



Step 5. Click **Install**.

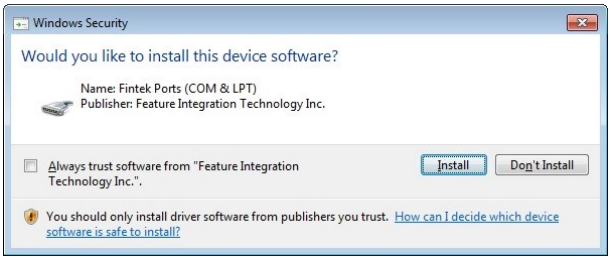


Step 6. Click **Finish** to complete setup.

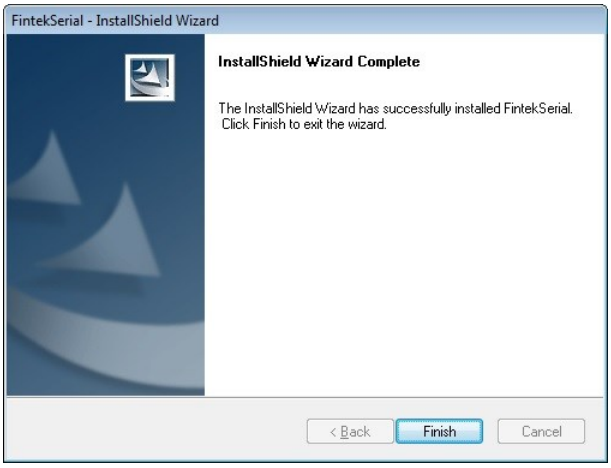
3.5 Install Fintek Serial Patch Driver

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

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

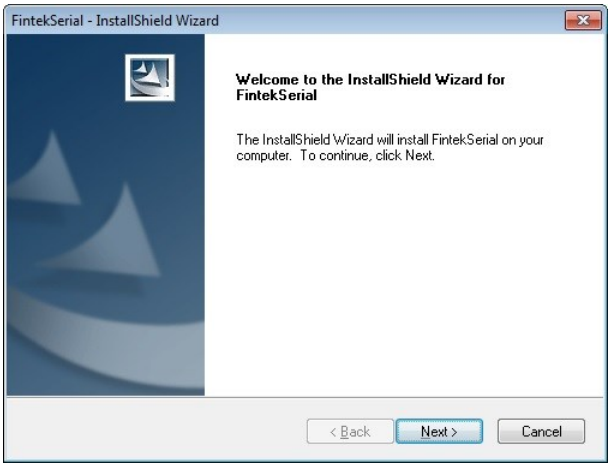


Step3. Click **Install**.



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

Step1. Click **Ok**.



Step 2. Click **Next**.

4.BIOS Setup

4.1 Introduction

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

4.2 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

4.3 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.

4.4 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.

4.5 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.

4.6 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.

4.6.1 Main Menu

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

4.6.1.1 System Language

This option allows choosing the system default language.

4.6.1.2 System Date

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

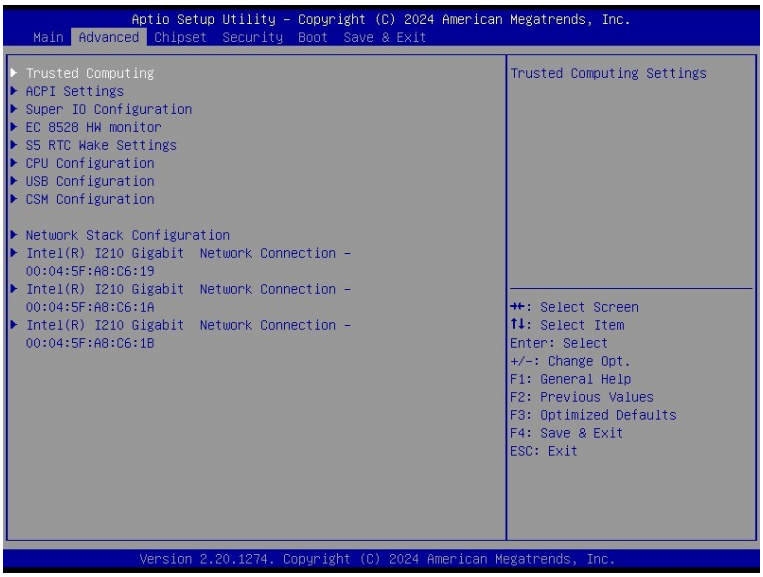
4.6.1.3 System Time

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

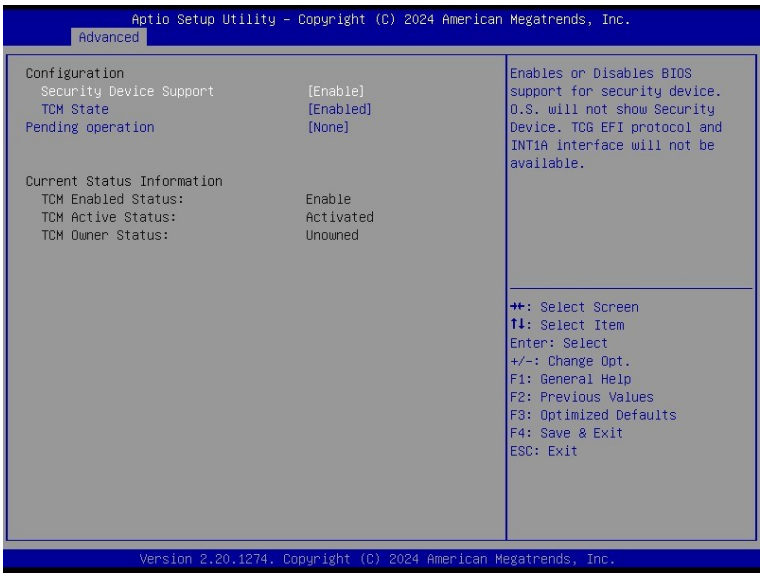
Note: The BIOS setup screens shown in this chapter are for reference purposes only, and may not exactly match what you see on your screen.
Visit the Avalue website (www.avalue.com) to download the latest product and BIOS information.

4.6.2 Advanced Menu

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

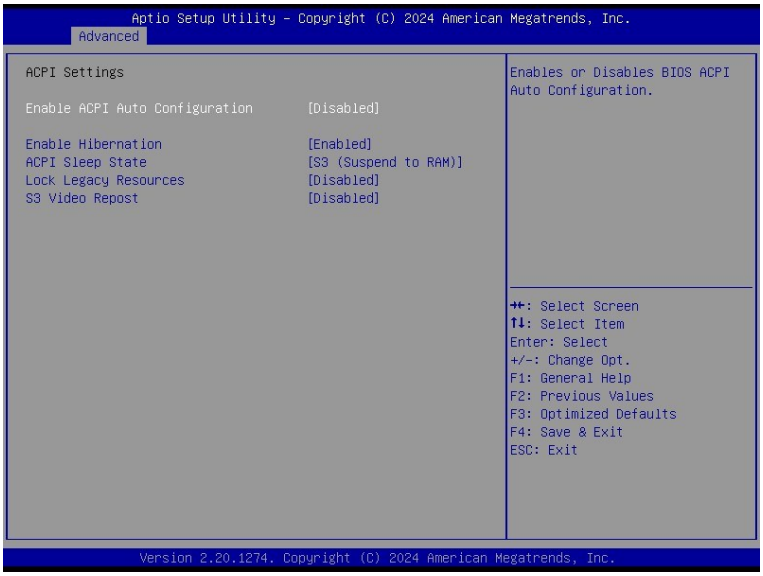


4.6.2.1 Trusted Computing



Item	Options	Description
Security Device Support	Disabled Enabled**[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.
TPM State	Disabled Enabled**[Default]**	Enable/Disable Security Device. NOTE: Your Computer will reboot during restart in order to change State of the Device.
Pending operation	Nono**[Default]** TCM Clear	Schedule an Operation for the Security Device. NOTE: Your Computer will reboot during restart in order to change State of Security Device.

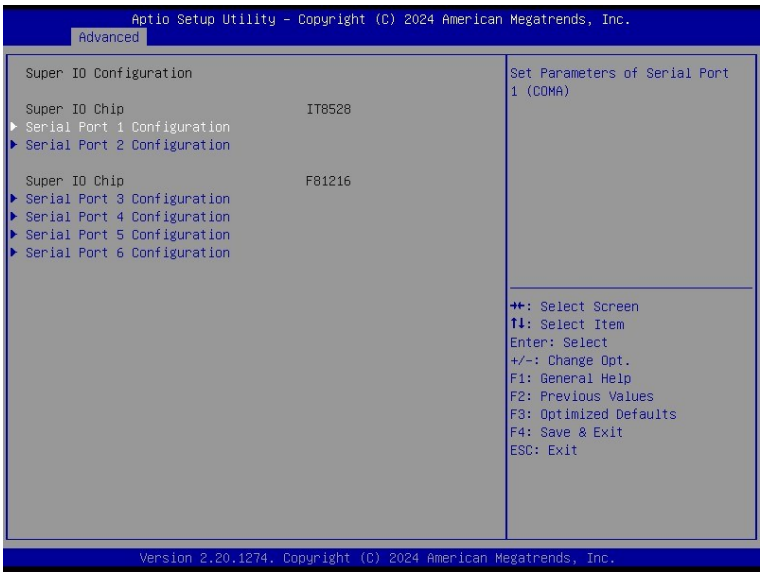
4.6.2.2 APCI Settings



Item	Options	Description
Enable ACPI Auto Configuration	Disabled**[Default]** Enabled	Enable or Disable BIOS ACPI Auto Configuration
Enable Hibernation	Disabled Enabled**[Default]**	Enables or Disables Syetem ability to Hibernate (OS/S4 Sleep State). This option may not be effective with some operating systems.
ACPI Sleep State	Suspend Disabled, S3 (Suspend to RAM)**[Default]**	Select the highest ACPI sleep state the system will enter when the SUSPEND button is pressed.
Lock Legacy Resources	Disabled**[Default]** Enabled	Enables or Disables Lock Legacy Resources
S3 Video Repost	Disabled**[Default]** Enabled	Enables or Disables S3 Video Repost

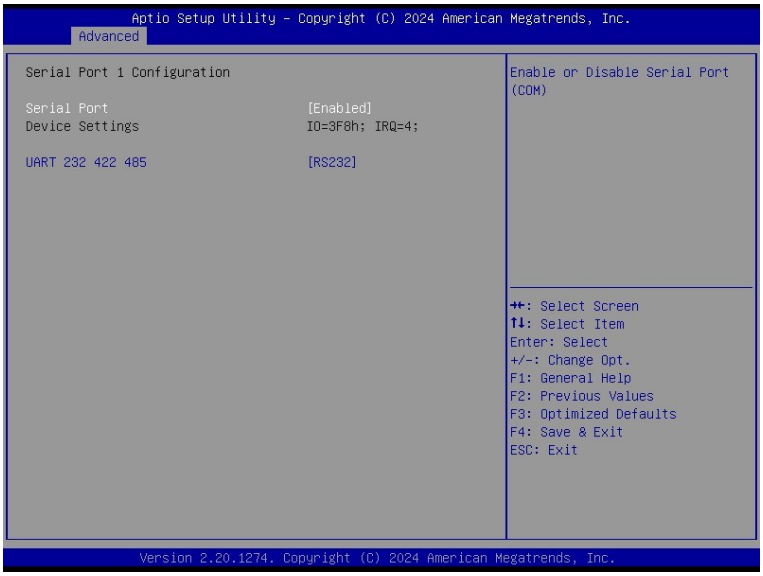
4.6.2.3 Super IO Configuration

You can use this item to set up or change the Super IO configuration for serial ports. Please refer to 4.6.2.3.1~ 4.6.2.3.6 for more information.



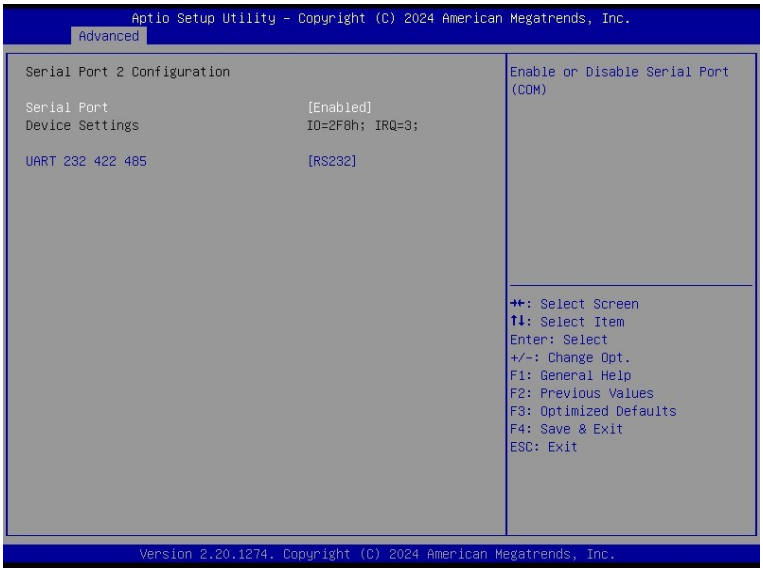
Item	Description
Serial Port 1 Configuration	Set Parameters of Serial Port 1 (COMA).
Serial Port 2 Configuration	Set Parameters of Serial Port 2 (COMB).
Serial Port 3 Configuration	Set Parameters of Serial Port 3 (COMC).
Serial Port 4 Configuration	Set Parameters of Serial Port 4 (COMD).
Serial Port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

4.6.2.3.1 Serial Port 1 Configuration



Item	Option	Description
Serial Port	Enabled**[Default]**, Disabled	Enable or Disable Serial Port (COM)
UART 232 422 485	RS232**[Default]**, RS422 RS485	Change the Serial Port as 232/422/485

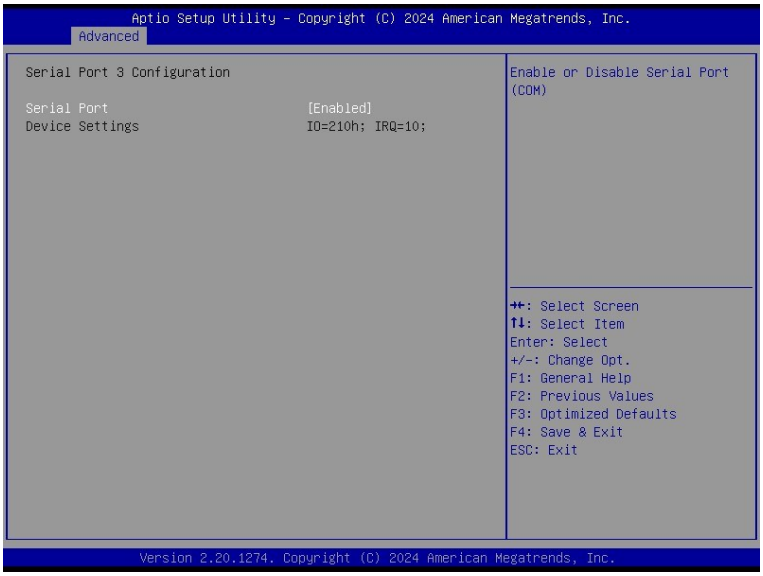
4.6.2.3.2 Serial Port 2 Configuration



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

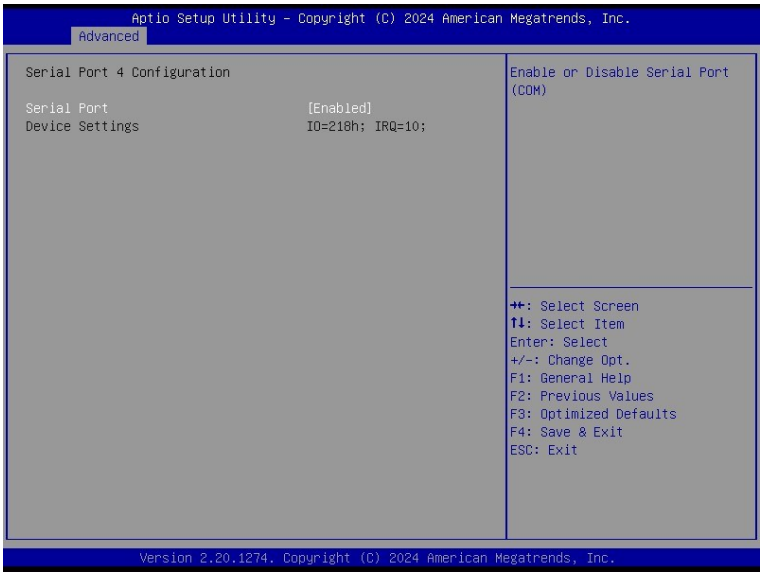
UART 232 422 485	RS232**[Default]**, RS422 RS485	Change the Serial Port as 232/422/485

4.6.2.3.3 Serial Port 3 Configuration



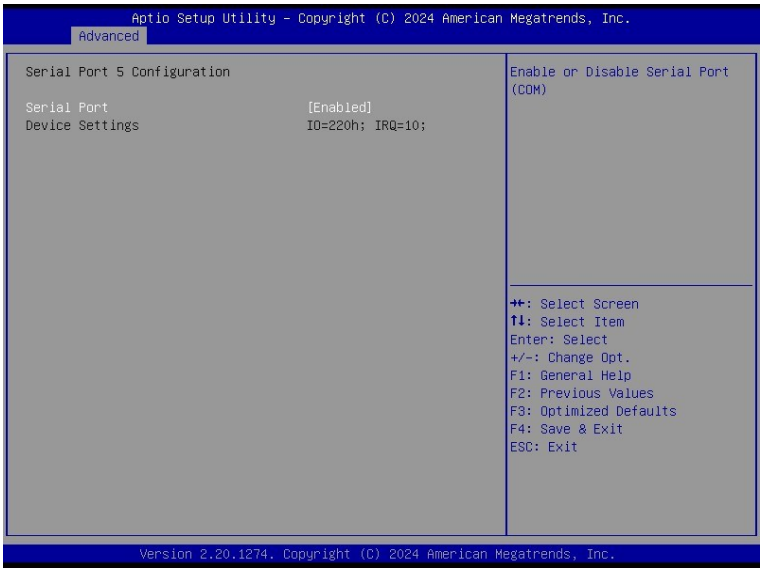
Item	Option	Description
Serial Port	Enabled**[Default]**, Disabled	Enable or Disable Serial Port (COM)

4.6.2.3.4 Serial Port 4 Configuration



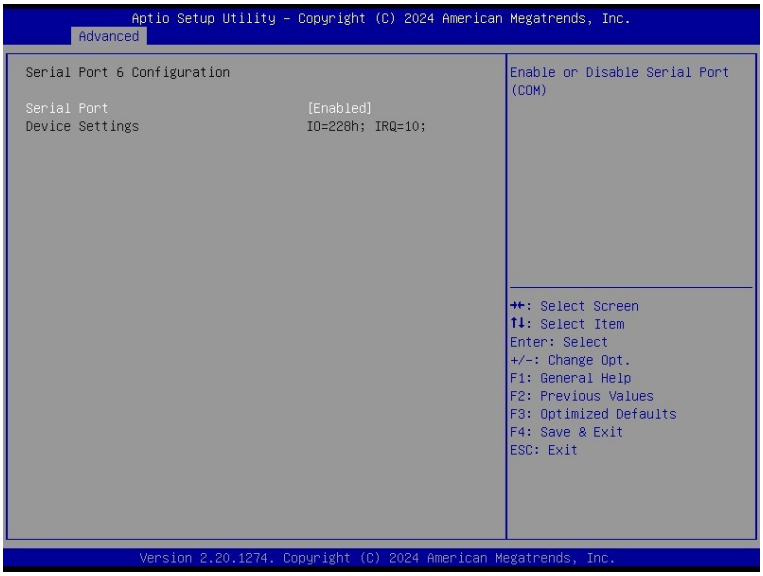
Item	Option	Description
Serial Port	Enabled**[Default]**, Disabled	Enable or Disable Serial Port (COM)

4.6.2.3.5 Serial Port 5 Configuration



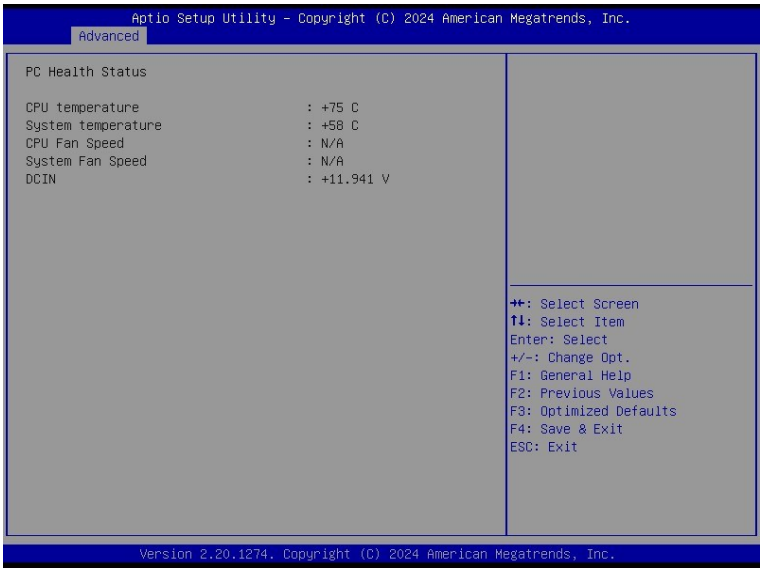
Item	Option	Description
Serial Port	Enabled**[Default]**, Disabled	Enable or Disable Serial Port (COM)

4.6.2.3.6 Serial Port 6 Configuration

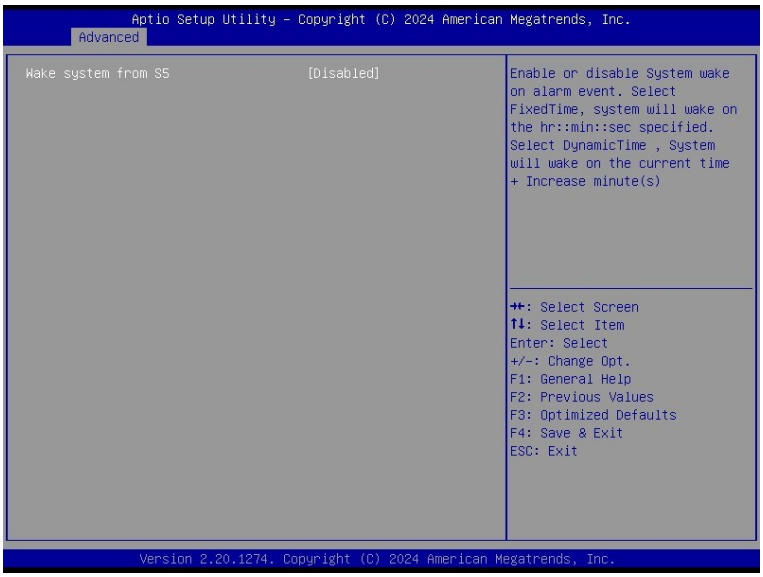


Item	Option	Description
Serial Port	Enabled**[Default]**, Disabled	Enable or Disable Serial Port (COM)

4.6.2.4 EC 8528 HW Monitor



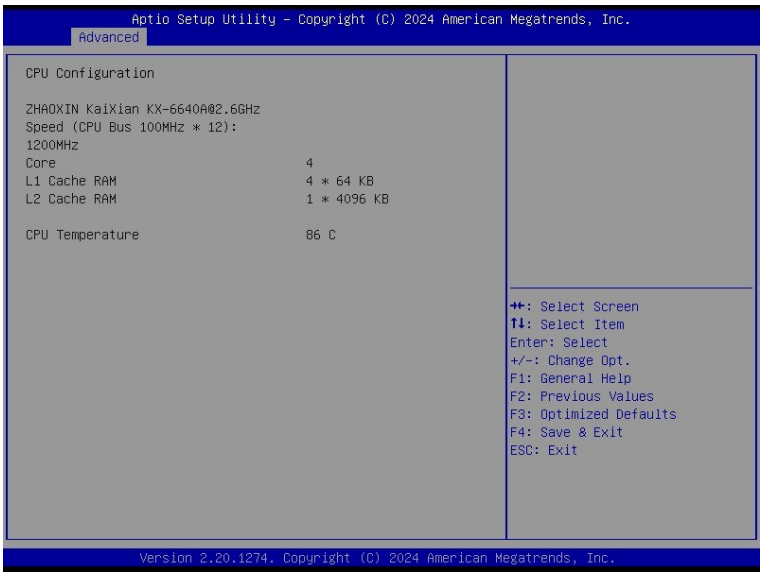
4.6.2.5 S5 RTC Wake Settings



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).

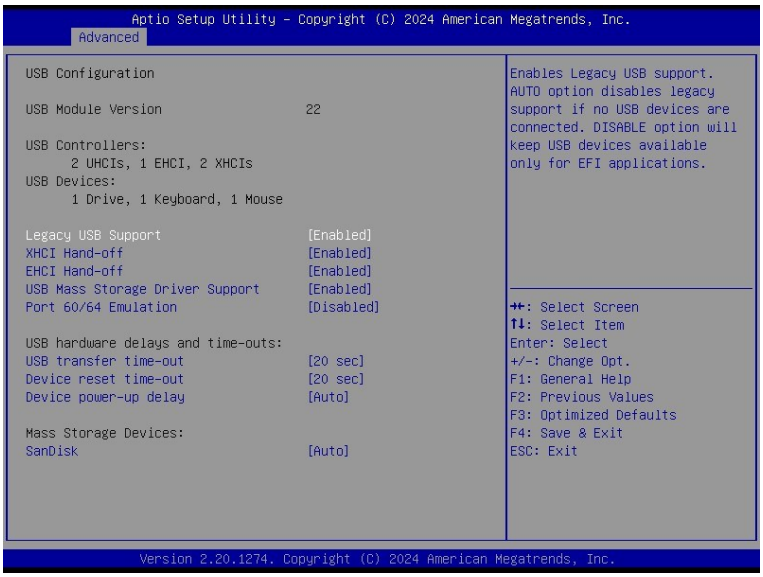
4.6.2.6 CPU Configuration

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



4.6.2.7 USB Configuration

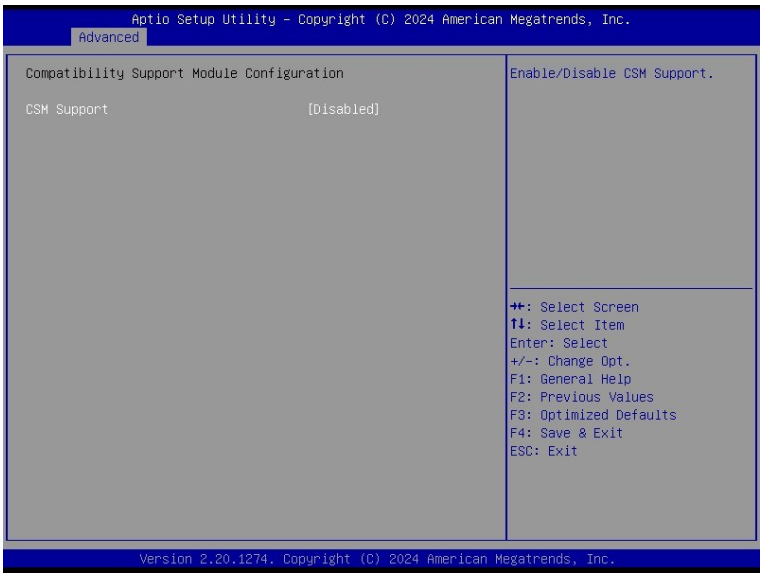
The USB Configuration menu helps read USB information and configures USB settings.



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.

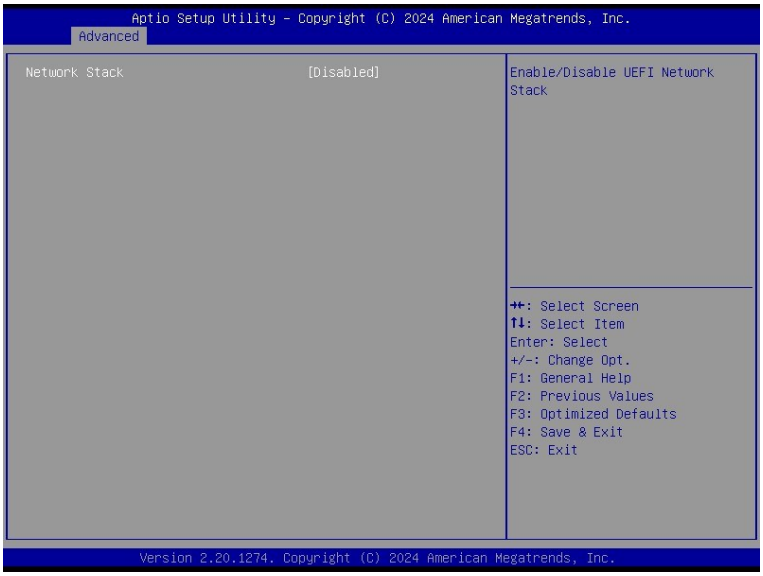
EHCI Hand-off	Enabled**[Default]** Disabled	This is a workaround for OSes without EHCI hand-off support. The EHCI ownership change should be claimed by EHCI driver.
USB Mass Storage Driver Support	Disabled Enabled**[Default]**	Enable/Disable USB Mass Storage Driver Support
Port 60/64 Emulation	Disabled**[Default]** Enabled	Enables I/O port 60h/64h emulation support. This should be enabled for the complete USB keyboard legacy support for non-USB aware OSes.
USB transfer time-out	1 sec 5 sec 10 sec 20 sec**[Default]**	The time-out value for Control, Bulk, and Interrupt transfer.
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.

4.6.2.8 CSM Configuration



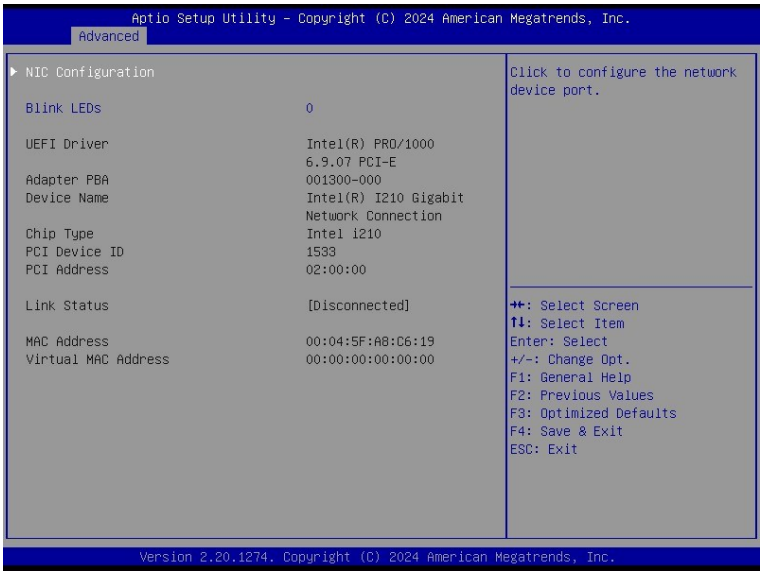
Item	Options	Description
CSM Support	Disabled**[Default]** Enabled	Enable/Disable CSM Support

4.6.2.9 Network Stack Configuration

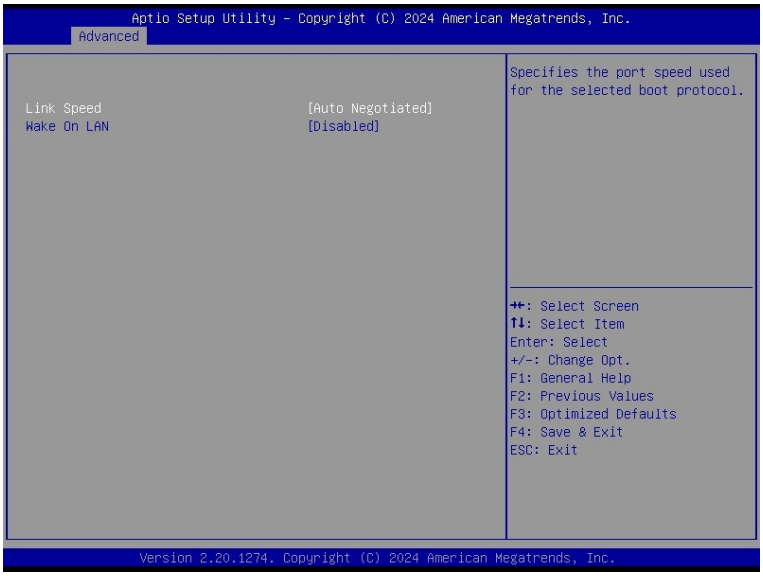


Item	Options	Description
Network Stack	Enabled Disabled**[Default]**	Enable/Disable UEFI Network Stack.

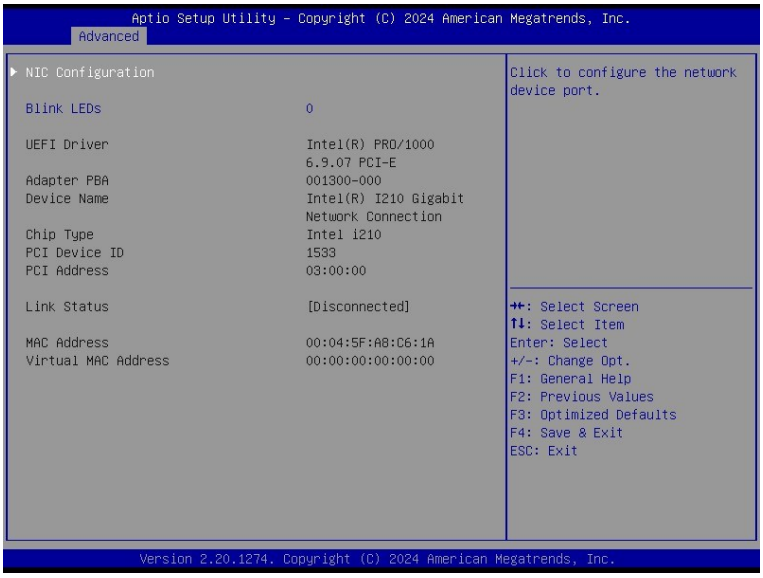
4.6.2.10 Intel (R) I210 Gigabit Network Connection – 00:04:5F:A8:C6:19



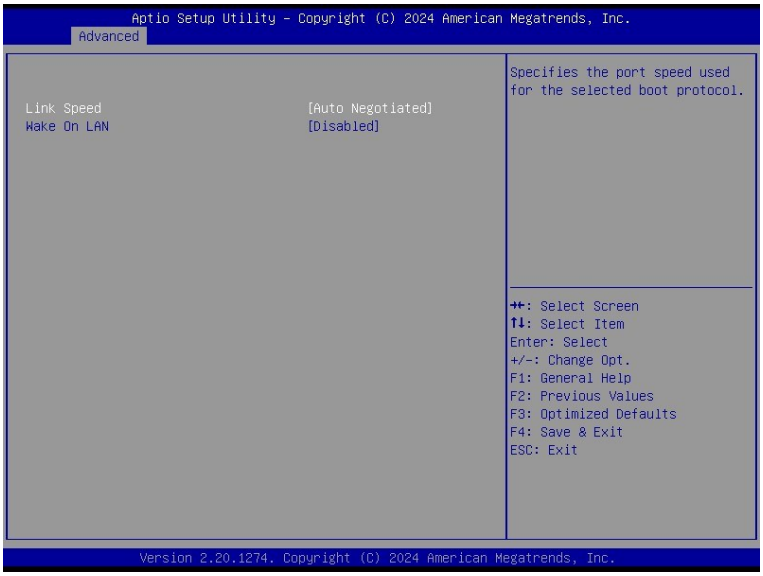
4.6.2.10.1 NIC Configuration



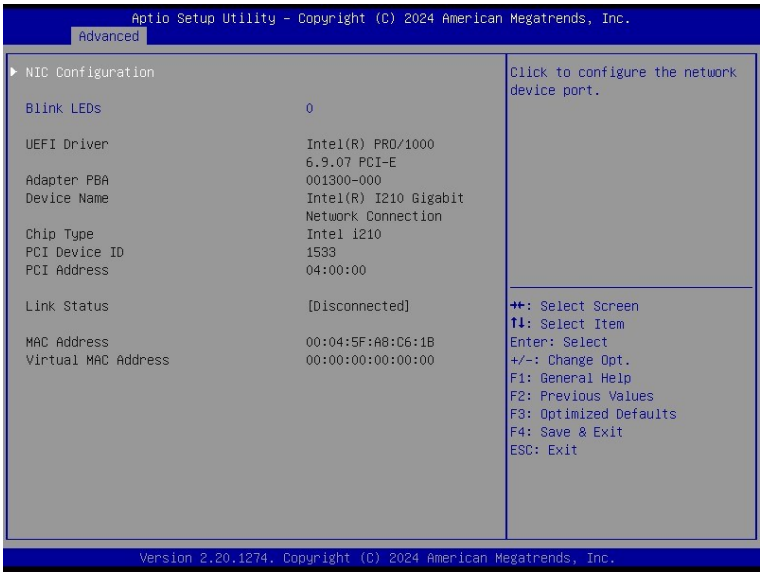
4.6.2.11 Intel (R) I210 Gigabit Network Connection – 00:04:5F:A8:C6:1A



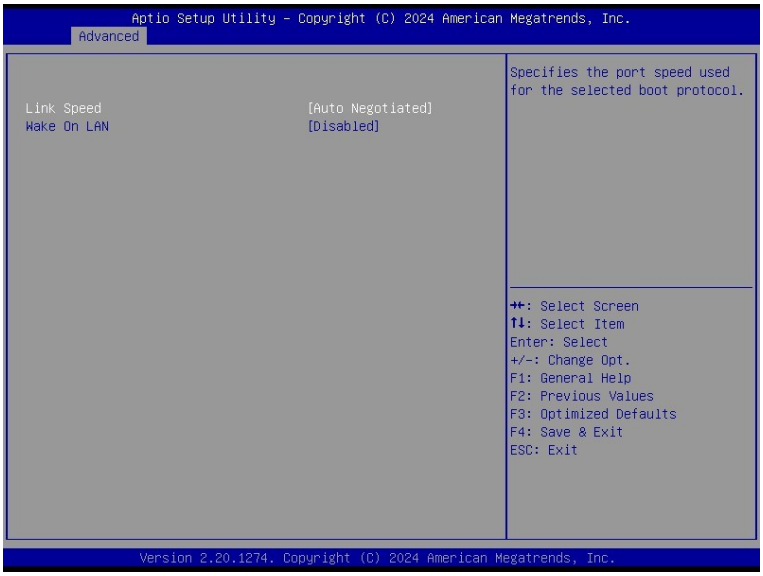
4.6.2.11.1 NIC Configuration



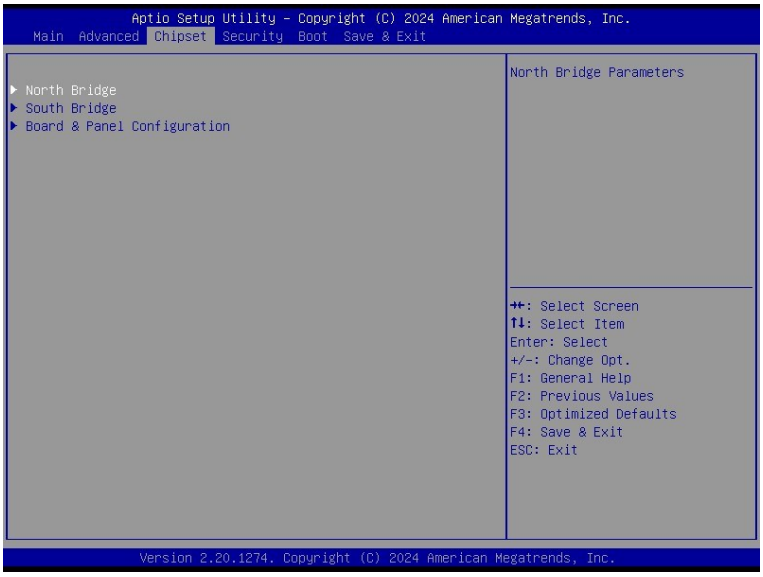
4.6.2.12 Intel (R) I210 Gigabit Network Connection – 00:04:5F:A8:C6:1B



4.6.2.12.1 NIC Configuration

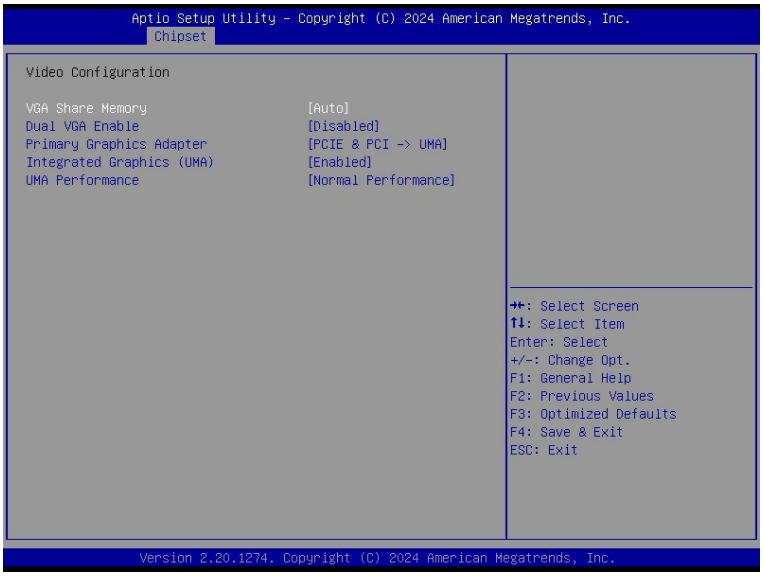


4.6.3 Chipset



4.6.3.1 North Bridge

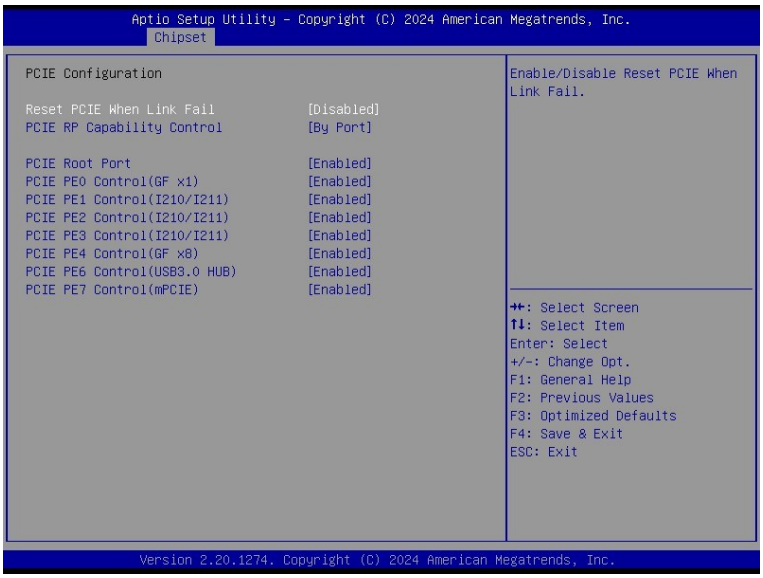
4.6.3.1.1 Video Configuration



Item	Options	Description
VGA Share Memory	64M 128M 256M 512M Auto**[Default]**	
Dual VGA Enable	Enabled Disabled**[Default]**	Dual VGA Enable/Disable.
Primary Graphics Adapter	PCIE & PCI -> UMA**[Default]** UMA -> PCIE & PCI	Select Primary Graphics Adapter

Integrated Graphics (UMA)	Disabled Enabled**[Default]**	Integrated Graphics (UMA) Enable/Disable.
UMA Performance	Normal Performance**[Default]** High Performance	

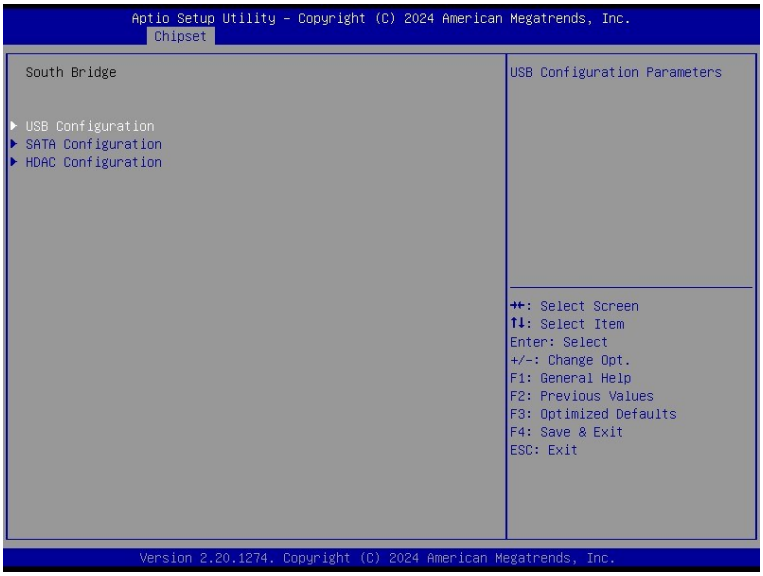
4.6.3.1.2 PCIE Configuration



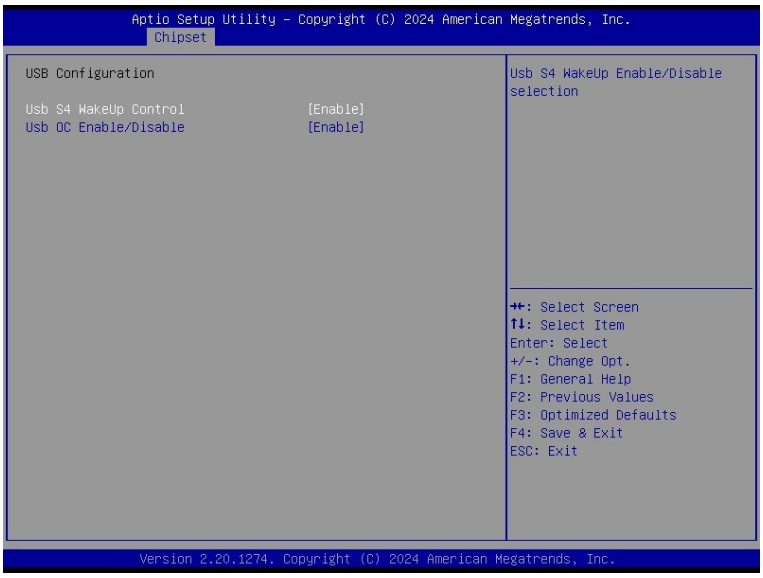
Item	Options	Description
Reset PCIE When Link Fail	Disabled**[Default]** Enabled	Enable/Disable Reset PCIE When Link Fail.
PCIE RP Capability Control	Auto Force Gen 1 Force Gen 2 Force Gen 3 By Port**[Default]**	Control PCIE RP Capability and Link-Speed; the Real Target Link-Speed will be defined in Advance -> PCI Subsystem Setting - > PCIE GEN2 Setting -> Target Link Speed
PCIE Root Port	Disabled Enabled**[Default]**	PCIE Root Port
PCIE PE0 Control (GF x1)	Disabled Enabled**[Default]**	PCIE Port 10 for GFx1 PCIE PE0 can't be disabled when PE1/PE2/PE3 is enabled
PCIE PE1 Control(I210/I211)	Disabled Enabled**[Default]**	PCIE Port 11 for I210/I211
PCIE PE2 Control(I210/I211)	Disabled Enabled**[Default]**	PCIE Port 12 for I210/I211
PCIE PE3 Control(I210/I211)	Disabled Enabled**[Default]**	PCIE Port 13 for I210/I211
PCIE PE4 Control (GF x8)	Disabled Enabled**[Default]**	PCIE Port 2~9 for GF x8

PCIE PE6 Control(USB3.0 HUB)	Disabled Enabled**[Default]**	PCIE Port 0 for USB3.0 HUB USB3.0 HUB: Port 1,2: USB Port 4 Port 3: Golden Finger Port 4: M.2 Key-B PCIE PE6 can't be disabled when PE7 is enabled
PCIE PE7 Control(mPCIE)	Disabled Enabled**[Default]**	PCIE Port 1 for Mini PCIE Slot

4.6.3.2 South Bridge

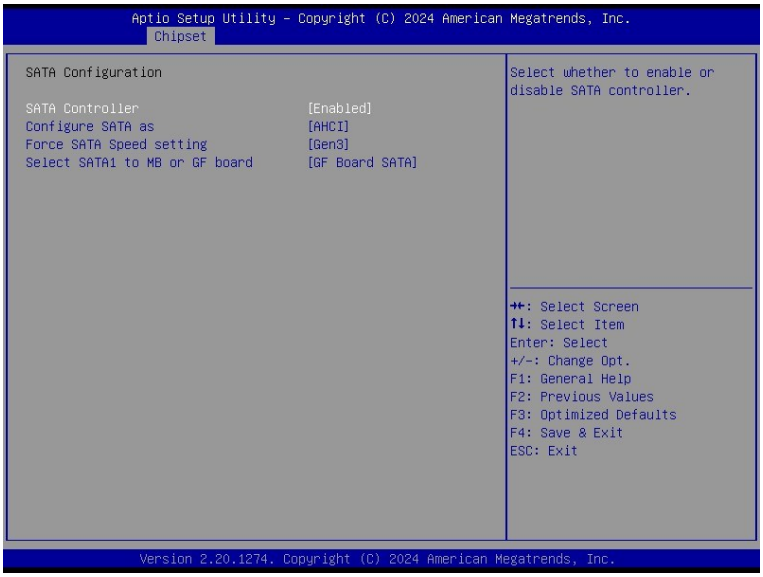


4.6.3.2.1 USB Configuration



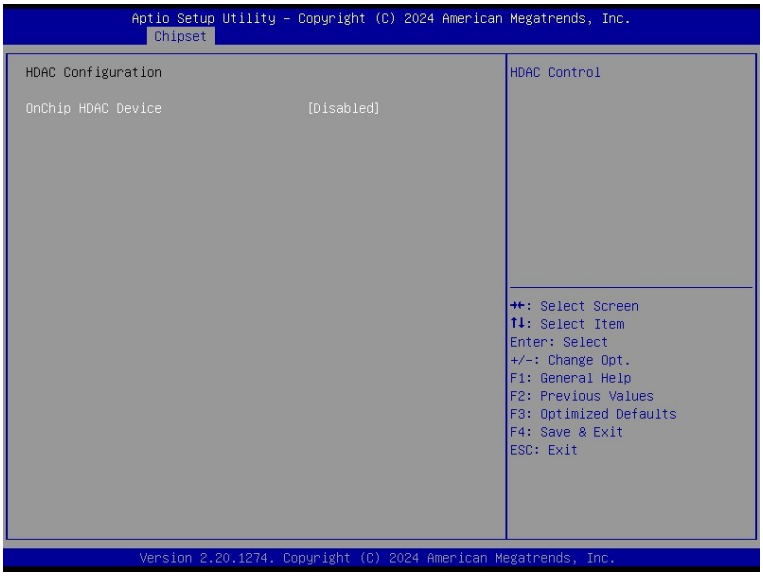
Item	Options	Description
Usb S4 WakeUp Control	Disabled Enable**[Default]**	Usb S4 WakeUp Enable/Disable selection
Usb OC Enable/Disable	Disabled Enable**[Default]**	Usb OC Enable/Disable selection

4.6.3.2.2 SATA Configuration



Item	Options	Description
SATA Controller	Disabled Enabled**[Default]**	Select whether to enable or disable SATA Controller
Configure SATA as	AHCI	Select IDE/AHCI Mode. Note: Device driver support is required for AHCI. Depending on how the hard disk image was installed, changing this setting may prevent the system from booting.
Force SATA Speed setting	Gen 1 Gen 2 Gen 3**[Default]**	Gen 1/ Gen 2/ Gen 3
Select SATA1 to MB or GF board	MB SATA GF board SATA**[Default]**	Select SATA1 to MB or GF board

4.6.3.2.3 HDAC Configuration

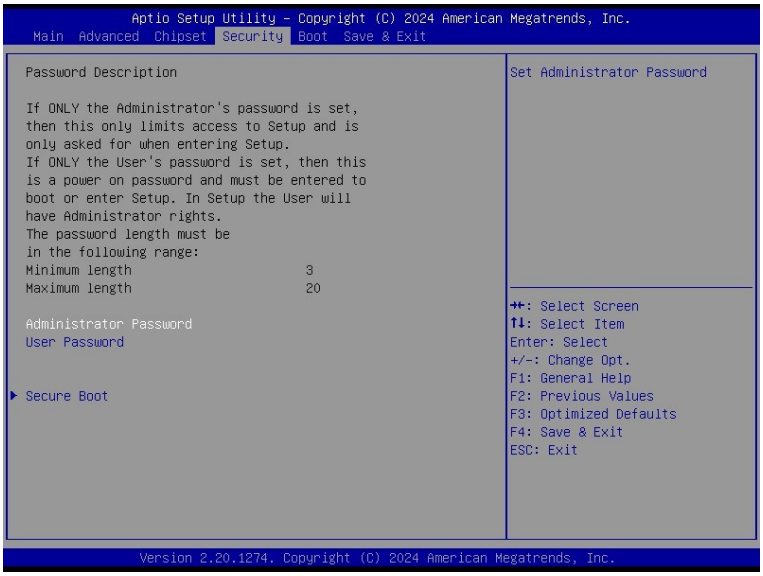


Item	Options	Description
OnChip HDAC Device	Disabled**[Default]** Enabled	HDAC Control

4.6.3.3 Board & Panel Configuration

Item	Options	Description
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 Watch Dog
Wake Up by Ring	Disabled Enabled**[Default]**	Wake Up by Ring from S3/S4/S5
USB Standby Power	Disabled Enabled**[Default]**	Enable/Disable USB Standby Power during S3/S4/S5

4.6.4 Security



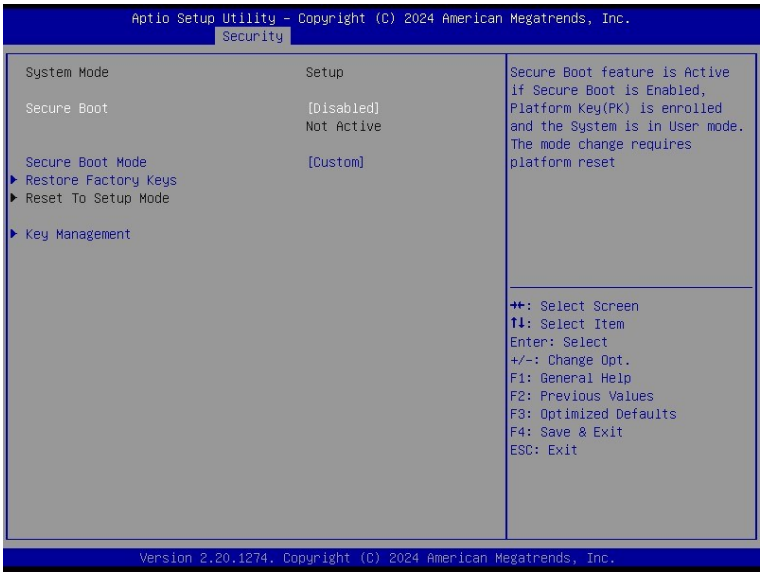
- **Administrator Password**

Set setup Administrator Password

- **User Password**

Set User Password

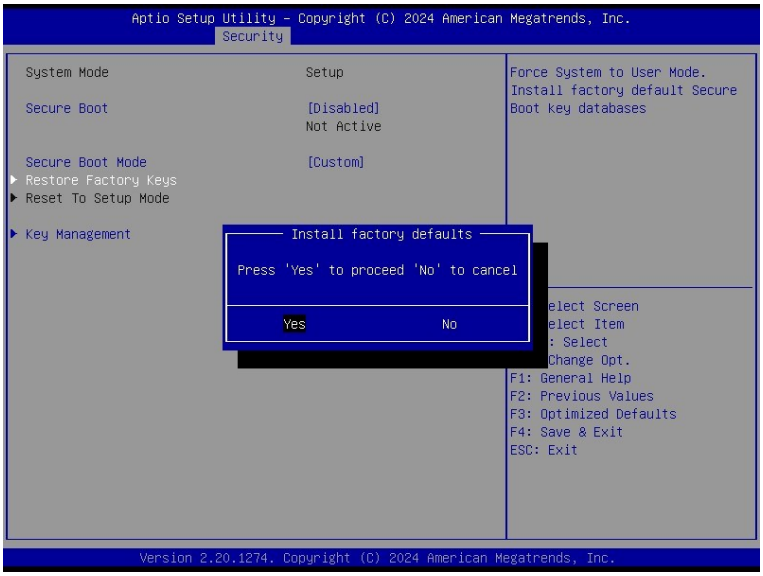
4.6.4.1 Secure Boot



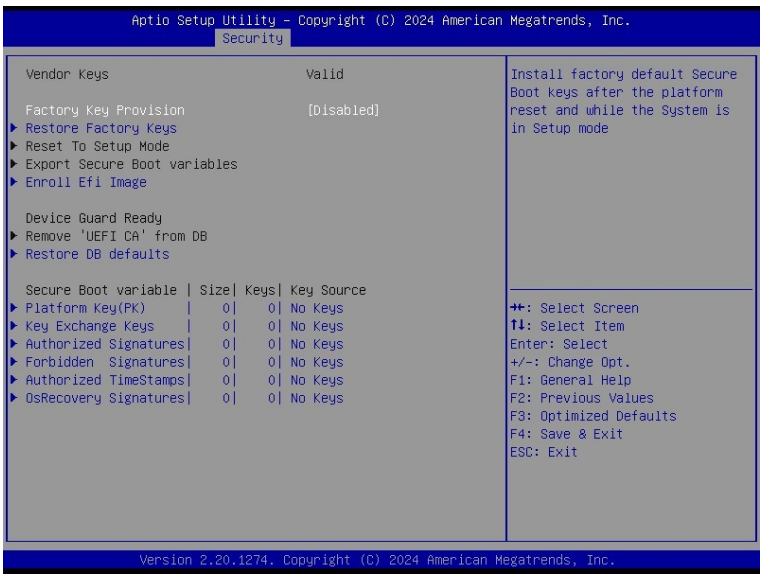
Item	Options	Description
Secure Boot	Disabled**[Default]** Enabled	Secure Boot Feature is Active if Secure Boot is Enable, Platform Key(PK) is enrolled and System is in User mode. The mode change requires platform reset

Secure Boot Mode	Standart Custom**[Default]**	Secure Boot options: Standard or Custom. In Custom mode, Secure Boot Policy variables can be configured by a physically present user without full authentication

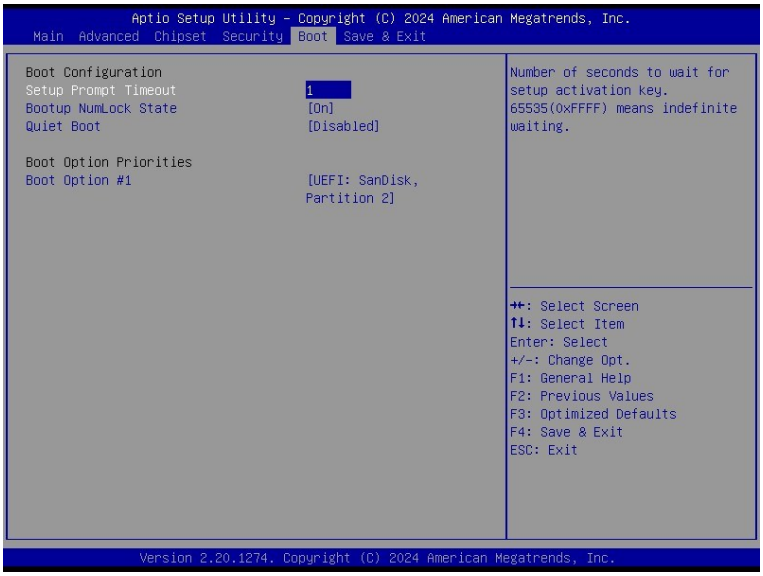
4.6.4.1.1 Restore Factory Keys



4.6.4.1.2 Key Management

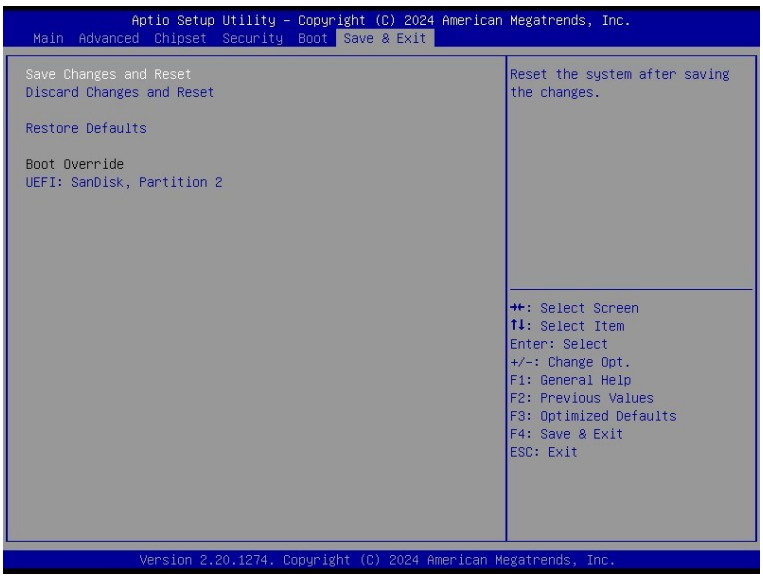


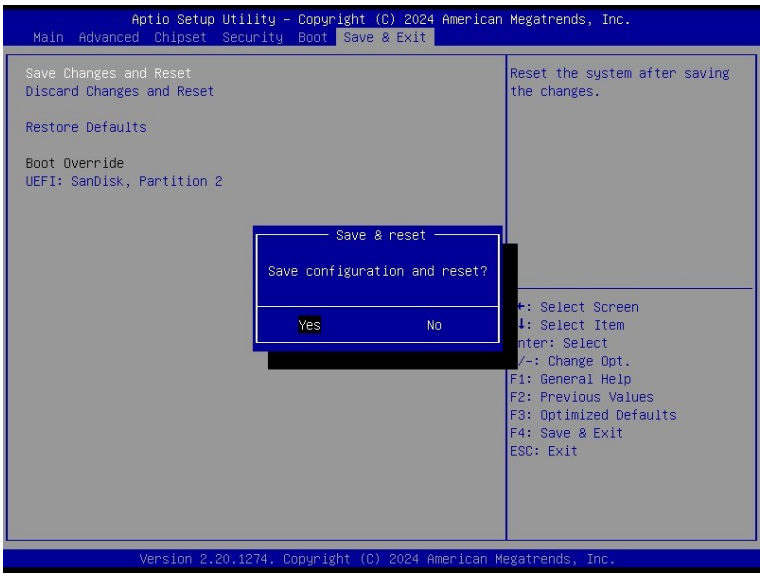
4.6.5 Boot



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 #1/2	Set the system boot order.	

4.6.6 Save and exit





4.6.6.1 Save Changes and Reset

Reset the system after saving the changes.

4.6.6.2 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.

4.6.6.3 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.

4.6.6.4 Launch EFI Shell from filesystem device

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

5. 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

6. 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.

7. 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.