BMX-T529

Mini-ITX Desktop System with Zhaoxin KX-6000G

Quick Reference Guide

1st Ed –13 February 2025

Part No. E2017GAU1A0R

Document Amendment History

Revision	Date	By	Comment
1st	February 2025	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

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	BMX-T529	1
2	Adapter	1
3	AC Power cord	1
4	Mounting kit	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	Onboard Zhaoxin KX-6000G series 4 core BGA Processor BGA CPU Only TDP15W
Platform Controller Hub	Soc
System Memory	2 x 260-pin DDR4 3200 MHz SO-DIMM socket, supports up to 64GB Max
I/O Chipset	EC-ITE: IT5782VG
BIOS Information	Byosoft BIOS, 128Mbit 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
TPM	Onboard Nationz (国民技术)TCM Z32H330TC-SQN-2701 or Nationz TPM 2.0 or equivalent products. (optional, default 不上件)
SBC	EMX-KX60G
Expansion	
M.2 (Key-X, Size, Signal)	1 x M.2 Key B 3042/3052 with 1 x PCI-e x1, USB2.0, USB 3.2 Gen1 with 1 x Nano SIM card slot/co-lay FPC connector(10Pin, P=0.5mm) support WWAN+GNSS 1 x M.2 Key E 2230 support WiFi module (1 x PCI-e x1 & USB 2.0) 2 x M.2 Key M 2280 (PCI-e x4) slot for storage NVMe SSD
Storage	
SATA	2 x 2.5# HDD Bracket
M.2 (Signal)	2 x M.2 Key M 2280 (PCI-e x4) slot for storage NVMe SSD
Front I/O	
USB Port	4 x USB2.0 optional
COM Port	3 x COM optional
SIM Slot	1 x Internal SIM slot
Antenna	4 x Antenna with dust cover
Rear I/O	
USB Port	4 x USB3.2 Gen1
COM Port	2 x RS/232/RS422/485(default RS232) 4 x RS-232
Power Button	1 x Push Button for Power on/off
HDMI	1 x HDMI 2.0b
VGA	1 x VGA
LVDS	1 x LVDS for DB26 Optional

Audio	1 x Mic-In, 1 x Line-Out Optional
RJ-45	3 x RJ45
LED	1 x Power LED (Blue) 1 x Storage LED (Red)
DC Input Conn.	1 x 2-pin Phoenix connector with dust cover 1 x DC Jack with lock
Left I/O (View on front side)	
Antenna	2 x Antenna with dust cover
Right I/O (View on front side)	
Antenna	2 x Antenna with dust cover
Onboard I/O	
SATA Signal	2 x 7 pin SATAIII Interface connector
SATA PWR	2 x SATA Power (JSATAP1/2)
USB Port	2 x 2 x 5 pin, pitch 2.54mm connector for 4 USB 2.0
COM Port	COM 1 & COM2: COM 1 & COM2 support RS232/422/485 connector, with / +5V & +12V Supported and RS422/485 by BIOS setting 2 x 2 x 5 pin, pitch 2.00mm connector support RS-232/422/485 connector, Pin 9 with / +5V & +12V Supported 2 x 2 x 3 pin, pitch 2.00mm connector, for RI/+5V/+12V Supported COM3 to 6: 1 x 2 x 20 pin, pitch 2.00mm connector for COM3~6: support RS-232 connector *COM6(Limitation)
AT/ATX Selector	1 x 1 x 3 pin pitch 2.54mm connector for AT/ATX jumper (JAT1)
RTC Battery	1 x 2 Pin Pitch 1.25mm SMT type battery connector (CR2032 Battery) JBAT1
Clear CMOS	1 x 3 pin, pitch 2.00mm connector for CMOS clear (JRTC1)
eSPI	1 x 2 x 6 pin, pitch 2.00mm connector for eSPI debug (JESPI1)
EC Debug	1 x 3 pin, pitch 2.00mm connector for EC SPI debug (JEC1)
Front Panel	1 x 2 x 5 pin, pitch 2.54mm connector for front panel_1 (JFP1)
BIOS EC	1 x 2 x 4 pin, pitch 2.00mm connector for BIOS SPI (JBIOS1)
DC Input Conn.	1 x DC Jack lockable connector type 1 x 2 x 2 pin, pitch 4.20mm connector for power input connector (PWR1)
Display	
Graphic Chipset	Zhaoxin ® Graphics CPU integrated
Multiple Display	Triple Display Multiple Display: HDMI+VGA+LVDS
Resolution	1 x HDMI 2.0 3840 x 2160 @ 30Hz, 4096x2160 @ 60Hz 1 x VGA: 1920x 1080 @60Hz 1 x LVDS: 1920 x 1080@60Hz Dual channel 18/24-bits LVDS

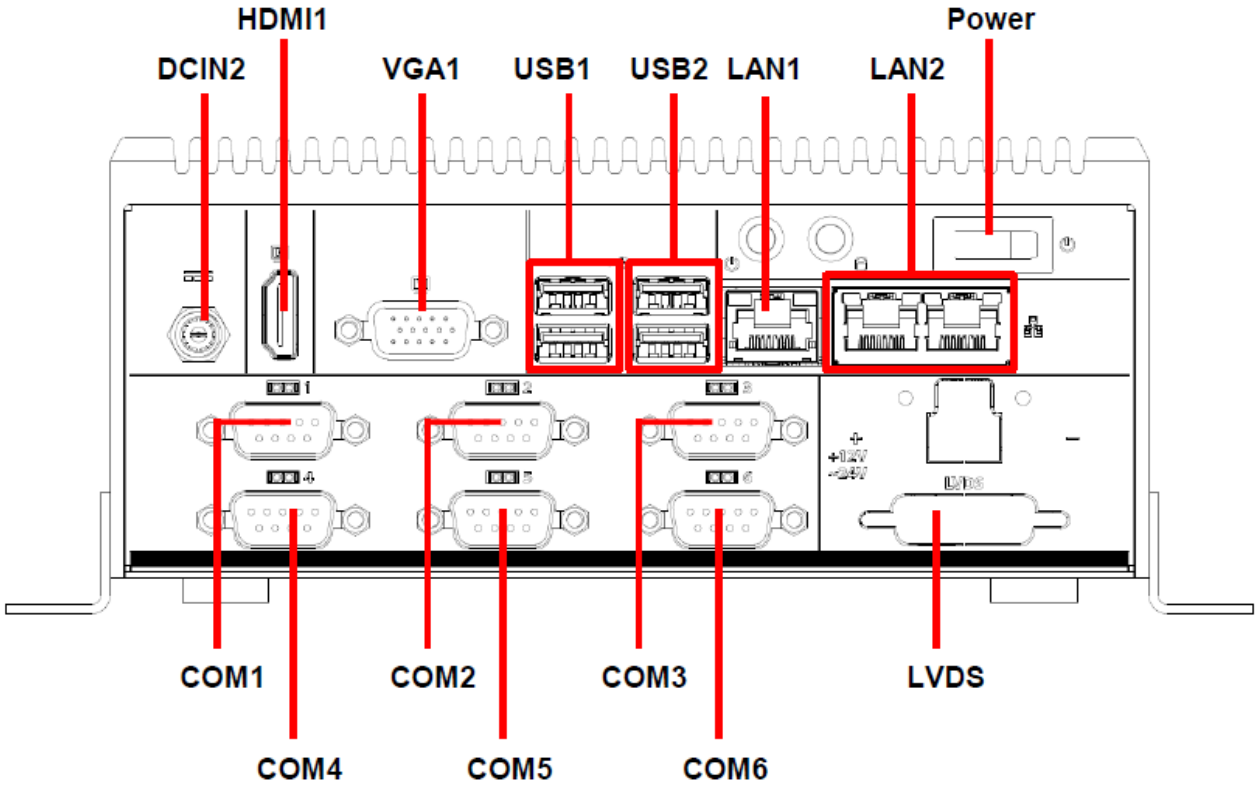
<table>
<tr><td colspan="2">Audio</td></tr>
<tr><td>Audio Codec</td><td>Realtek ALC888S HD codec</td></tr>
<tr><td colspan="2">Ethernet</td></tr>
<tr><td>LAN Chipset</td><td>3 x Realtek RTL8111K 1G(15W)(default)</td></tr>
<tr><td>Data Rate Per Port</td><td>10/100/1000 Base-Tx GbE compatible</td></tr>
<tr><td>LED Indicator</td><td>
<table>
<tr><td colspan="4">Max. 1G LAN Port</td></tr>
<tr><td colspan="2">ACT/LINK</td><td>SPEED</td><td></td></tr>
<tr><td>LED</td><td>Definition</td><td>LED</td><td>Definition</td></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>Yellow 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>Voltage Input Spec.</td><td>DC in +12V ~ +24V</td></tr>
<tr><td>Voltage Input Conn.</td><td>DC Jack with lock or 2P- Phoenix connect(optional)</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 colspan="2">Mechanical & Environment</td></tr>
<tr><td>Operating Temp.</td><td>0°C ~ 50°C (w/SSD) ambient w/ 0.5 air flow</td></tr>
<tr><td>Storage Temp.</td><td>-30~70C° (-22°F ~ 158°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>180mm x 182mm x 82.2 mm (Standard)</td></tr>
<tr><td>Weight</td><td>2.1KG</td></tr>
<tr><td>Vibration Test</td><td>Random Vibration Operation
1. PSD: 0.0505G²/Hz , 5 Grms
2. System condition : operation mode
3. Test frequency : 10 ~500 Hz
4. Test axis : X,Y and Z axis
5. Test time : 30 minutes per each axis
6. IEC60068-2-64 Test Fh
7. Storage : SSD

Sine Vibration test (Non-operation)
1. Test Acceleration : 2G</td></tr>
</table>

	2. Test frequency : 5~500 Hz 3. Sweep：1 Oct/ per one minute. (logarithmic) 4. Test Axis : X,Y and Z axis 5. Test time :30 min. each axis 6. System condition : Non-Operating mode 7. Reference IEC 60068-2-6 Testing procedures Package Vibration Test: 1. Test PSD : 0.026G²/Hz , 2.16 Grms 2. Test frequency : 5~500 Hz 3. Test axis : X,Y and Z axis 4. Test time : 30 minutes per each axis IEC 60068-2-64 Test Fh
Shock Test	1. Wave from : Half Sine wave 2. Acceleration Rate : 55G 3. Duration Time : 11ms 4. No. of shock : 18 times 5. Test Axis : +/- X, +/-Y, +/-Z axis 6. operation mode 7. Reference IEC 60068-2-27 testing procedures Test Eb : SSD Shock Test
Drop Test	Package drop test Reference ISTA 2A, Method : IEC-60068-2-32 Test:Ed Test Ea : Drop Test 1. Test phase : One corner, three edges, six faces 2. Test high : 96.5cm Package weight : 3.0Kg
IP Rating	IP3X
Mounting Kit	Wall mount kit (default) DIN RAIL (optional)
Software Support	
OS Information	Win10, Win11, Linux

Note: Specifications are subject to change without notice.

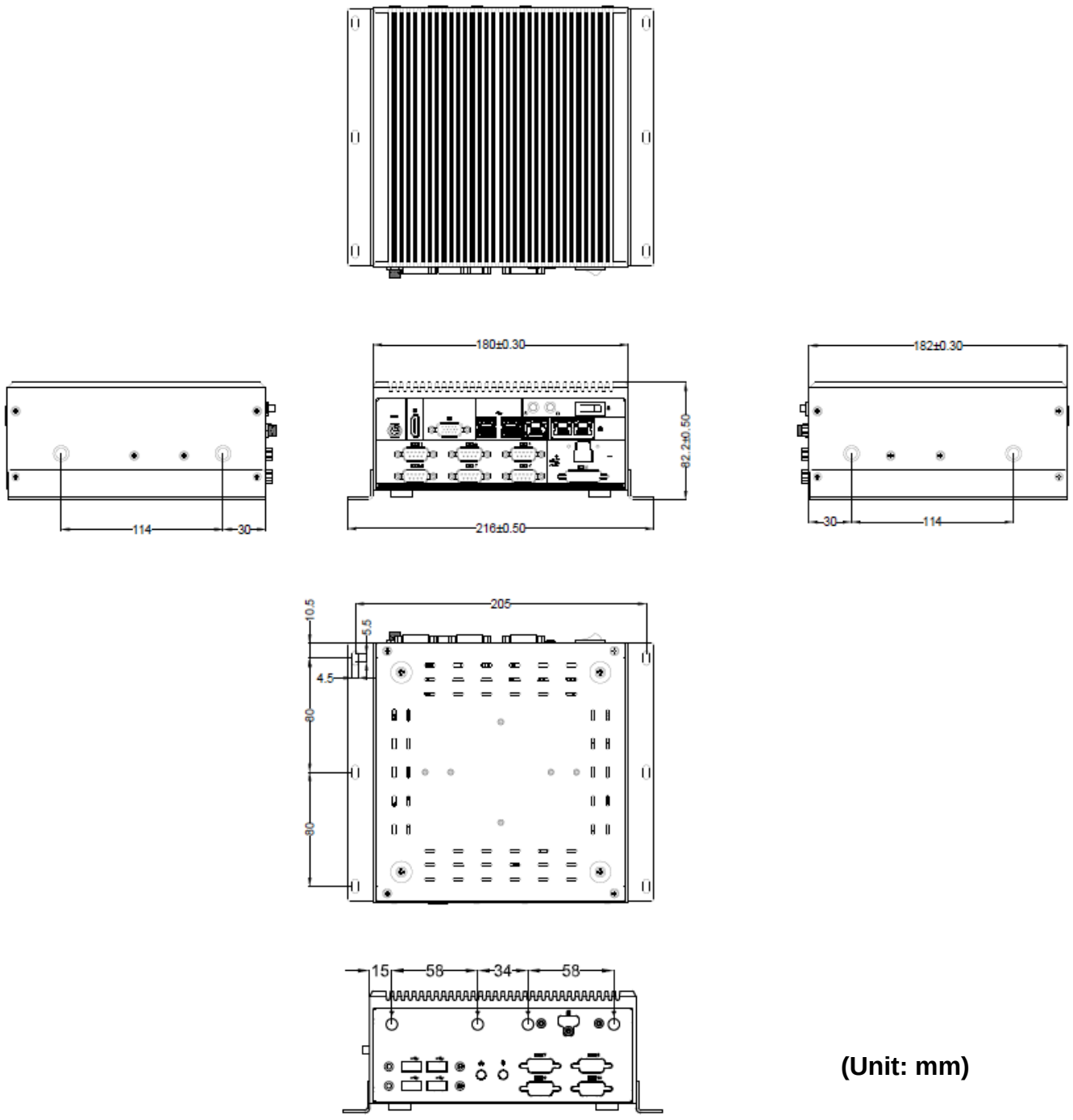
1.4 System Overview



Connectors

Label	Function	Note
Power	Power on button	
DCIN2	DC in connector	
USB2	USB 3.2 connector x 2	
USB1	USB 2.0 connector x 2	
COM	Serial Port connector x 6	
LAN1/2	RJ45 Ethernet	
VGA1	VGA connector	
HDMI1	HDMI Connector	
LVDS	LVDS 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:

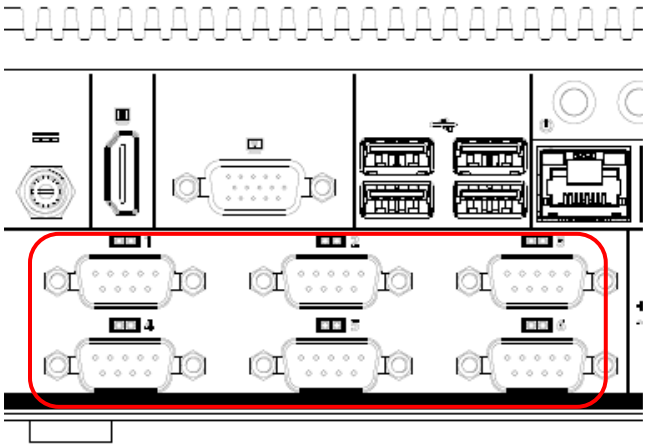
1- EMX-KX60G included in this manual.

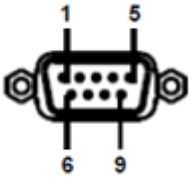
Note: If you need more information, please visit our website:

www.avalue.com

2.1 BMX-T529 connector mapping

2.1.1 Serial Port connector (COMs)





In RS-232 Mode

Signal	PIN	PIN	Signal
NDCD#	1	6	NDSR#
NRXD	2	7	NRTS#
NTXD	3	8	NCTS#
NDTR#	4	9	NRI#
GND	5		

In RS-422 Mode

Signal	PIN	PIN	Signal
TxD1-	1	6	NC
TxD1+	2	7	NC
RxD1+	3	8	NC
RxD1-	4	9	NC
GND	5		

In RS-485 Mode

Signal	PIN	PIN	Signal
DATA1-	1	6	NC
DATA1+	2	7	NC
NC	3	8	NC
NC	4	9	NC
GND	5		

2.2 Powering On the System

WARNING:

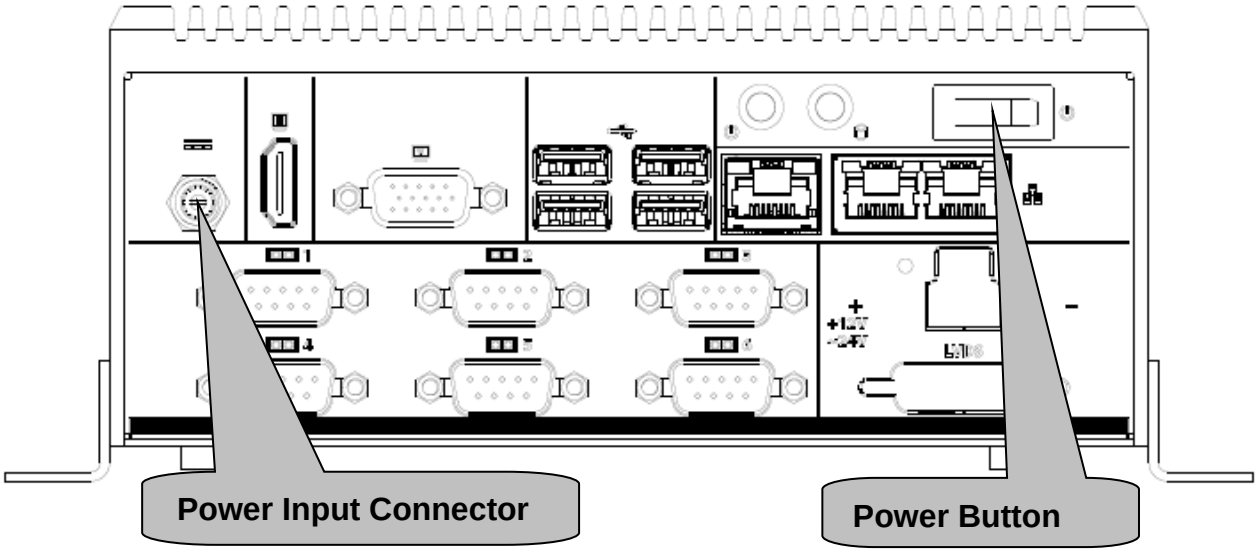
Make sure a power supply with the correct input voltage is being fed into the system. Incorrect voltages applied to the system may cause damage to the internal electronic components and may also cause injury to the user.

- 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.

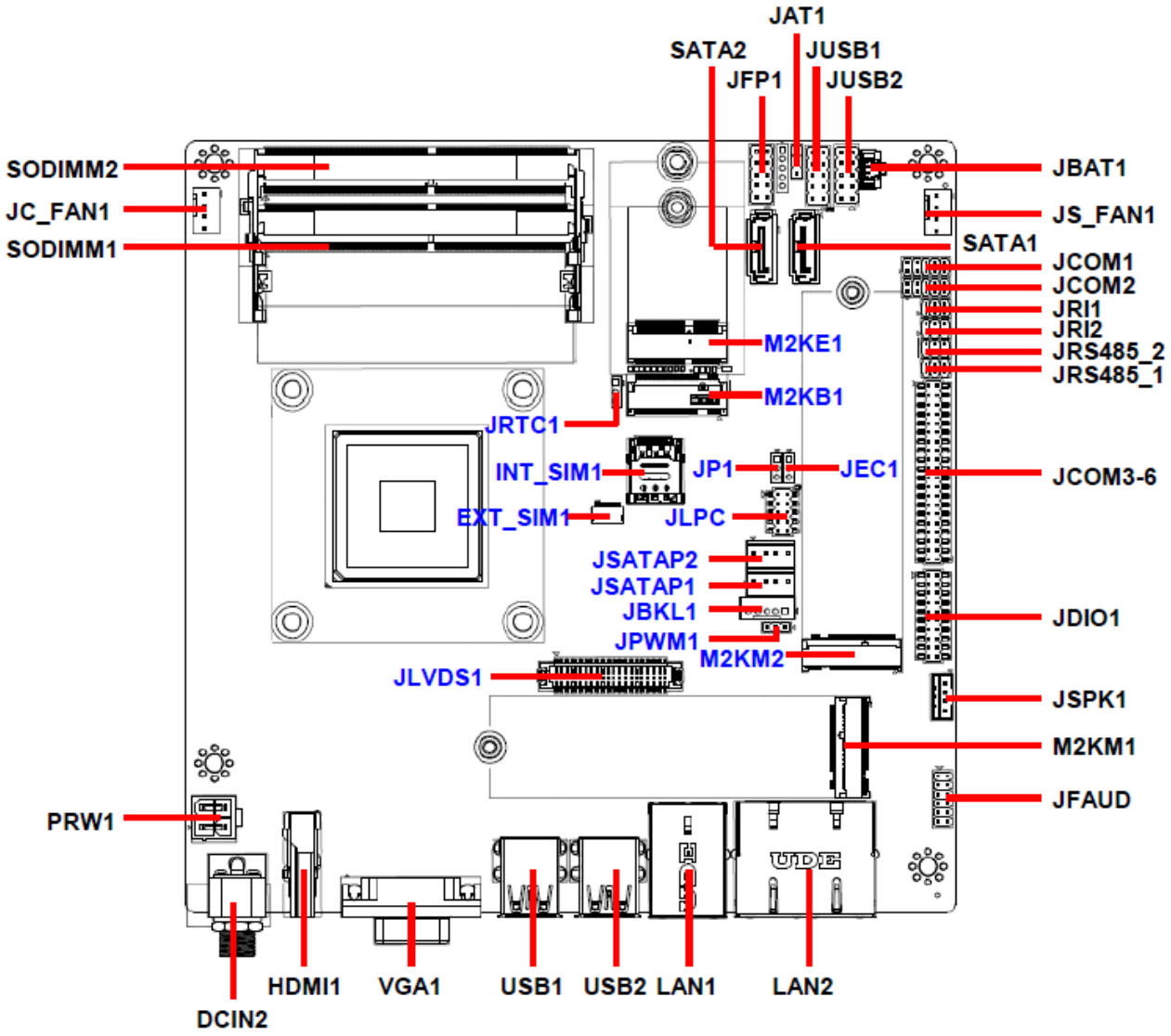
2.3 Connecting to Power Supply

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



2.4 EMX-KX60G Overviews



2.5 EMX-KX60G Jumper & Connector list

Jumpers

Label	Function	Note
JRI1/2	Serial port 1/2 pin9 signal select	3 x 2 header, pitch 2.00mm
JPWM1	JPWM connector	3 x 1 header, pitch 2.00mm
JAT1	AT/ATX Power Mode Select	3 x 1 header, pitch 2.54mm
JP1	M2KB2 Voltage setting	3 x 1 header, pitch 2.00mm
JRTC1	Clear CMOS	3 x 1 header, pitch 2.00mm

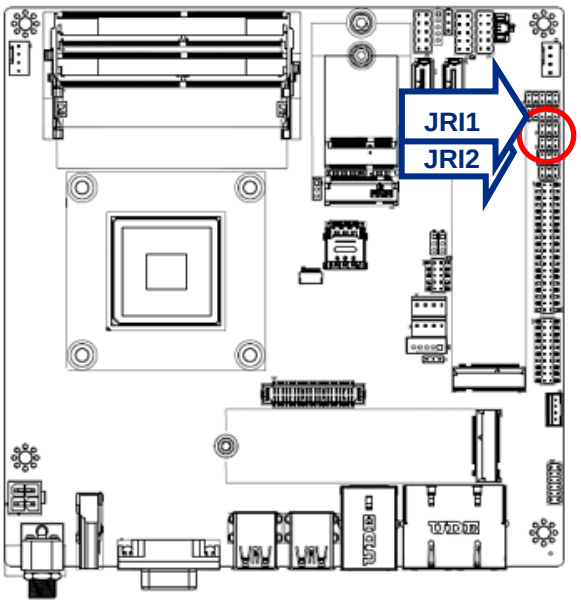
Connectors

Label	Function	Note
JFPT1	Miscellaneous setting connector 1/2	5 x 2 header, pitch 2.54mm
SODIMM1/2	2 x 262-Pin DDR5 4800MHz SO-DIMM Socket Supports Up to 64GB (non ECC only)	
JFAUD1	Front Audio connector	6 x 2 header, pitch 2.00mm
JBKL1	LCD Inverter connector	5 x 1 wafer, pitch 2.00mm
JCOM1/2	Serial Port 1/2 connector	5 x 2 header, pitch 2.00mm
JCOM3-6	Serial Port 3-6 connector	20 x 2 header, pitch 2.00mm
JDIO1	General purpose I/O connector	10 x 2 header, pitch 2.00mm
SPK1	Speaker connector	4 x 1 wafer, pitch 2.00mm
JLPC	LPC connector	5 x 2 header, pitch 2.00mm
LVDS1	LVDS Connector	20 x 2 wafer, pitch 1.25mm
JUSB1/2	USB connector 1/2	5 x 2 header, pitch 2.54mm
JBAT1	Battery connector	2 x 1 wafer, pitch 1.25mm
M2KE1	M.2 2230 Type E Slot	
M2KM1	M.2 2280 TYPE M Slot	
M2KB1	M.2 2242 Type B Slot	
JRS485_1/2	Serial Port 1/2 RS485/422 Mode connector	3 x 2 header, pitch 2.00mm
JEC1	JEC connector	3 x 1 header, pitch 2.00mm
DCIN2	DC Power-in connector	
PWR1	Power connector	2 x 2 wafer, pitch 4.20mm
SATA1/2	Serial ATA connector 1/2	
JSATAP1/2	JSATAP connector 1/2	4 x 1 wafer, pitch 2.54mm

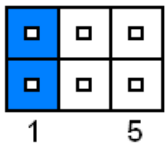
INT_SIM1	SIM card slot	
EXT_SIM	SIM card slot	
JC_FAN1	CPU fan connector	4 x 1 wafer, pitch 2.54mm
JS_FAN1	SYS fan connector	4 x 1 wafer, pitch 2.54mm
LAN1/2	RJ-45 Ethernet 1/2	
VGA	VGA connector	
USB1/2	USB connector	

2.6 Setting Jumpers & Connectors

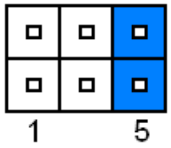
2.6.1 Serial port 1/2 pin9 signal select (JRI1/JRI2)



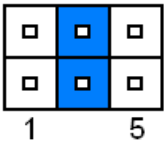
Ring*



+12V

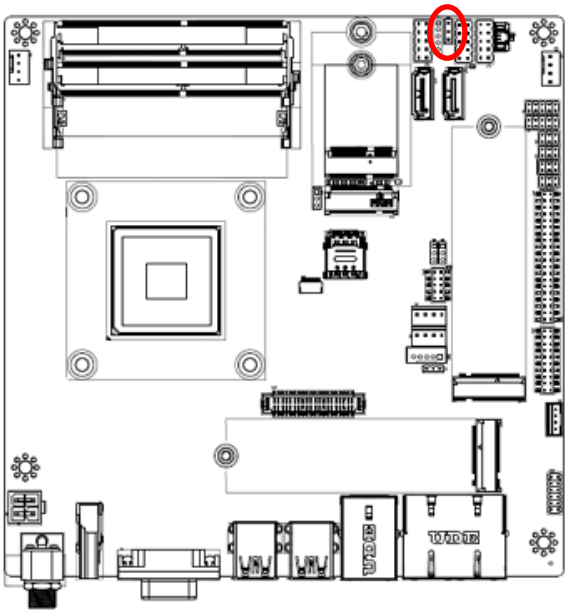


+5V

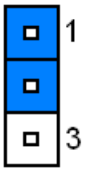


*** Default**

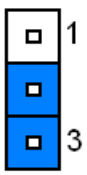
2.6.2 AT/ATX Power Mode Select (JAT1)



ATX*

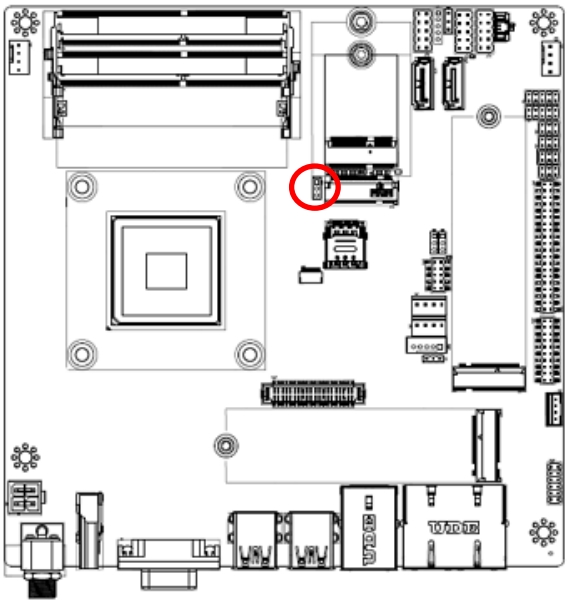


AT

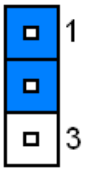


*** Default**

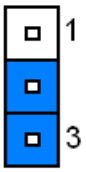
2.6.3 Clear CMOS (JRTC1)



Protect*

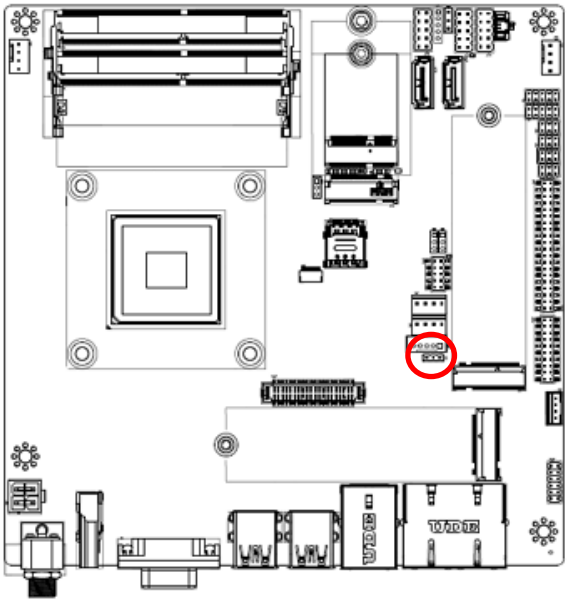


Clear CMOS



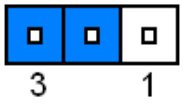
*** Default**

2.6.4 JPWM connector (JPWM1)



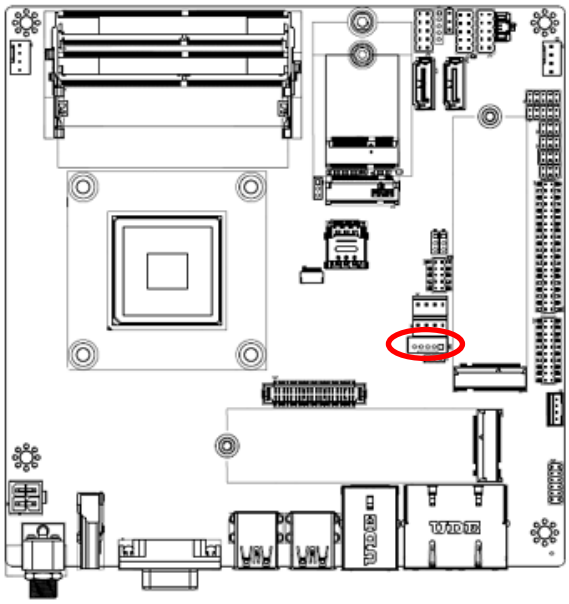
JPWM*

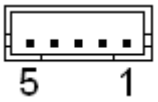
DC



*** Default**

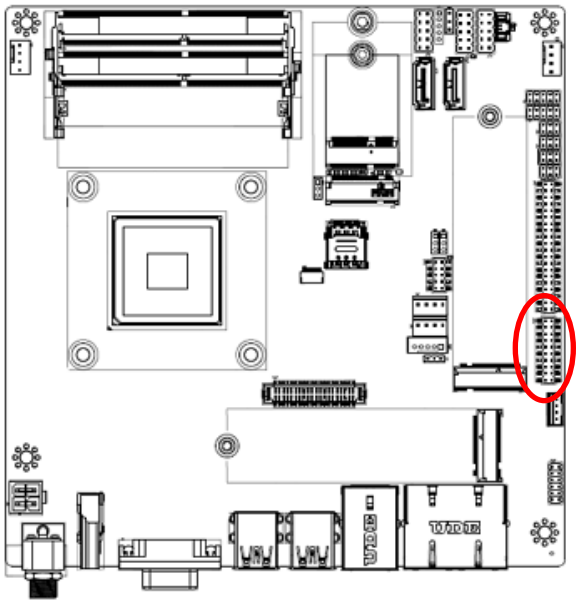
2.6.5 LCD Inverter connector (JBKL1)

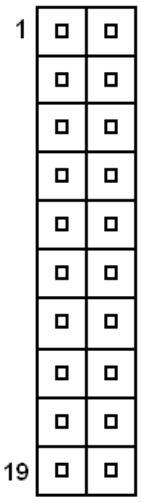




PIN	Signal
1	+12V_INV
2	GND
3	LVDS_BKLT_EN
4	LVDS_BKLTCTL
5	+5V

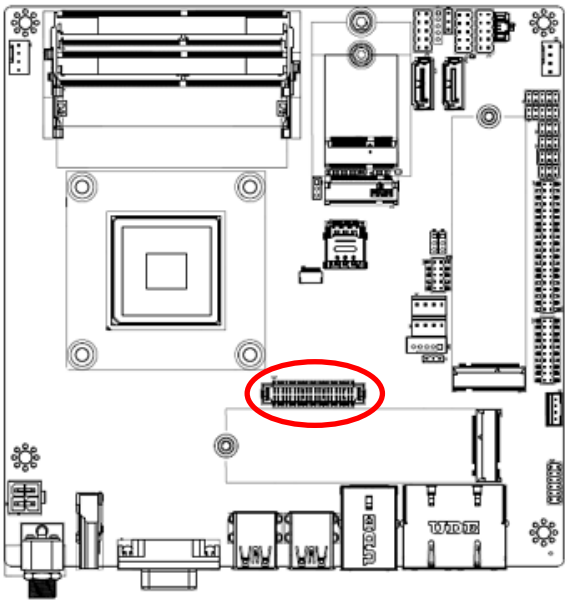
2.6.6 General purpose I/O connector (JDIO1)

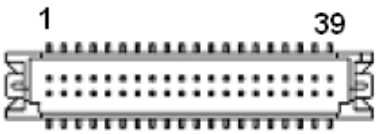




Signal	PIN	PIN	Signal
DI0	1	2	DO0
DI1	3	4	DO1
DI2	5	6	DO2
DI3	7	8	DO3
DI4	9	10	DO4
DI5	11	12	DO5
DI6	13	14	DO6
DI7	15	16	DO7
SMB_SCL_ S0_3P3EXT	17	18	SMB_SDA_ S0_3P3EXT
GND	19	20	+5V (Max current = 0.5A)

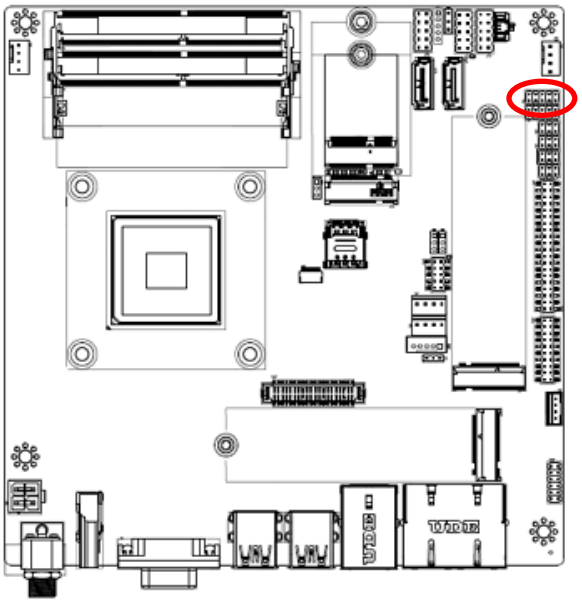
2.6.7 LVDS connector (LVDS1)

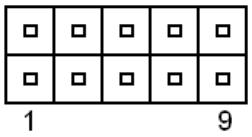




Signal	PIN	PIN	Signal
+V5S_LVDS	2	1	+ V3.3S_LVDS
+V5S_LVDS	4	3	+ V3.3S_LVDS
+V5S_LVDS	6	5	+ V3.3S_LVDS
GND	8	7	GND
LVDS_DATAP0/eDP_HPD	10	9	LVDS_DATAP1/eDPP1
LVDS_DATAN0	12	11	LVDS_DATAN1/eDPN1
GND	14	13	GND
LVDS_DATAP2/eDPP0	16	15	LVDS_DATAP3
LVDS_DATAN2/eDPN0	18	17	LVDS_DATAN3
GND	20	19	GND
LVDS_DATAP4	22	21	LVDS_DATAP5
LVDS_DATAN4	24	23	LVDS_DATAN5
GND	26	25	GND
LVDS_DATAP6	28	27	LVDS_DATAP7
LVDS_DATAN6	30	29	LVDS_DATAN7
GND	32	31	GND
LVDS_CLK1P/EPAUXP	34	33	LVDS_CLK2P
LVDS_CLK1N/EPAUXN	36	35	LVDS_ CLK2N
GND	38	37	GND
+V12S_LVDS	40	39	+V12S_LVDS

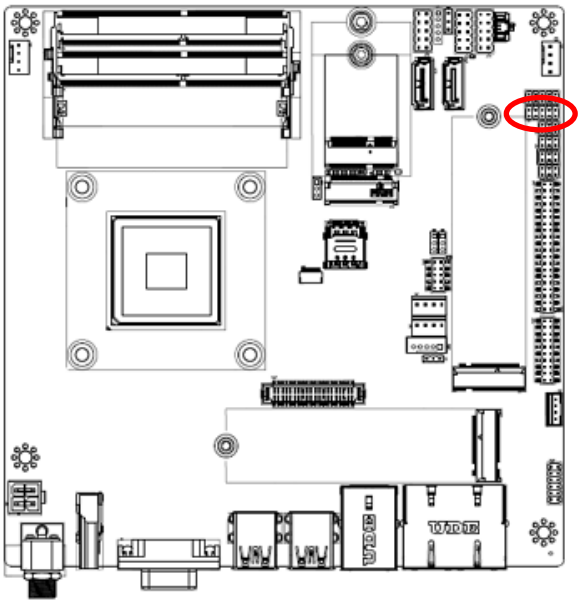
2.6.8 Serial port1 connector (JCOM1)

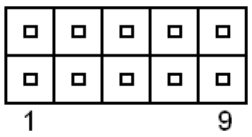




Signal	PIN	PIN	Signal
COM_DCD#_1	1	2	COM_RXD_1
COM_TXD_1	3	4	COM_DTR#_1
GND	5	6	COM_DSR#_1
COM_RTS#_1	7	8	COM_CTS#_1
COM_RI#_1	9	10	NC

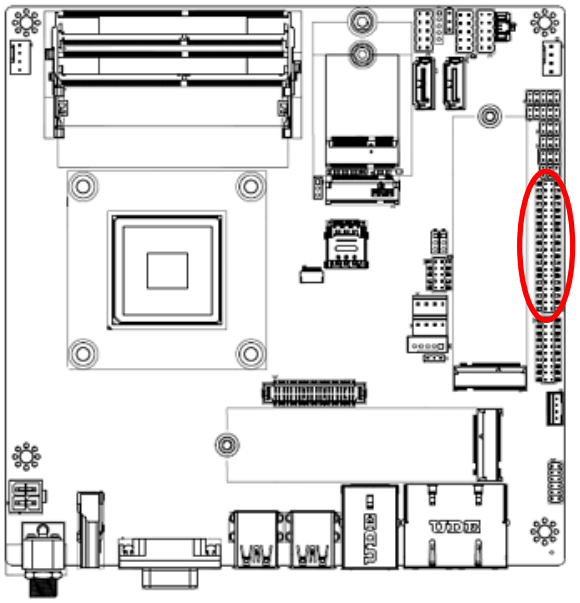
2.6.9 Serial port2 connector (JCOM2)

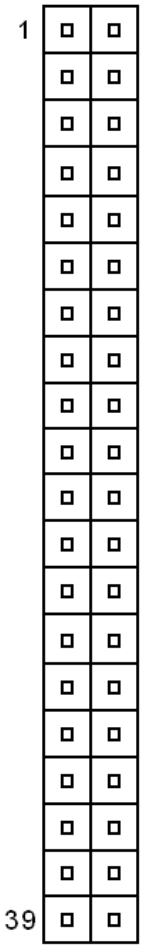




Signal	PIN	PIN	Signal
COM_DCD#_2	1	2	COM_RXD_2
COM_TXD_2	3	4	COM_DTR#_2
GND	5	6	COM_DSR#_2
COM_RTS#_2	7	8	COM_CTS#_2
COM_RI#_2	9	10	NC

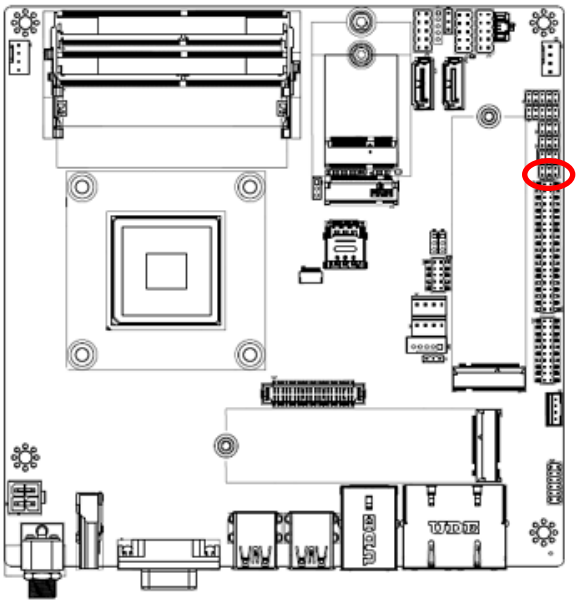
2.6.10 Serial port 3/4/5/6 connector (JCOM3_6)

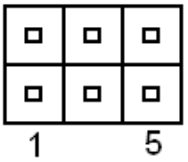




Signal	PIN	PIN	Signal
COM_DCD#_3	1	2	COM_RXD_3
COM_TXD_3	3	4	COM_DTR#_3
GND	5	6	COM_DSR#_3
COM_RTS#_3	7	8	COM_CTS#_3
COM_RI#_3	9	10	NC
COM_DCD#_4	11	12	COM_RXD_4
COM_TXD_4	13	14	COM_DTR#_4
GND	15	16	COM_DSR#_4
COM_RTS#_4	17	18	COM_CTS#_4
COM_RI#_4	19	20	NC
COM_DCD#_5	21	22	COM_RXD_5
COM_TXD_5	23	24	COM_DTR#_5
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

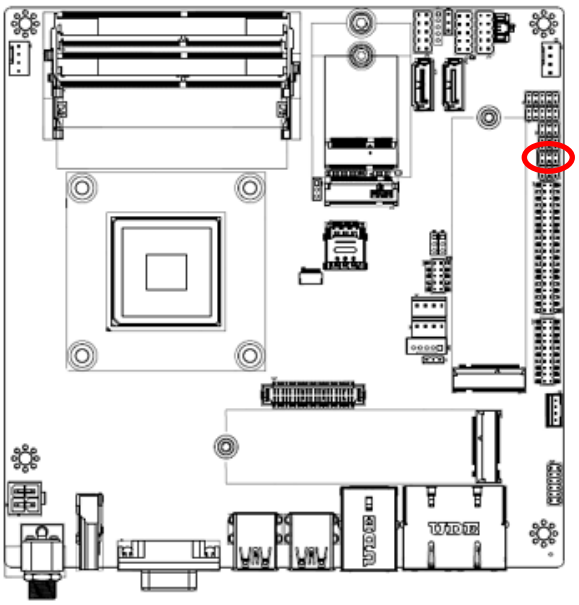
2.6.11 Serial Port 1 RS485/422 Mode connector (JRS485_1)

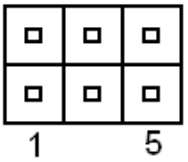




Signal	PIN	PIN	Signal
485_422TX1-	1	2	485_422TX1+
422RX1+	3	4	422RX1-
+5V (Max current = 0.5A)	5	6	GND

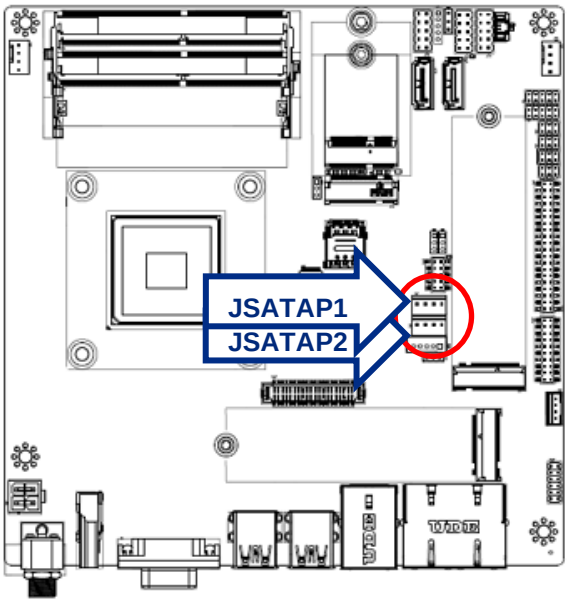
2.6.12 Serial Port 1 RS485/422 Mode connector (JRS485_2)

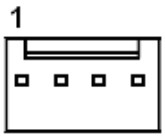




Signal	PIN	PIN	Signal
485_422TX2-	1	2	485_422TX2+
422RX2+	3	4	422RX2-
+5V (Max current = 0.5A)	5	6	GND

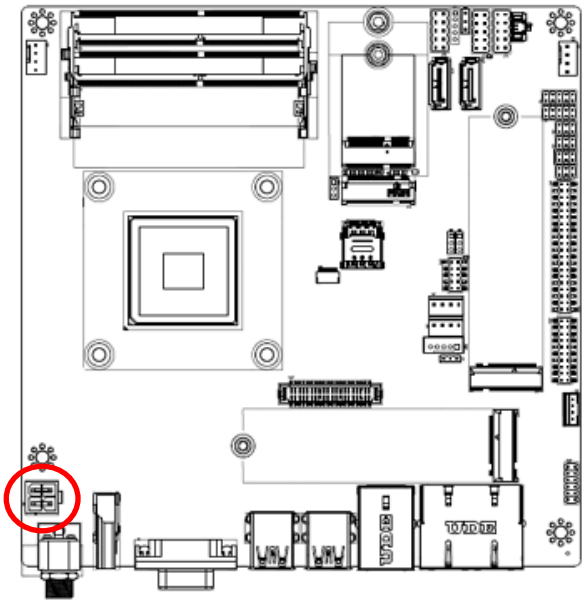
2.6.13 JSATAP connector 1/2 (JSATAP1/2)

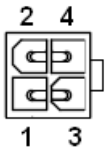




PIN	Signal
1	+5V_SATA
2	GND
3	GND
4	+12V_SATA

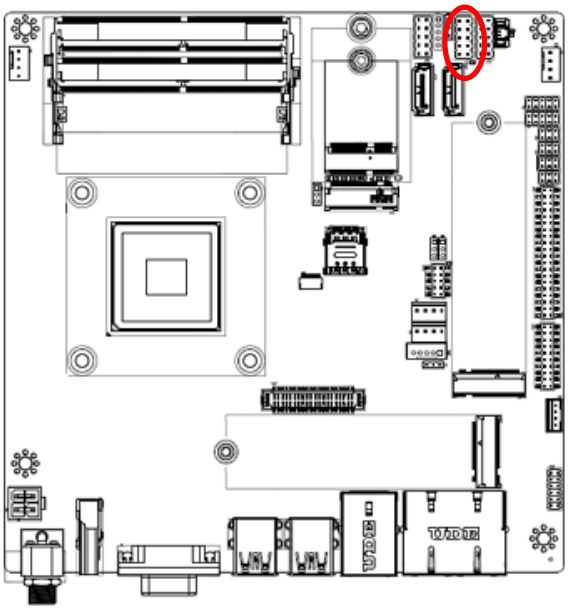
2.6.14 Power connector (PWR1)

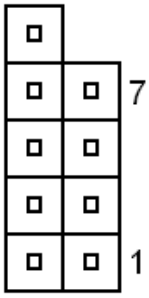




Signal	PIN	PIN	Signal
GND	2	4	+VIN
GND	1	3	+VIN

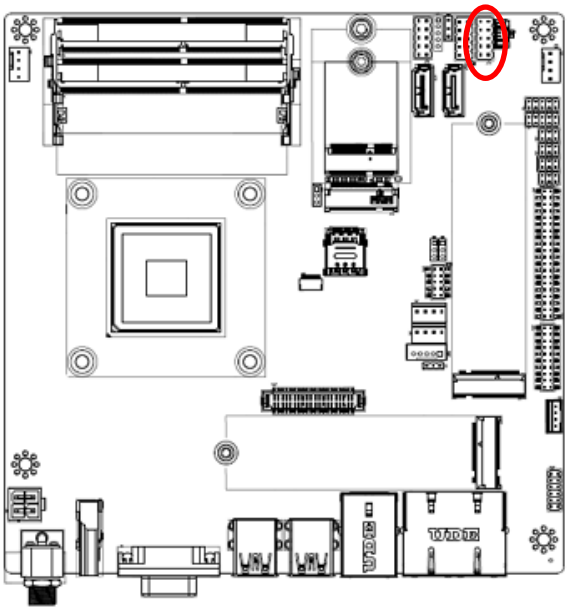
2.6.15 USB connector 1 (JUSB1)

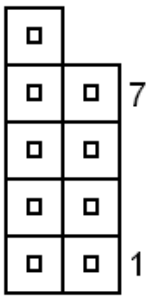




Signal	PIN	PIN	Signal
GND	10		
GND	8	7	GND
USB2_R_DP5	6	5	USB2_R_DP4
USB2_R_DN5	4	3	USB2_R_DN4
+V5A_USB45	2	1	+V5A_USB45

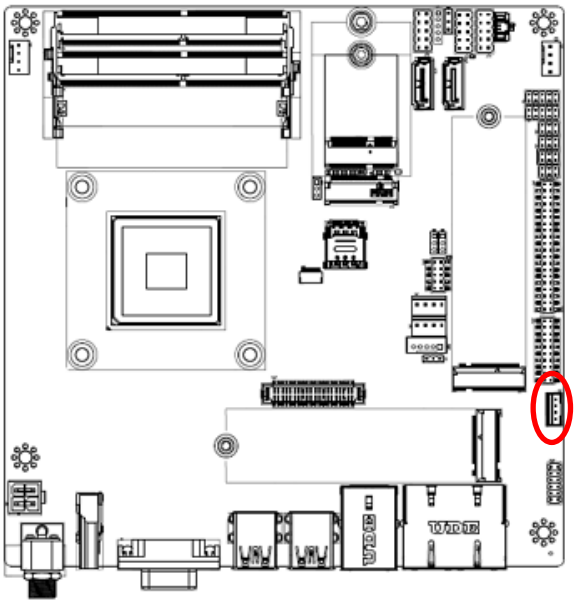
2.6.16 USB connector 2 (JUSB2)





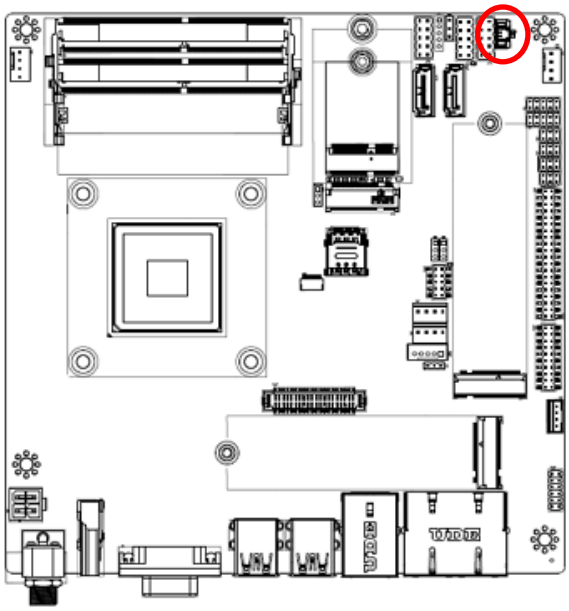
Signal	PIN	PIN	Signal
GND	10		
GND	8	7	GND
USB_R_DP7	6	5	USB2_R_DP6
USB_R_DN7	4	3	USB2_R_DN6
+V5A_USB67	2	1	+V5A_USB67

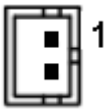
2.6.17 Speaker connector (SPK1)



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

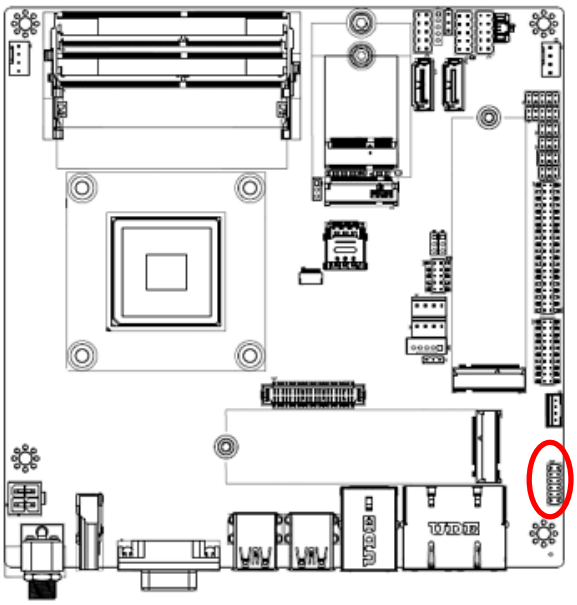
2.6.18 Battery connector (JBAT1)

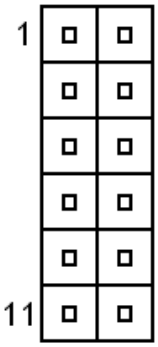




PIN	Signal
1	+RTCBAT
2	GND

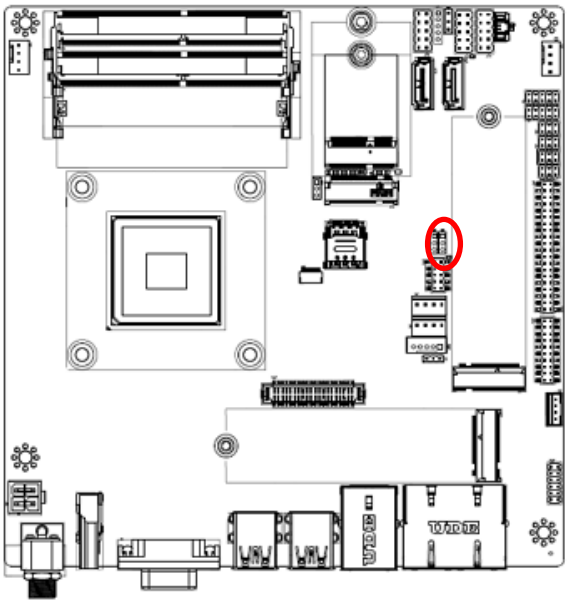
2.6.19 Audio connector (JFAUD1)

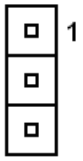




Signal	PIN	PIN	Signal
LINEOUT_R	1	2	LINEOUT_L
GND_AUD	3	4	GND_AUD
LINEIN_R	5	6	LINEIN_L
MICIN_R	7	8	MICIN_L
LINEOUT1_JD	9	10	LINE1-JD
MIC1_JD	11	12	GND_AUD

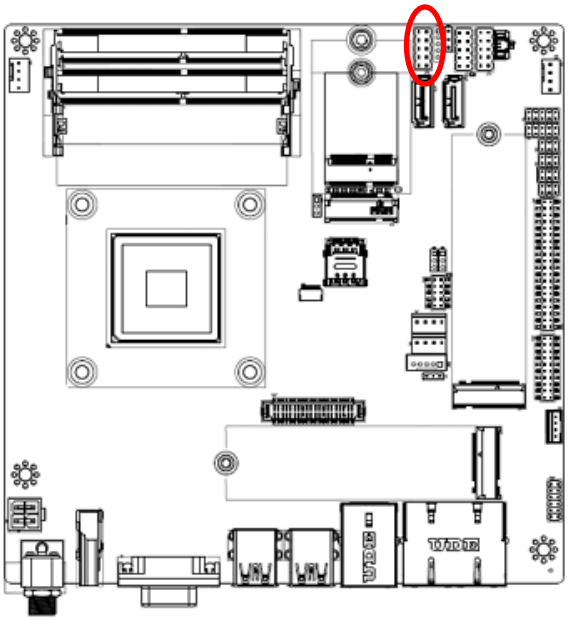
2.6.20 JEC1 connector (JEC1)

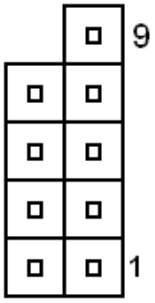




Signal	PIN
EC_SMDAT_DEBUG	1
EC_SMCLK_DEBUG	2
GND	3

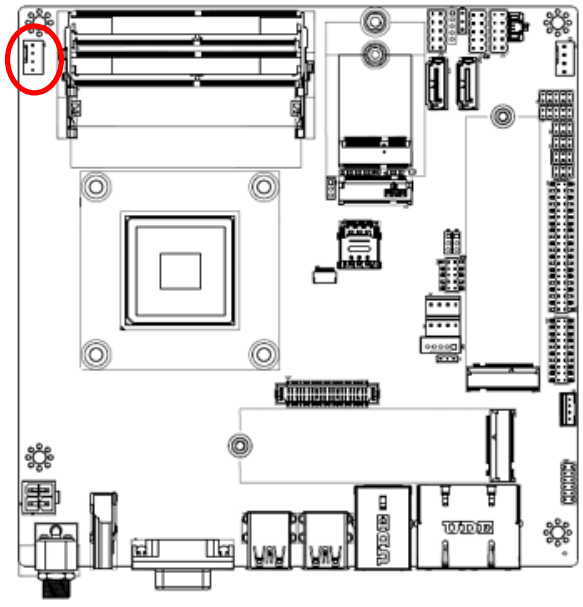
2.6.21 Miscellaneous setting connector 1 (JFP1)

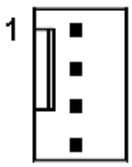




Signal	PIN	PIN	Signal
		9	NC
GND	8	7	GND
EXT_PWRBTN#	6	5	EXT_SYSRST#
PWR_LED-	4	3	HDD_LED-
PWR_LED+	2	1	HDD_LED+

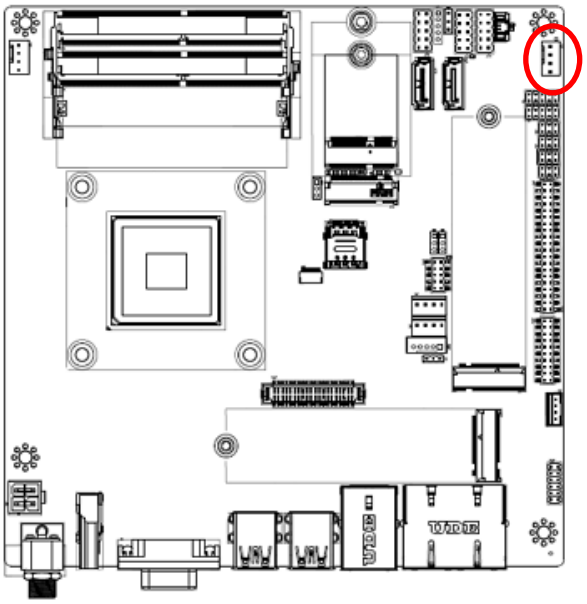
2.6.22 CPU fan connector (JC_FAN1)

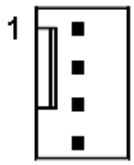




PIN	Signal
1	GND
2	+12V
3	EC_TACH0
4	FAN_PWM0

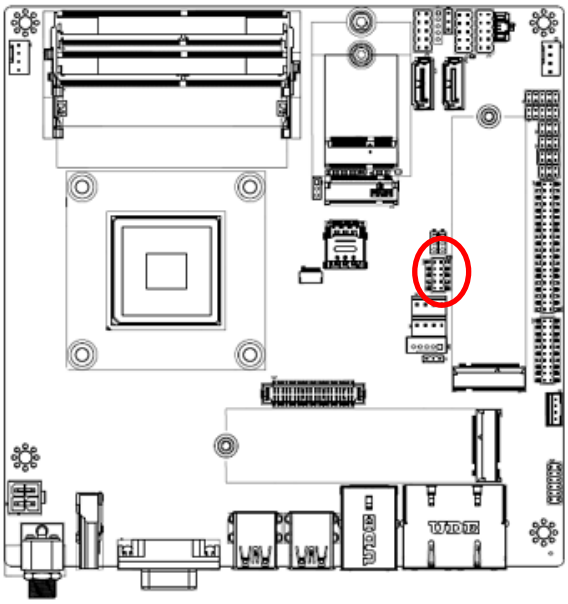
2.6.23 SYS fan connector (JS_FAN1)

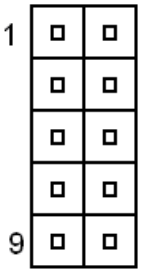




PIN	Signal
1	GND
2	+12V
3	EC_TACH0
4	FAN_PWM0

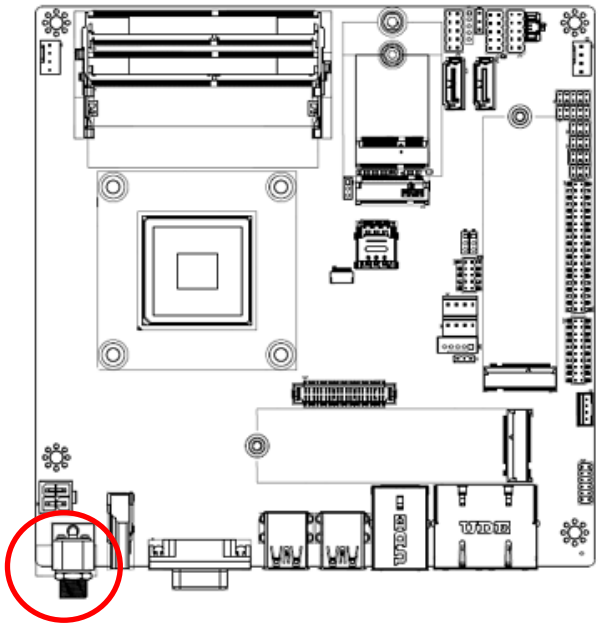
2.6.24 LPC connector (JLPC)





Signal	PIN	PIN	Signal
LPC_AD0_80P	1	2	+3.3V
LPC_AD1_80P	3	4	PLT_BUF_RST#
LPC_AD2_80P	5	6	LPC_LFRAME#_80P
LPC_AD3_80P	7	8	LPC_CLK_80P
SERIRQ_80P	9	10	GND

2.6.25 Power connector (DCIN1)



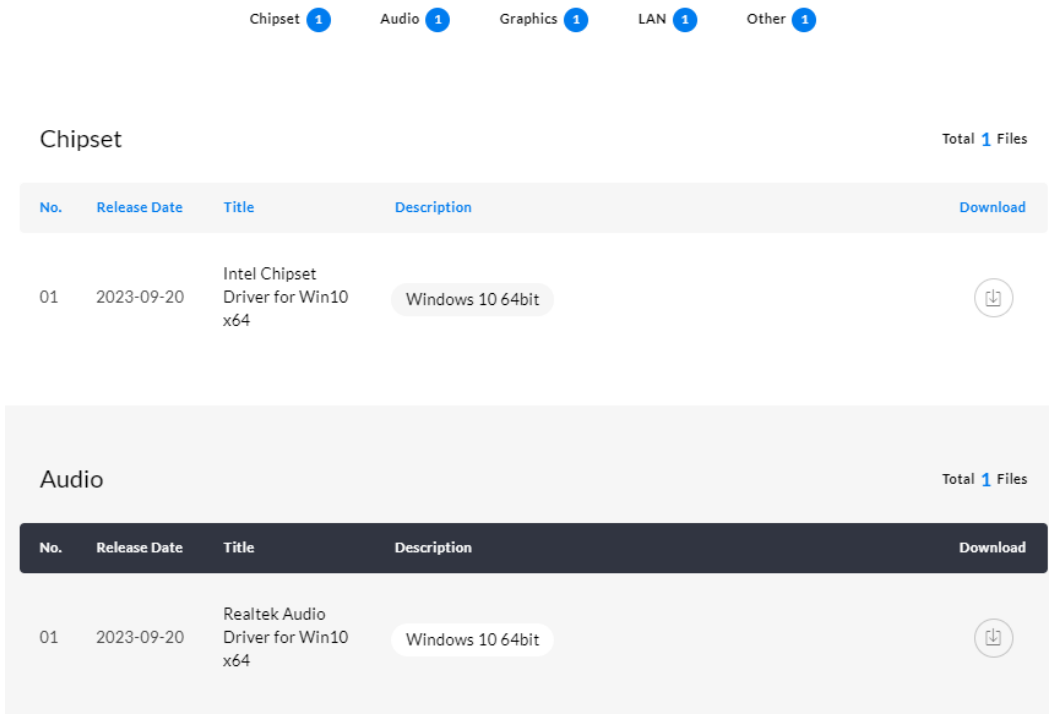
Signal	PIN	PIN	Signal
+VIN_12-24V	1	2	+VIN_12-24V
GND	3	4	GND

Note: Vin = 12~24V

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 7 (or later) OS does not require touch driver installation. This is because there is a HID touch digitizer built-in driver in Windows 7 or later.



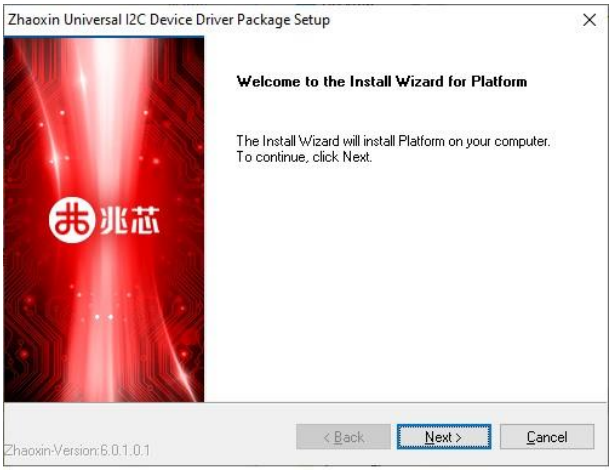
Note: Installation procedures and screen shots in this section are for your reference and may not be exactly the same as shown on your screen.

3.1 Install I2C Driver

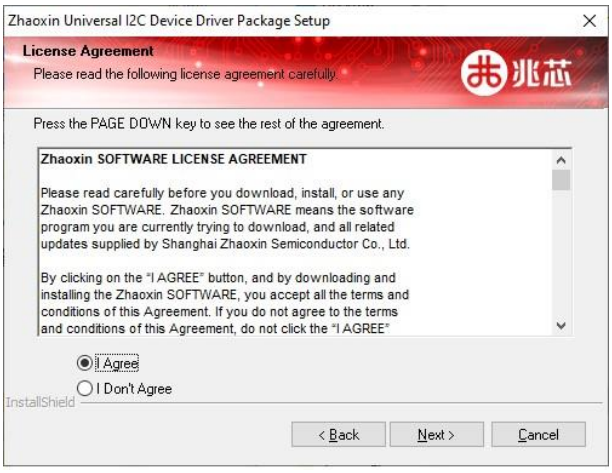
All drivers can be found on the Avalue Official Website:

www.avalue.com

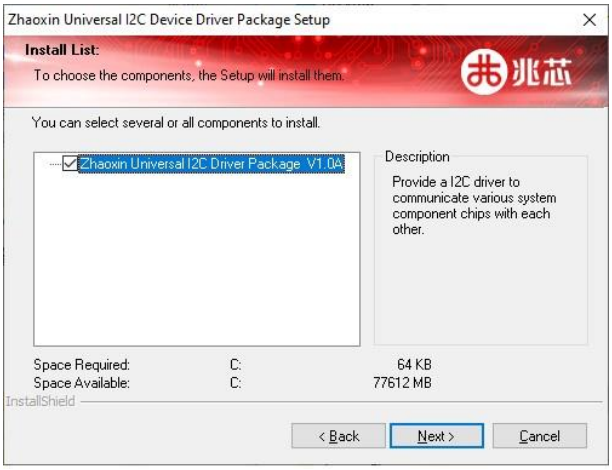
Note: The installation procedures and screen shots in this section are based on Windows 11 operation system. If the warning message appears while the installation process, click Continue to go on.



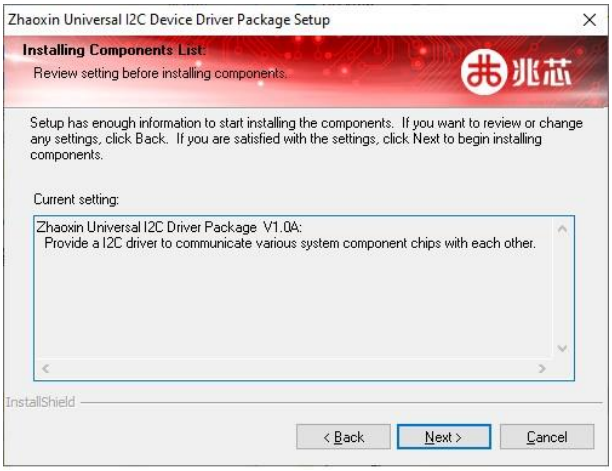
Step1. Click **Next**.



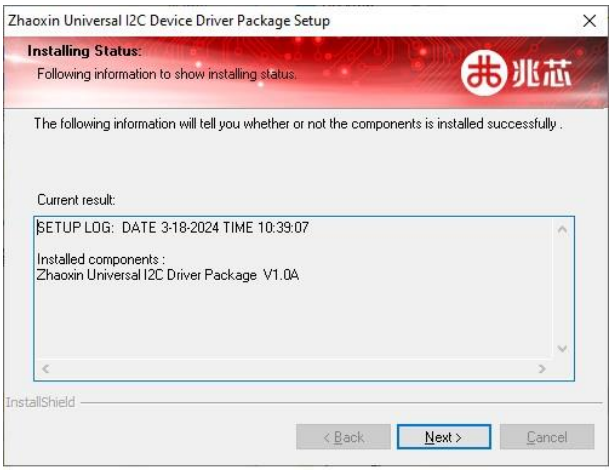
Step 2. Click **Next**.



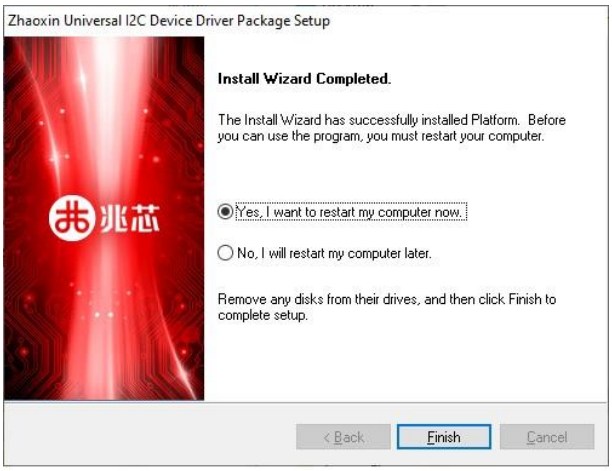
Step 3. Click **Next**.



Step 4. Click **Next**.



Step 5. Click **Next**.



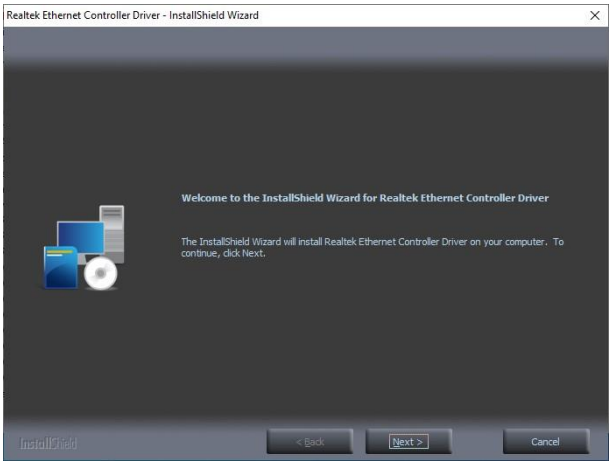
Step 6. Click **Finish.**

3.2 Install LAN Driver

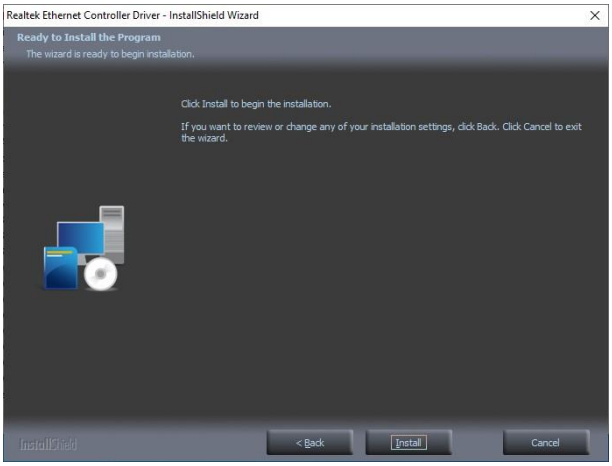
All drivers can be found on the Avalue Official Website:

www.avalue.com

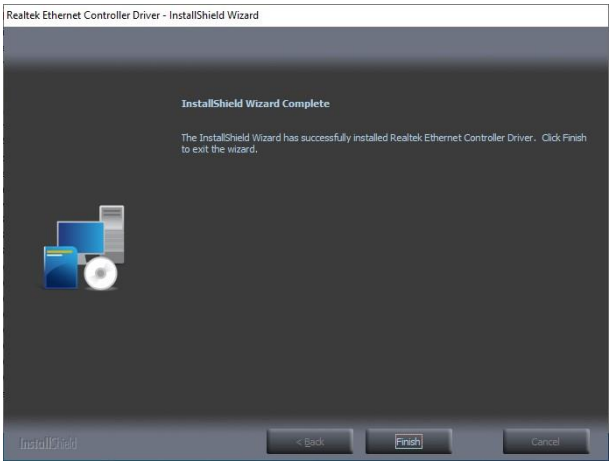
Note: The installation procedures and screen shots in this section are based on Windows 11 operation system. If the warning message appears while the installation process, click Continue to go on.



Step 1. Click **Next**.



Step 2. Click **Install**.



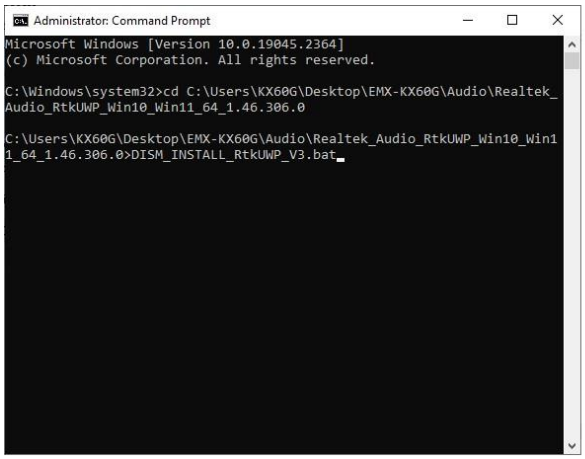
Step 3. Click **Finish.**

3.3 Install RtkUWP Driver

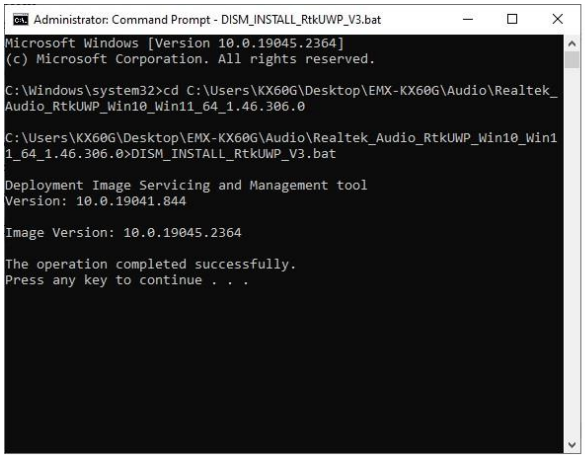
All drivers can be found on the Avalue Official Website:

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.



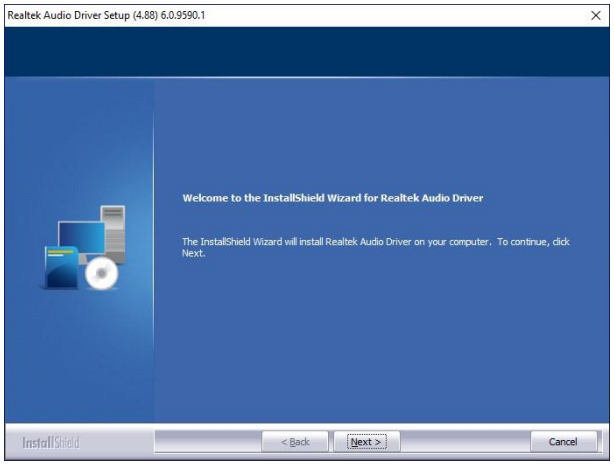
Step 2.

3.4 Install Audio Driver

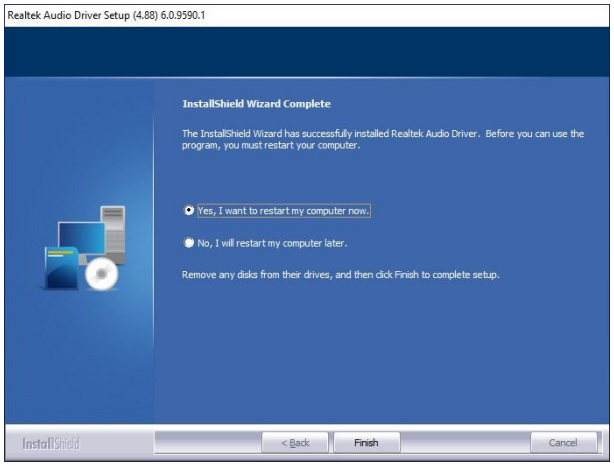
All drivers can be found on the Avalue Official Website:

www.avalue.com

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



Step1. Click **Next**.



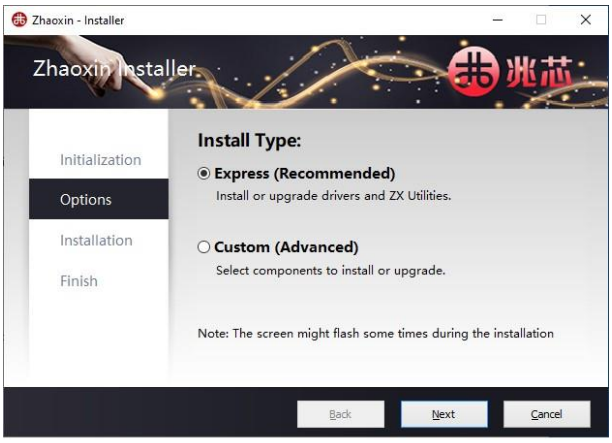
Step 2. Click **Finish.**

3.5 Install VGA Driver

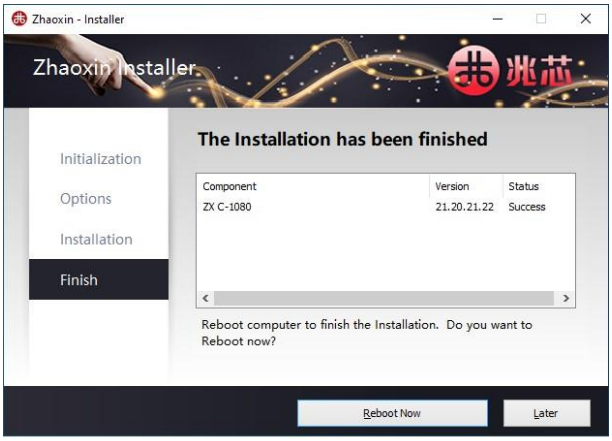
All drivers can be found on the Avalue Official Website:

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**.



Step 2. Click **Reboot Now**.

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 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 following message appears briefly at the left-bottom of the screen during the POST (Power On Self Test).

Press Key in 5 seconds

Press [F2] to enter setup and select boot options. Press [F7] to show boot menu options. Press [F12] to PXE boot.

The Setup program can be activated on the <F2> key has been pressed before timeout. 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:

No bootable device

4.3 Using Setup

Using Setup In general, you use the arrow keys to highlight items, press to select, use the ↑ and ↓ keys to change entries, press [F1] for general 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
↑↓→←	Select Item, Select Menu
Enter	Select Sub Menu
+/-	Change Value
Esc	Exit
F1	Help
F9	Setup Defaults
F10	Save & Exit

- **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 <Enter> 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 BIOS supports an override to the NVRAM settings which resets your system to its defaults.

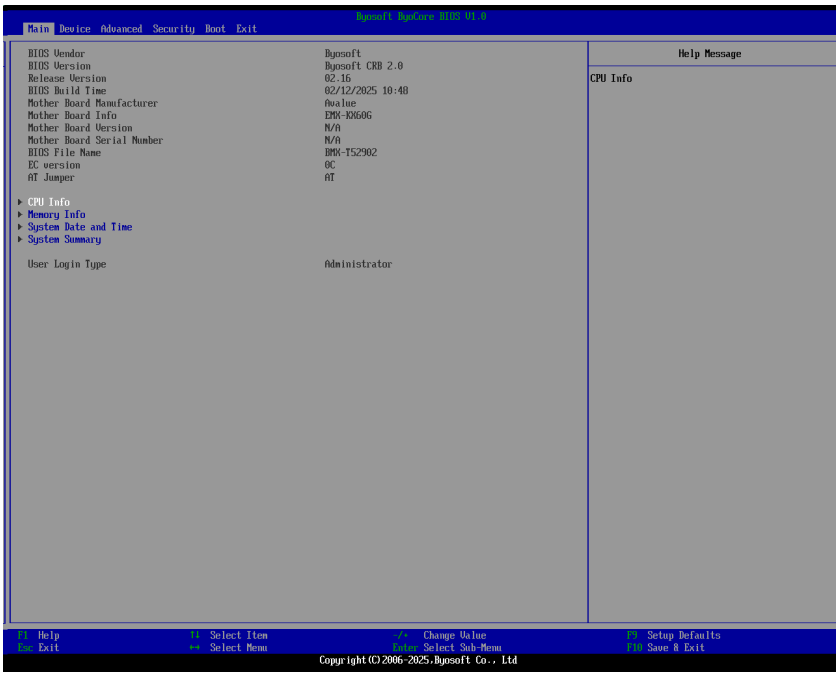
The best advice is to only alter settings which you thoroughly understand. To this end, we strongly recommend that you avoid making any changes to the chipset defaults. These defaults have been carefully chosen by both BIOS Vendor and your systems manufacturer to provide the absolute maximum performance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

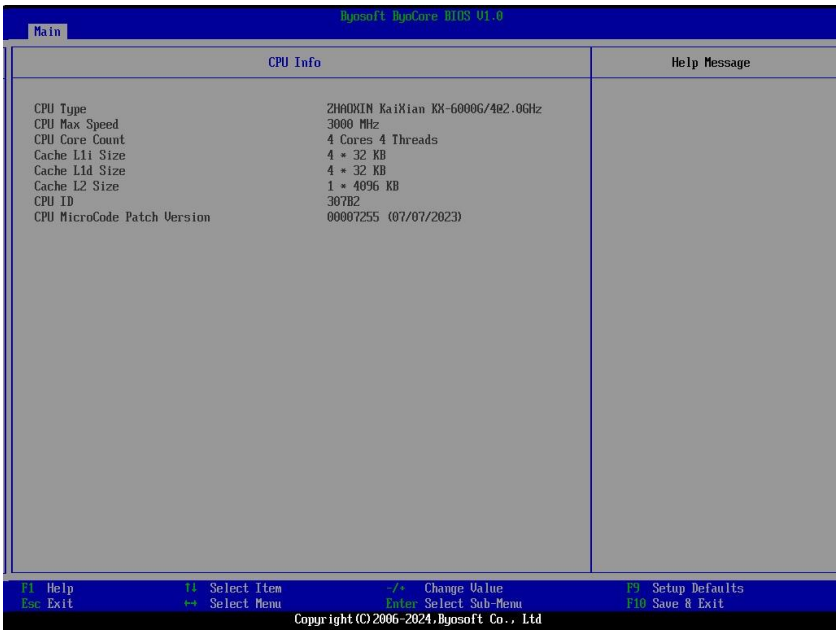
Once you enter the Setup Utility, the Main Menu will appear on the screen. The Main Menu allows you to select from several setup functions and exit choices. Use the arrow keys to select among the items and press <Enter> to accept and enter the sub-menu.

4.6.1 Main Menu

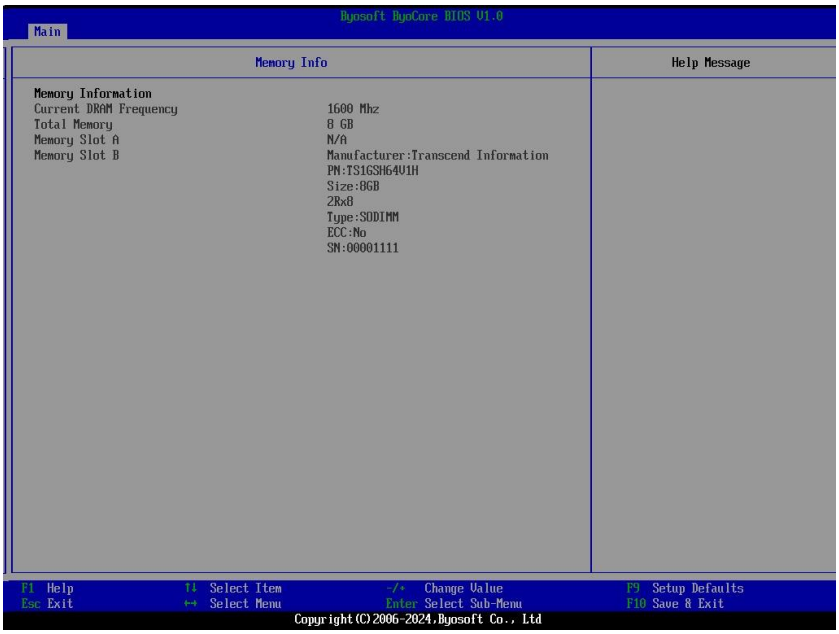
This section allows you to record some basic hardware configurations in your computer and set the system clock.



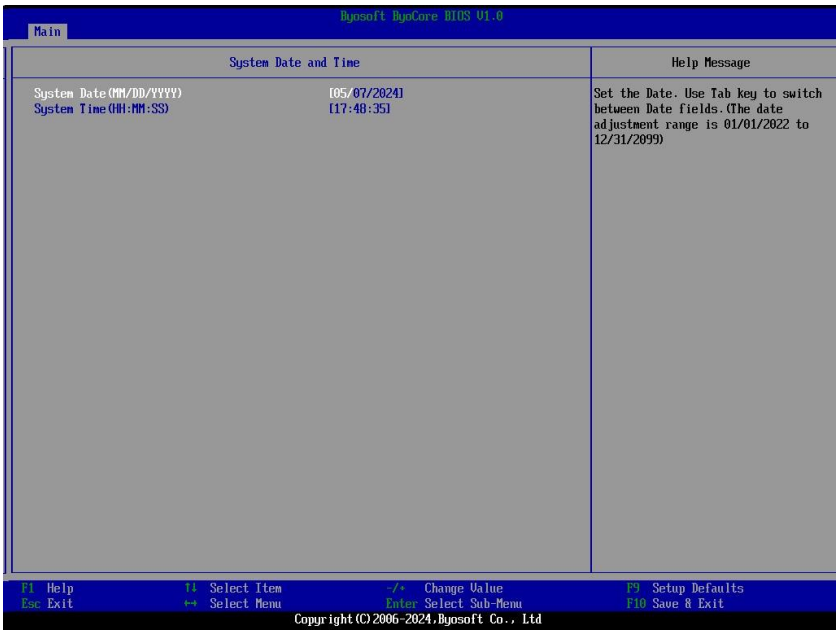
4.6.1.1 CPU Infu



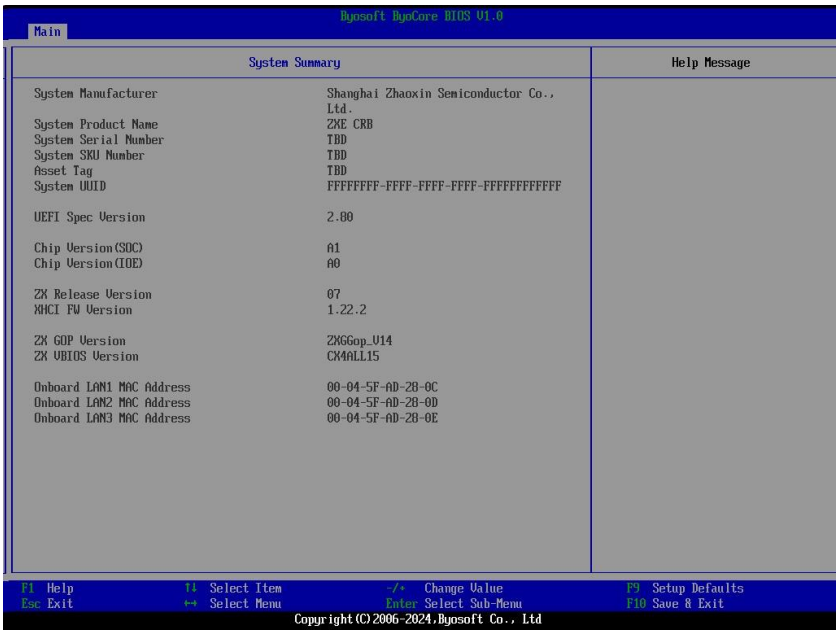
4.6.1.2 Memory Information



4.6.1.3 System Date and Time

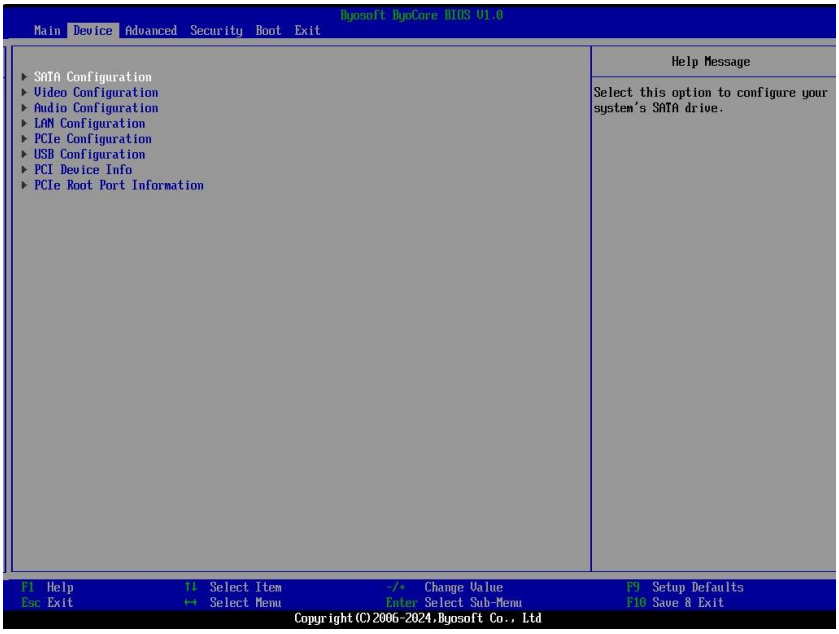


4.6.1.4 System Summary



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 Device Menu



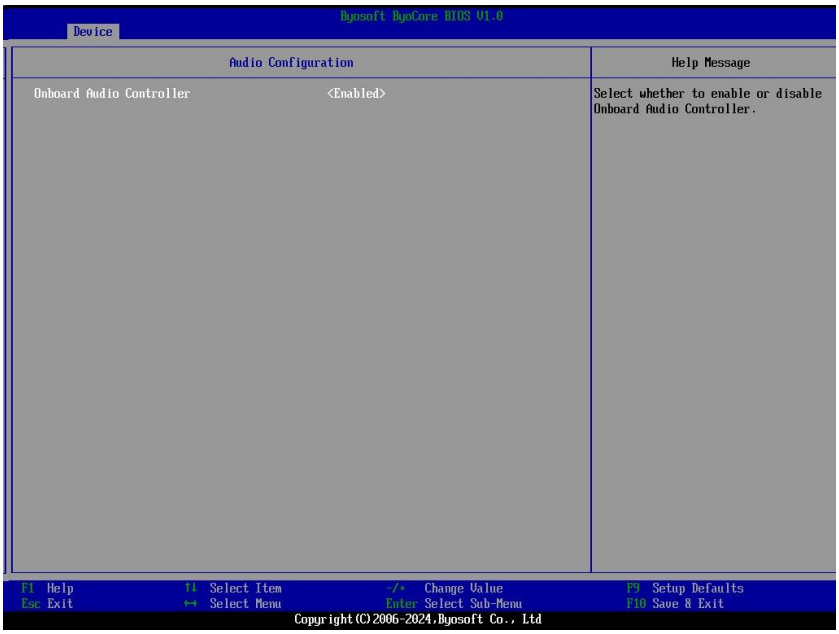
4.6.2.1 SATA Configuration

Item	Options	Description
S.M.A.R.T Check	Disabled**[Default]** Enabled	STAT Hark disk S.M.A.R.T Check
SATA Controller	Disabled Enabled**[Default]**	Select whether to enable or disable SATA Controller.
Force SATA Speed setting	Gen1 Gen2 Gen3**[Default]**	Set SATA speed to Gen1/Gen2/Gen3

4.6.2.2 Video Configuration

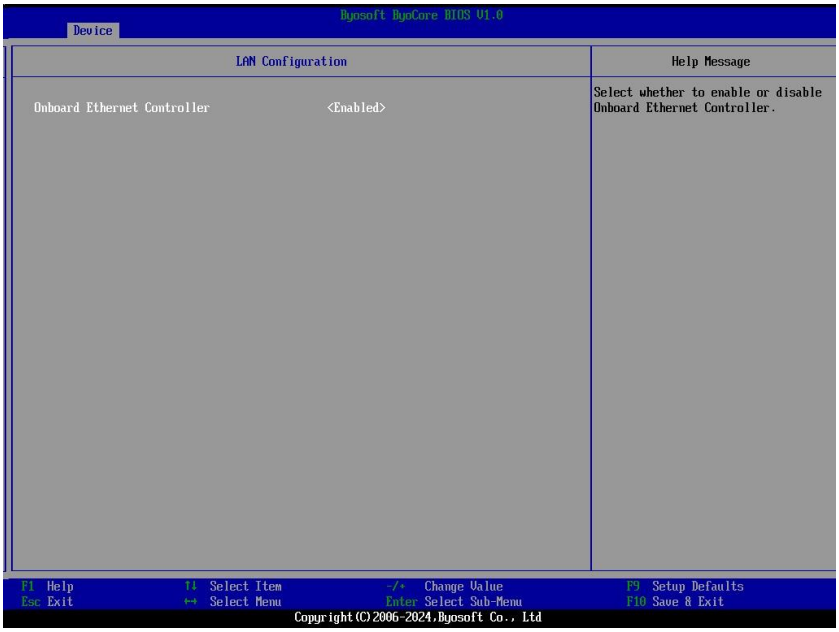
Item	Options	Description
Primary Graphics Adapter	PCIE**[Default]** IGD	Select Primary Graphics Adapter
VGA	Enabled**[Default]** Disabled	

4.6.2.3 Audio Configuration



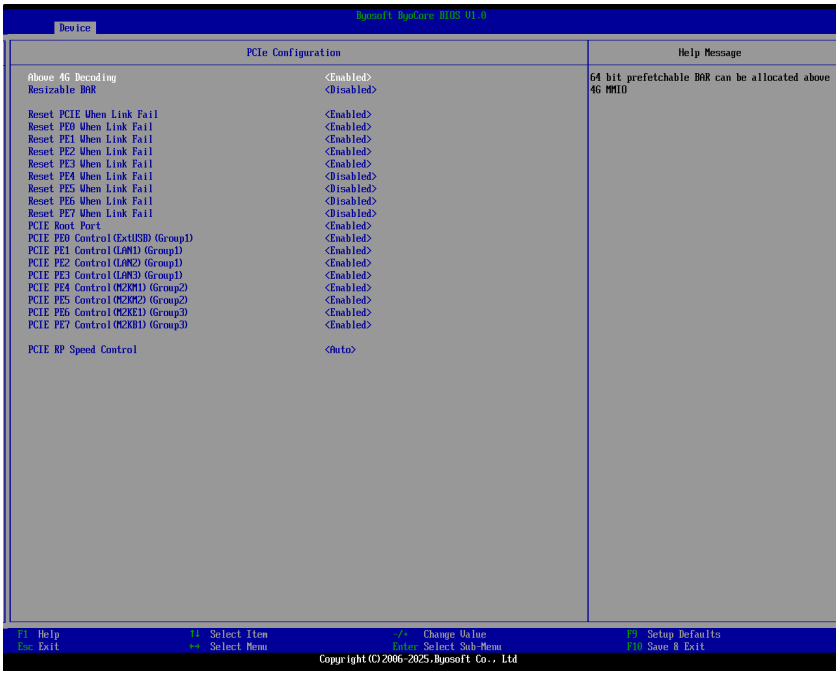
Item	Options	Description
Onboard Audio Controller	Disabled Enabled**[Default]**	Select whether to enable or disable Onboard Audio Controller.

4.6.2.4 LAN Configuration



Item	Options	Description
Onboard Ethernet Controller	Disabled Enabled**[Default]**	Select whether to enable or disable Onboard Ethernet Controller.

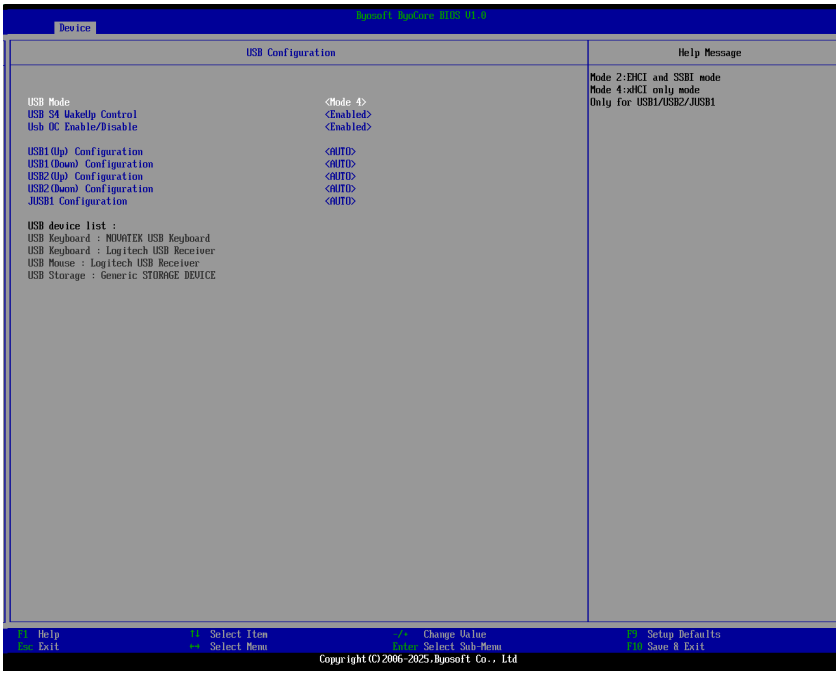
4.6.2.5 PCIe Configuration



Item	Options	Description
Above 4G Decoding	Disabled Enabled**[Default]**	64 bit prefetchable BAR can be allocated above 4G MMIO
Resizable BAR	Disabled Enabled**[Default]**	Resizable BAR control, if enabled, suggest to Disable CSM.

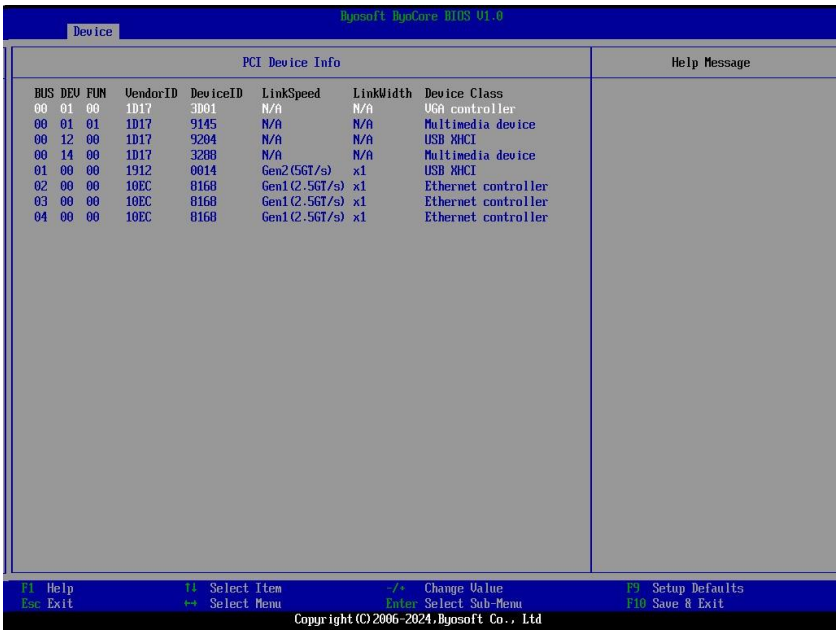
Reset PCIE When Link Fail	Disabled Enabled**[Default]**	
Reset PE0 When Link Fail	Disabled Enabled**[Default]**	
Reset PE1 When Link Fail	Disabled Enabled**[Default]**	
Reset PE2 When Link Fail	Disabled Enabled**[Default]**	
Reset PE3 When Link Fail	Disabled Enabled**[Default]**	
Reset PE4 When Link Fail	Disabled Enabled**[Default]**	
Reset PE5 When Link Fail	Disabled Enabled**[Default]**	
Reset PE6 When Link Fail	Disabled Enabled**[Default]**	
Reset PE7 When Link Fail	Disabled Enabled**[Default]**	
PCIE Root Port	Disabled Enabled**[Default]**	
PCIE PE0 Control (ExtUSB) (Group1)	Disabled Enabled**[Default]**	
PCIE PE1 Control (LAN1) (Group1)	Disabled Enabled**[Default]**	
PCIE PE2 Control (LAN2) (Group1)	Disabled Enabled**[Default]**	
PCIE PE3 Control (LAN3) (Group1)	Disabled Enabled**[Default]**	
PCIE PE4 Control (LAN4) (Group1)	Disabled Enabled**[Default]**	
PCIE PE5 Control (LAN5) (Group1)	Disabled Enabled**[Default]**	
PCIE PE6 Control (LAN6) (Group1)	Disabled Enabled**[Default]**	
PCIE PE7 Control (LAN7) (Group1)	Disabled Enabled**[Default]**	
PCIE RP Speed Control	Auto**[Default]** Force Gen1 Force Gen2 Force Gen3 By Port	

4.6.2.6 USB Configuration

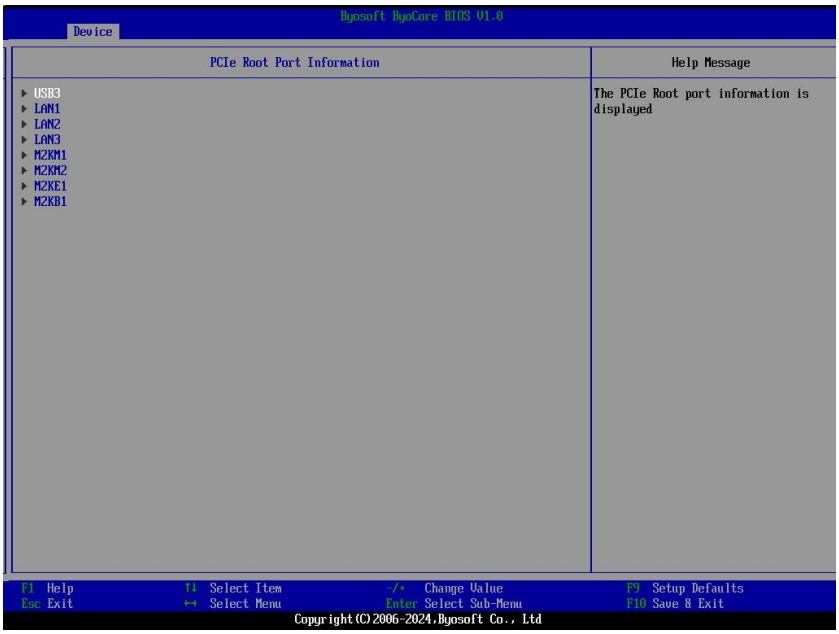


Item	Options	Description
USB Mode	Disabled Mode 2 Mode 4**[Default]**	Mode 2: EHCI and SSBI mode Mode 4: xHCI only mode Only for USB1/USB2/JUSB1
USB S4 WakeUp Control	Disabled Enabled**[Default]**	USB1/USB2/JUSB1 S4 WakeUp Enable/Disable selection Ps. To Enable S4 WakeUp function, USB1/USB2/JUSB1 Standby Power must be Enabled, too.
Usb OC Enable/Disable	Disabled Enabled**[Default]**	Usb OC Enable/Disable selection
USB1(Up) Configuration	AUTO**[Default]** None	Select the device type supported by the port, AUTO for all device type. When it is None, this is not available.
USB1(Down) Configuration	AUTO**[Default]** None	Select the device type supported by the port, AUTO for all device type. When it is None, this is not available.
USB2(Up) Configuration	AUTO**[Default]** None	Select the device type supported by the port, AUTO for all device type. When it is None, this is not available.
USB2(Down) Configuration	AUTO**[Default]** None	Select the device type supported by the port, AUTO for all device type. When it is None, this is not available.
JUSB1 Configuration	AUTO**[Default]** None	Select the device type supported by the port, AUTO for all device type. When it is None, this is not available.

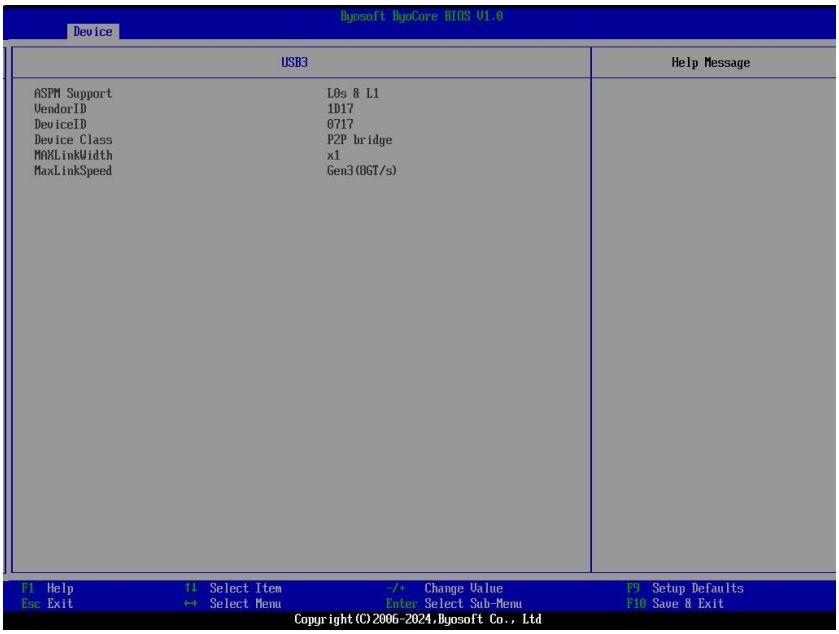
4.6.2.7 PCI Device Info



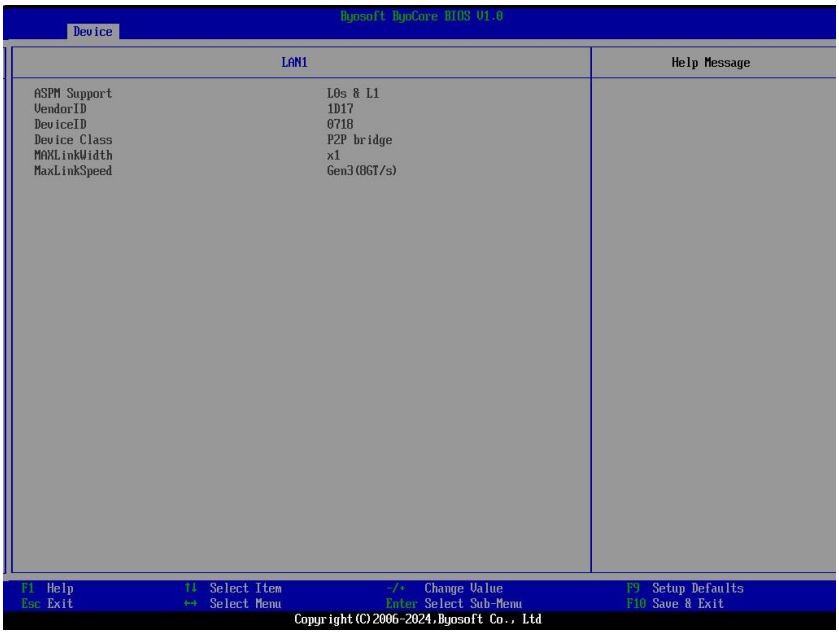
4.6.2.8 PCIe Root Port Information



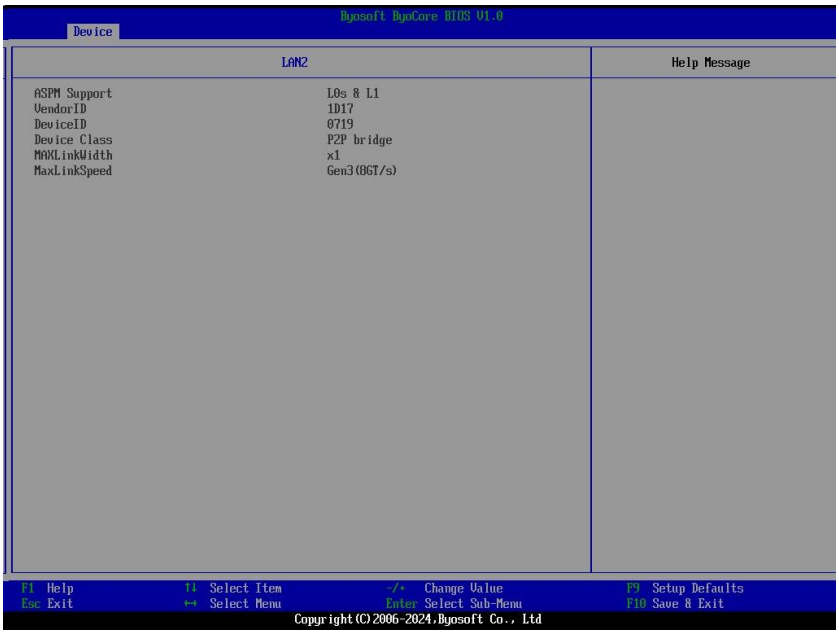
4.6.2.8.1 USB3



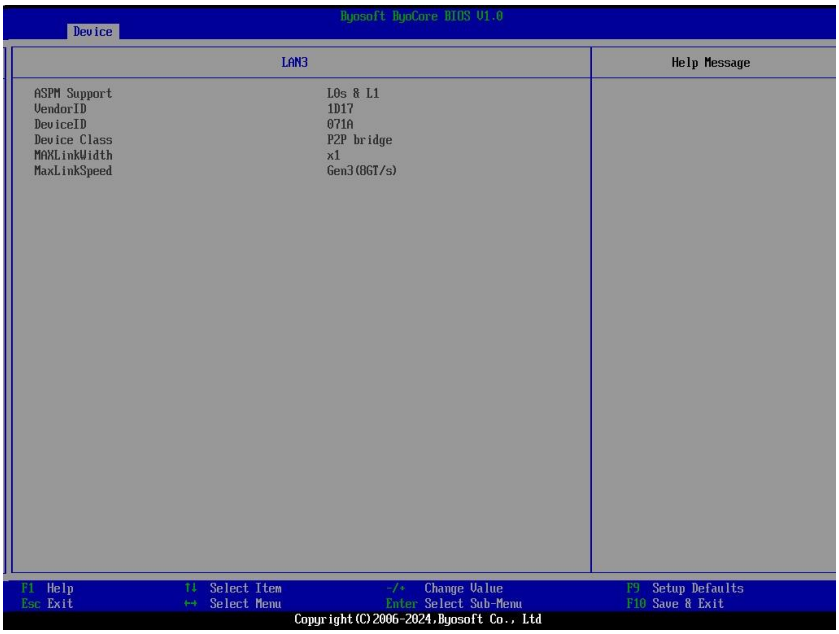
4.6.2.8.2 LAN1



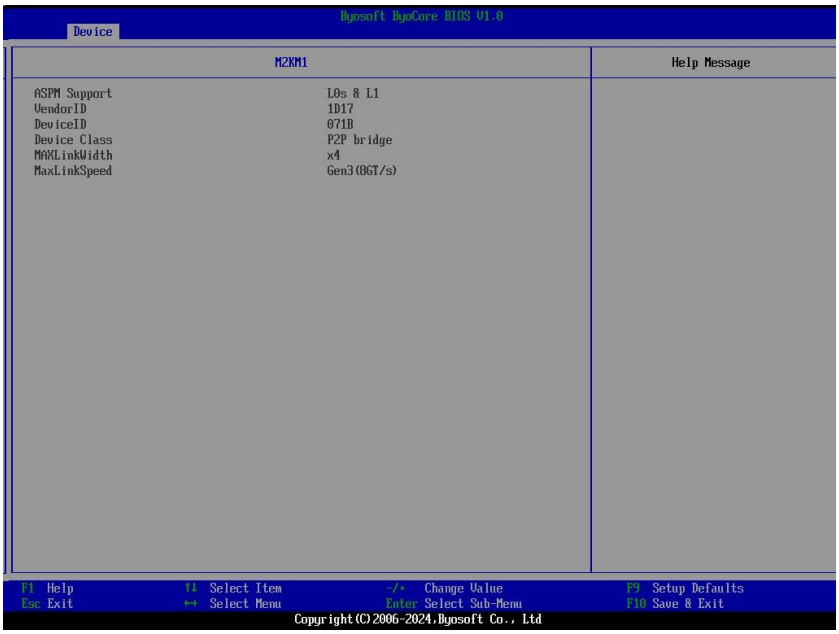
4.6.2.8.3 LAN2



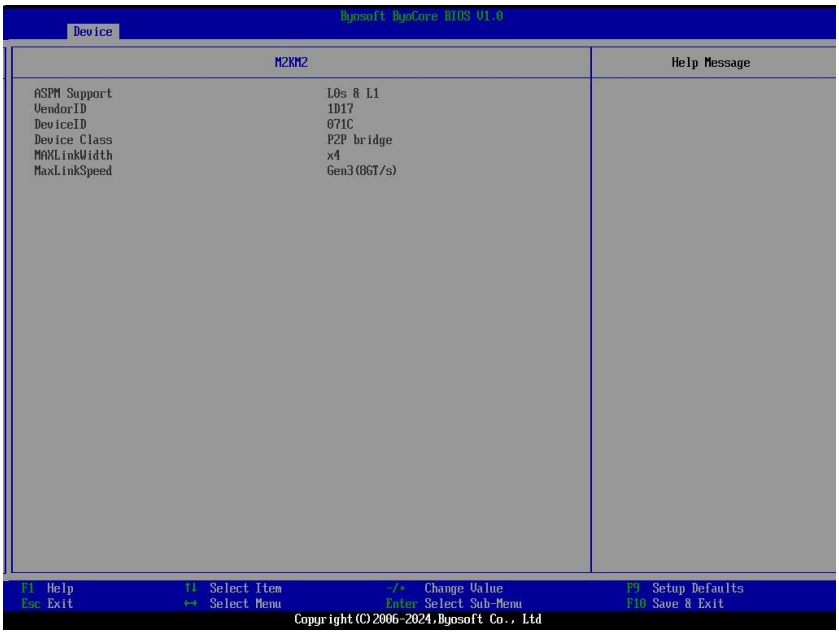
4.6.2.8.4 LAN3



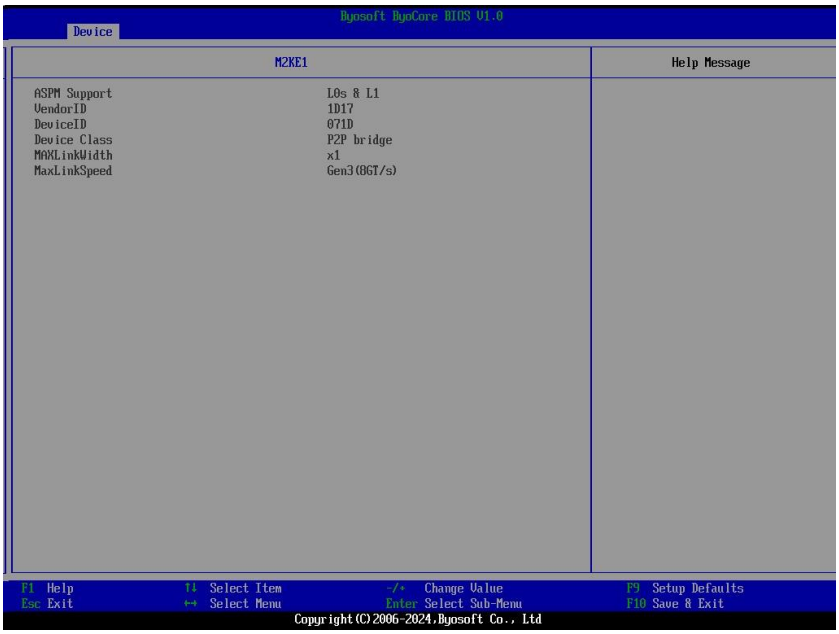
4.6.2.8.5 M2KM1



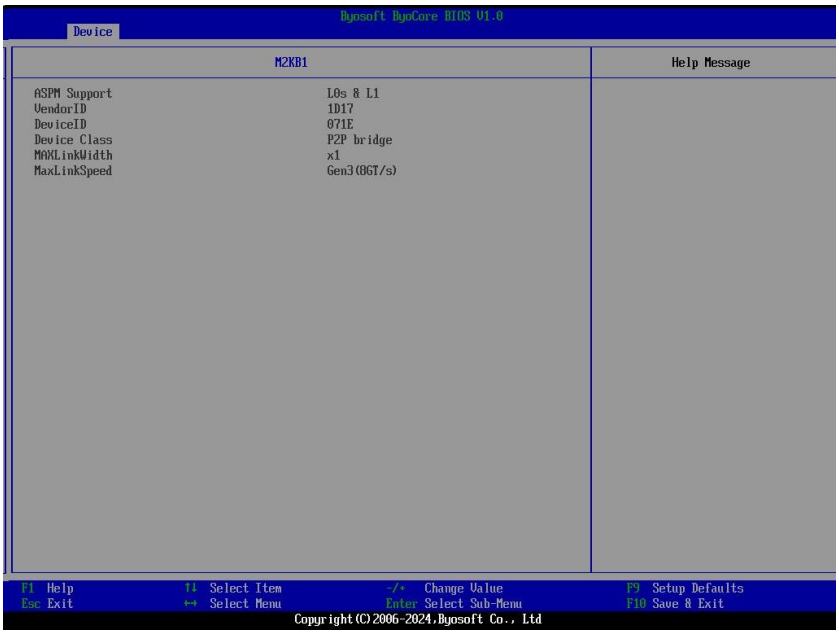
4.6.2.8.6 M2KM2



4.6.2.8.7 M2KE1



4.6.2.8.8 M2KB1



Item	Options	Description
Smart Fan Function	Disabled**[Default]** Enabled	Enable or disable Smart Fan Function

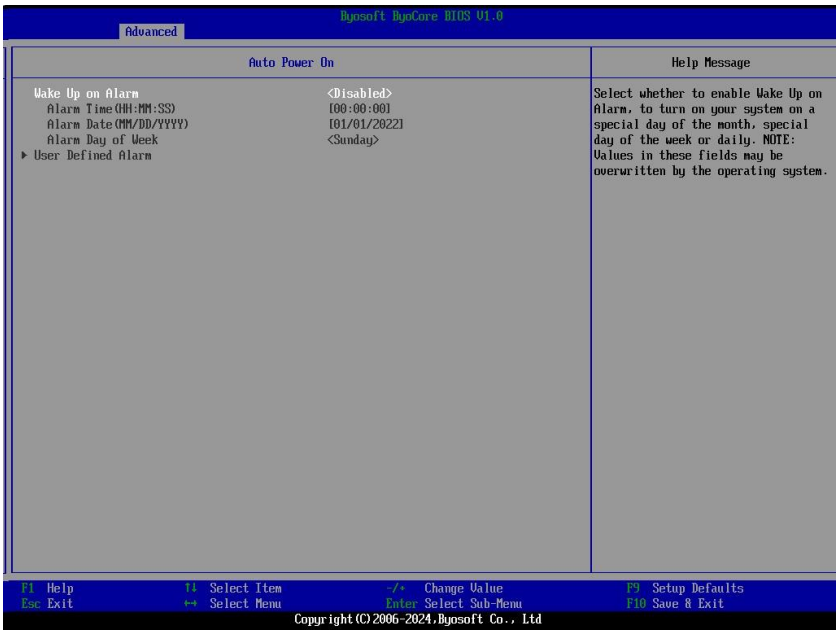
4.6.3 Advanced Menu

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

4.6.3.1 Power Configuration

Item	Options	Description
ACPI Sleep Status	Disabled**[Default]** S3	Select ACPI sleep state the system will enter when the SUSPEND button is pressed.

4.6.3.1.1 Auto Power On



Item	Options	Description
Wake Up on Alarm	Single Event Daily Event Weekly Event User Defined Period Minutes Period Seconds Disabled**[Default]**	Select whether to enable Wake Up on Alarm, to turn on your system on a special day of the month, special day of the week or daily. NOTE: Values in these fields may be overwritten by the operating system.

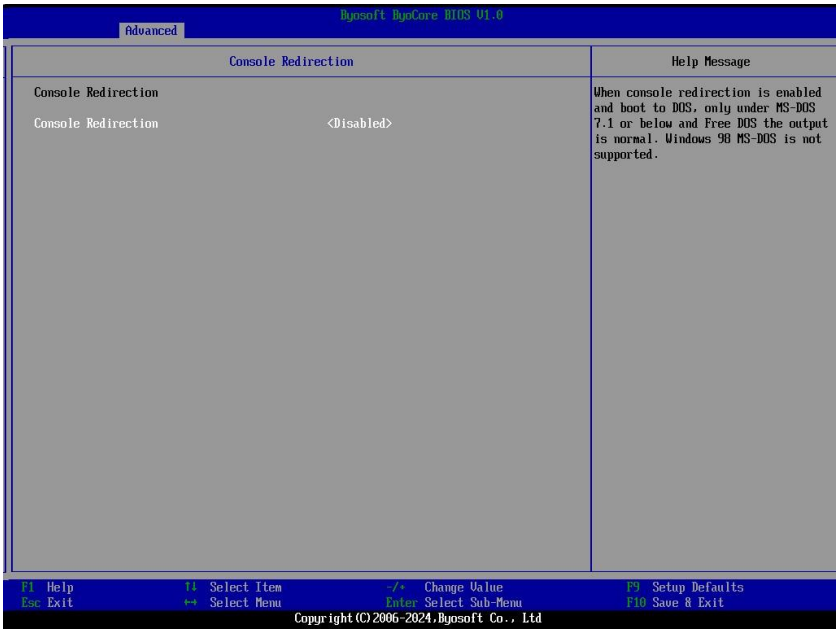
4.6.3.2 CPU Configuration

tem	Options	Description
MCA Supported	Disabled**[Default]** Enabled	MCA Supported
AUX Supported	Disabled Enabled**[Default]**	AUX Supported

4.6.3.3 DRAM Configuration

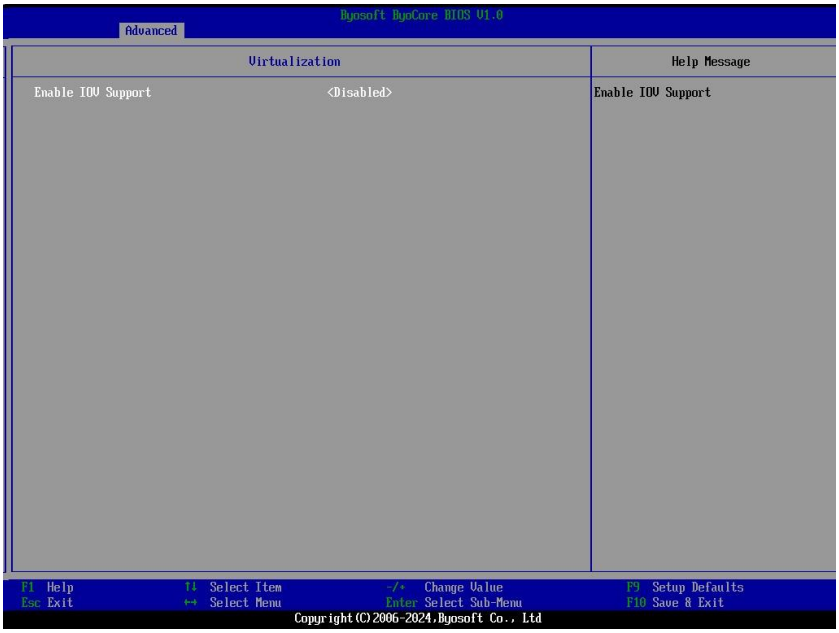
Item	Options	Description
Dram Fast Boot	Enabled Disabled**[Default]**	

4.6.3.4 Console Redirection



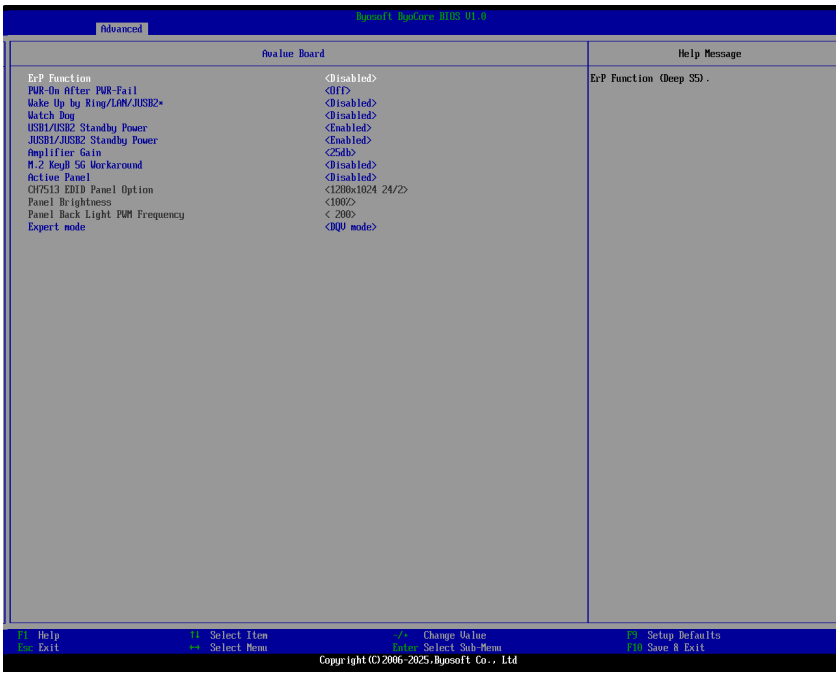
Item	Options	Description
Console Redirection	Enabled Disabled**[Default]**	When console redirection is enabled and boot to DOS, only under MS-DOS 7.1 or below and Free DOS the output is normal. Windows 98 MS-DOS is not supported.

4.6.3.5 Virtualization



Item	Options	Description
Enable IOV Support	Disabled**[Default]** Enabled	Enable IOV Support

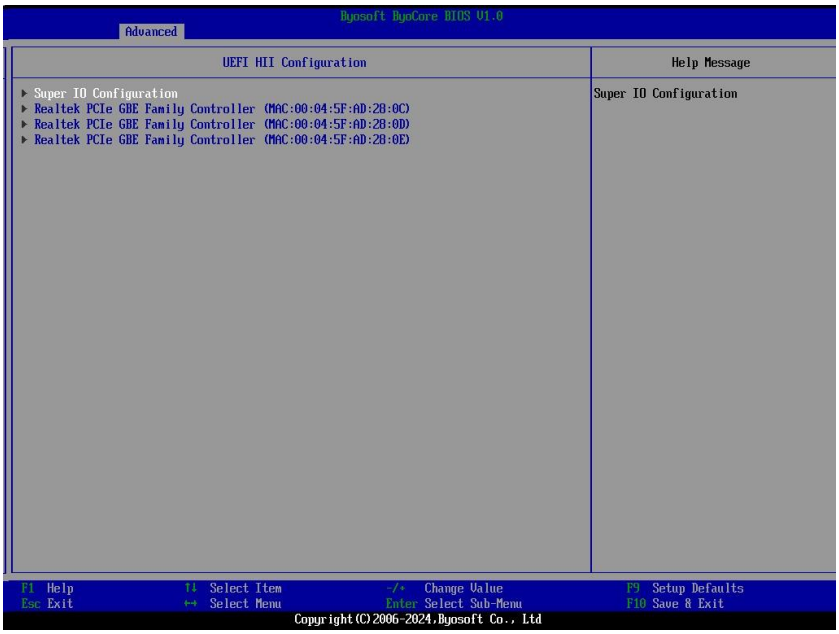
4.6.3.6 Avalue Board



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.
Wake Up by Ring/LAN/JUSB2*	Disabled**[Default]** Enabled	Ring – Wake Up from S3/S4/S5 Lan – Wake Up from S3/S4/S5 JUSB2 – Wake Up from S3/S4 Ps. JUSB2 Standby Power must be Enabled for S3/S4 Wake Up.
Watch Dog	Disabled**[Default]** 30sec 40sec 50 sec 1min 2min 10min 30min	Select WatchDog.
USB1/USB2 Standby Power	Disabled Enabled**[Default]**	Enabled/Disabled USB Standby Power during S3/S4/S5
JUSB1/JUSB2 Standby Power	Disabled Enabled**[Default]**	Enabled/Disabled USB Standby Power during S3/S4/S5
Amplifier Gain	11dp 14dp 19dp**[Default]** 25dp	Amplifier Gain

M.2 KeyB 5G Workaround	Disabled Enabled**[Default]**	Powre Control on S3/S4/S5 Disabled – Turn On Enabled – Turn Off
Active Panel	Disabled**[Default]** Enabled	Active Internal LVDS (eDP->CH7513-to-LVDS)
CH7513 EDID Panel Option	1024x768 24/1 800x600 18/1 1024x768 18/1**[Default]** 1366x768 18/1 1024x600 18/1 1280x800 18/1 1920x1200 24/2 1920x1080 18/2 1280x1024 24/2 1440x900 18/2 1600x1200 24/2 1366x768 24/1 1920x1080 24/2 1680x1050 24/2 or eDP	Port1-EDP to LVDS(Chrotel 7513) Panel EDID Option
Panel Brightness	00% 25% 50% 75% 100%**[Default]**	Select Panel back light PWM duty.
Panel Back Light PWM Frequency	200**[Default]** 300 400 500 700 1k 2k 3k 5k 10k 20k	Select Panel back light PWM Frequency.
Expert mode	DQV mode**[Default]** Expert mode	Switch Expert mode or DQV mode

4.6.3.7 UEFI HII Configuration

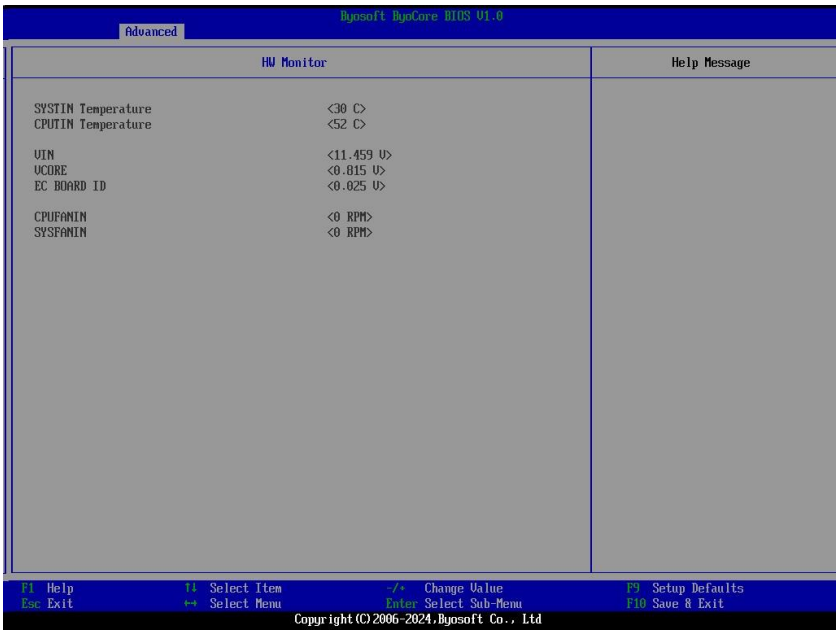


4.6.3.7.1 Super IO Configuration

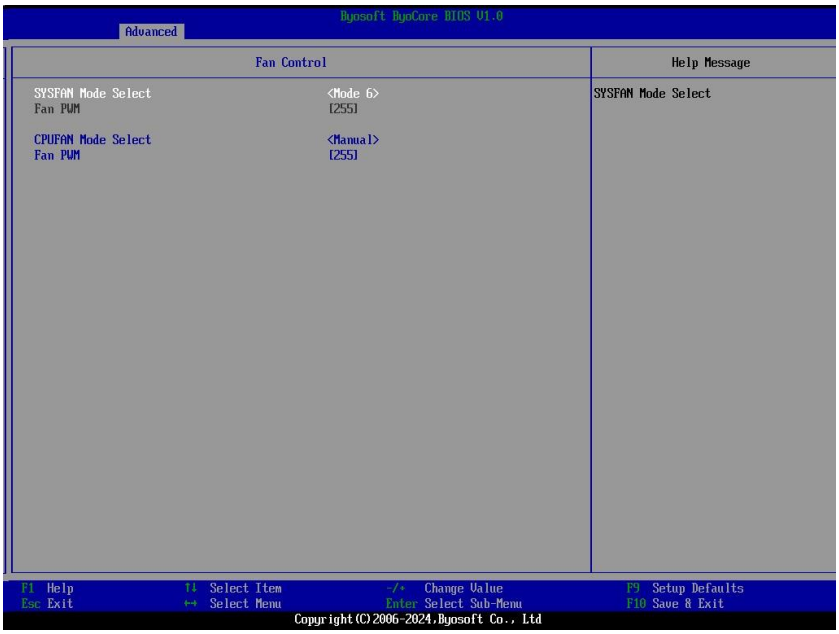
Item	Options	Description
UART 1	Disabled**[Default]** Enabled	Enable or Disbale Super IO Uart 1
RS232/422/485 mode	RS232**[Default]** RS422 RS485	Switch to RS232/422/485
UART 2	Disabled**[Default]** Enabled	Enable or Disbale Super IO Uart 2

RS232/422/485 mode	RS232**[Default]** RS422 RS485	Switch to RS232/422/485
UART 3	Disabled**[Default]** Enabled	Enable or Disbale Super IO Uart 3
UART 4	Disabled**[Default]** Enabled	Enable or Disbale Super IO Uart 4
UART 5	Disabled**[Default]** Enabled	Enable or Disbale Super IO Uart 5
UART 6	Disabled**[Default]** Enabled	Enable or Disbale Super IO Uart 6

4.6.3.7.1.1 HW Monitor

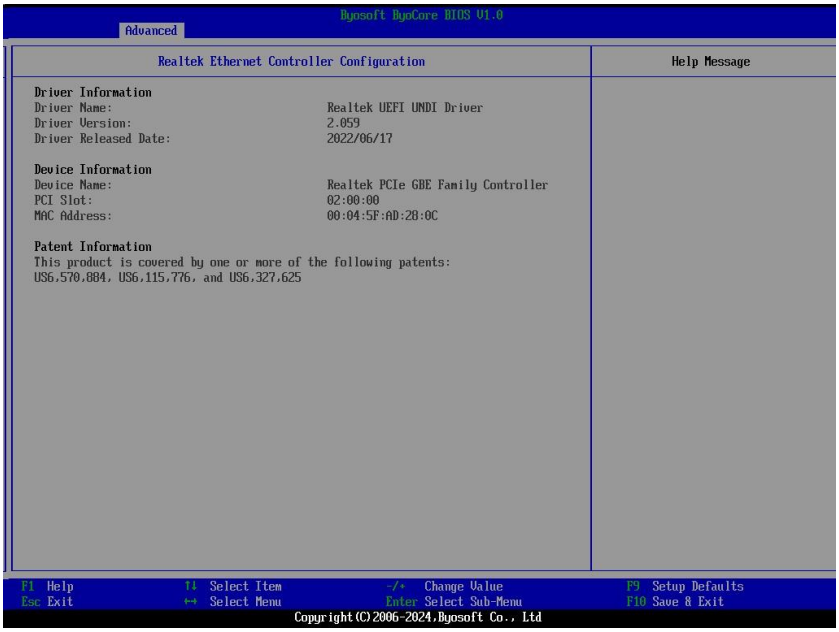


4.6.3.7.1.2 Fan Control

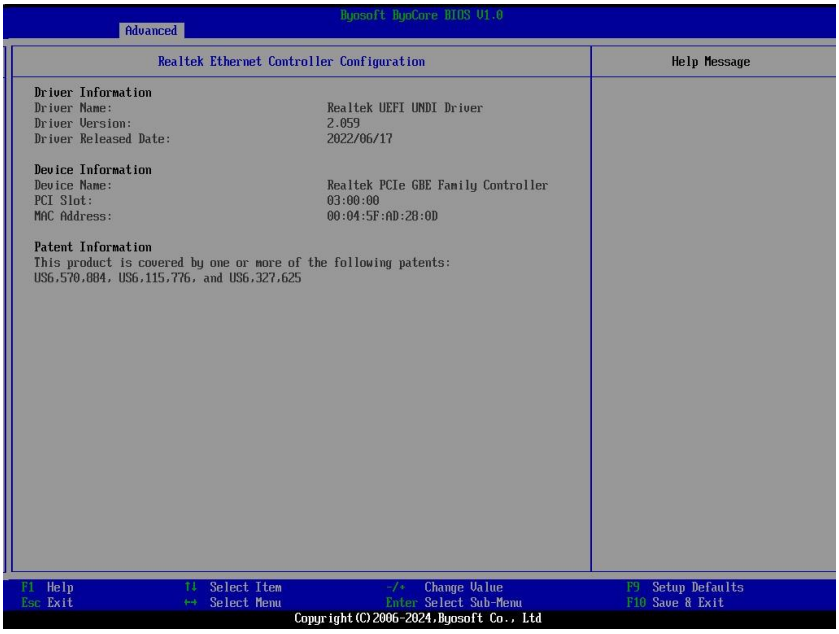


Item	Options	Description
SYSFAN Mode Select	Manual 1/Mode 1/ Mode 2/Mode 3/Mode 4/ Mode 5/Mode 6**[Default]**/ Mode 7/Mode 8/Mode 9/ Mode 10/Mode 11/Mode 12/ Mode 13/ Mode 14/Mode15/ Mode16/Mode17/ Mode18/ Mode 19/ Mode 20	SYSFAN Mode Select
CPUFAN Mode Select	Manual 1**[Default]**/ Mode 1/Mode 2/Mode 3/ Mode 4/Mode 5/Mode 6/ Mode 7/Mode 8/Mode 9/ Mode 10/Mode 11/Mode 12/ Mode 13/ Mode 14/Mode15/ Mode16/Mode17/ Mode18/ Mode 19/ Mode 20	CPUFAN Mode Select
Fan PWM	255	Fan PWM

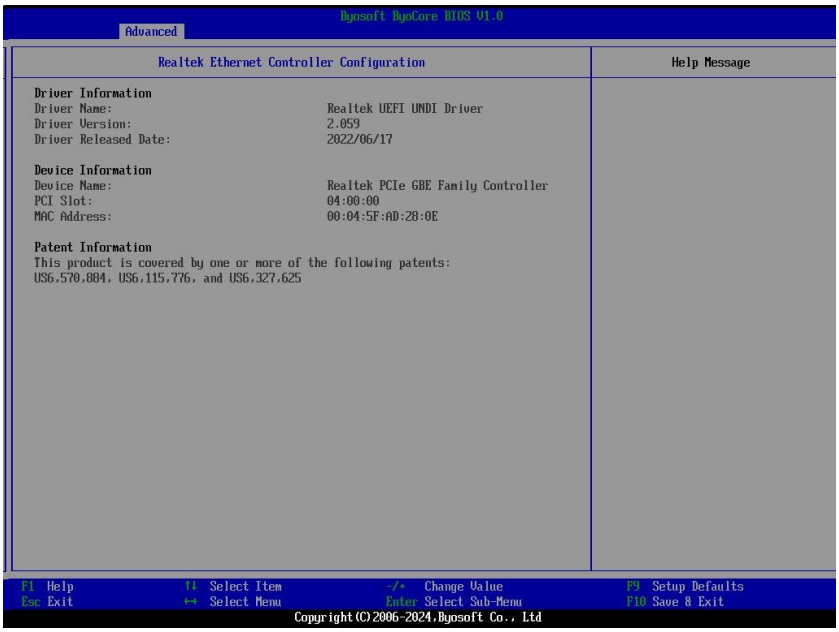
4.6.3.7.2 Realtek PCIe GBE Family Controller (MAC:xx:xx:xx:xx:xx:xx)



4.6.3.7.3 Realtek PCIe GBE Family Controller (MAC:xx:xx:xx:xx:xx:xx)



4.6.3.7.4 Realtek PCIe GBE Family Controller (MAC:xx:xx:xx:xx:xx:xx)



4.6.4 Security

- **Set Administrator Password**

Select this item to set, change, or delete Administrator Password. a-z, 0-9 and special printable character are supported. Passwords are case sensitive. The limited length of password string is 6 to 20.

NOTE:
To delete Password, enter blank when input new password. The password need contains at least three of the four types of uppercase letters, lowercase letters, numbers, and special characters. And it cannot be set to the previously set password, within five (inclusive) times.

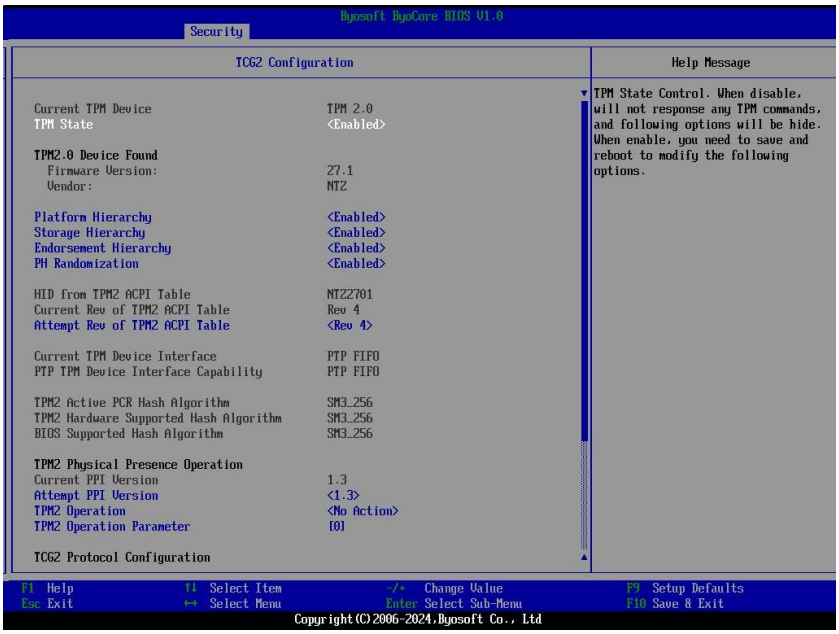
If Administrator password network auth is enabled, network auth is performed before password is changed

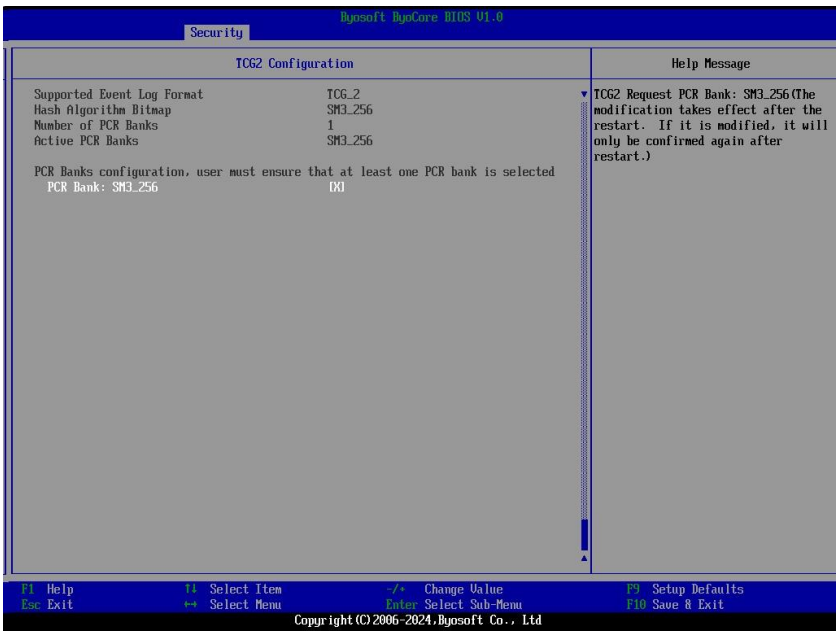
- **Set User Password**

Select this item to set, change, or delete User Password. a-z, 0-9 and special printable character are supported. Passwords are case sensitive. The limited length of password string is 6 to 20.

NOTE:
To delete Password, enter blank when input new password. The password need contains at least three of the four types of uppercase letters, lowercase letters, numbers, and special characters. And it cannot be set to the previously set password, within five (inclusive) times. If Administrator password network auth is enabled, network auth is performed before password is changed

4.6.4.1 TCG2 Configuration

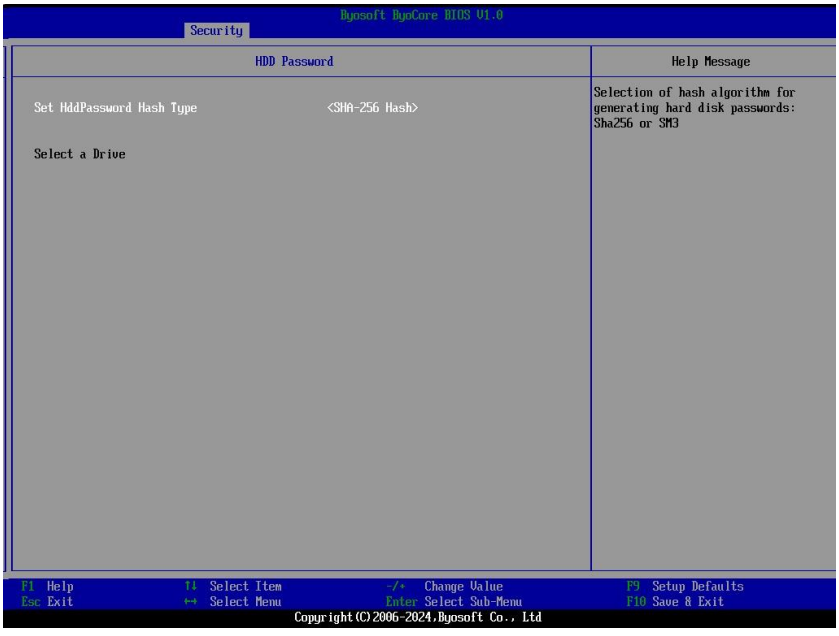




Item	Options	Description
TPM Select	Enabled**[Default]** Disabled	TPM State Control. When disable, will not response any TPM commands, and following options will be hide. When enable, you need to saue and reboot to modify the following options.
Platform Hierarchy	Enabled**[Default]** Disabled	Platform Hierarchy Configuration. If Disable, Storage Hierarchy, Endorsement Hierarchy and PH Randomization will be grayed out.
Storage Hierarchy	Enabled**[Default]** Disabled	Storage Hierarchy Configuration. Enable or Disable.
Endorsement Hierarchy	Enabled**[Default]** Disabled	Endorsement Hierarchy Configuration. Enable or Disable.
PH Randomization	Enabled**[Default]** Disabled	PH Randomization Configuration. Enable or Disable.
Attempt Rev of TPM2 ACPI Table	Rev 3 Rev 4**[Default]**	Rev 3 or Rev 4 (Rev 4 is defined in TCG ACPI Spec00.37) .PcdTpm2AcpiTableRev needs to be DynamicHii type and map to this option. Otherwise the version configuring by this setup option will not work.
Attempt PPI Version	1.2 1.3**[Default]**	Attempt PPI Version: 1.2 or 1.3. PcdTcgPhysica 1PresenceInterfaceVer needs to be DynamicHii type and map to this option. Otherwise the Version configuring by this setup option will not work.

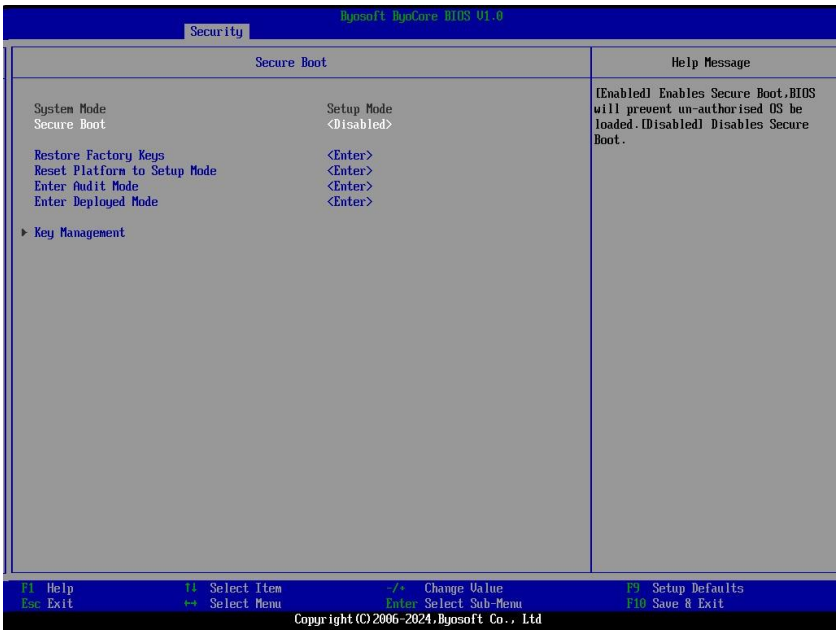
TMP Operation	No Action**[Default]** TPM2 ClearControl (NO) + Clear TPM2 HierarchyControl (TPM_RH_OWNER YES, TPM_RH_ENDORSEMENT YES) TPM2 HierarchyControl (TPM_RH_OWNER NO, TPM_RH_ENDORSEMENT NO) TPM2 PCR_Allocate (Algorithm IDs) TPM2 ChangeEPS TCG2 LogAllDigests TPM2 HierarchyControl (IPM_RH_OWNER NO, TPM_RH_ENDORSEMENT YES)	Select one of the supported operation to change TPM2 state.
TMP Operation Parameter	0	Additional TPM2 Operation Parameter need be sent with Operation Code (required for SetPCRBanks).
PCR Bank: SM3_256	X	TCG2 Request PCR Bank: SM3_256 (The modification takes effect after the restart. If it is modified, it will only be confirmed again after restart.)

4.6.4.2 HDD Password



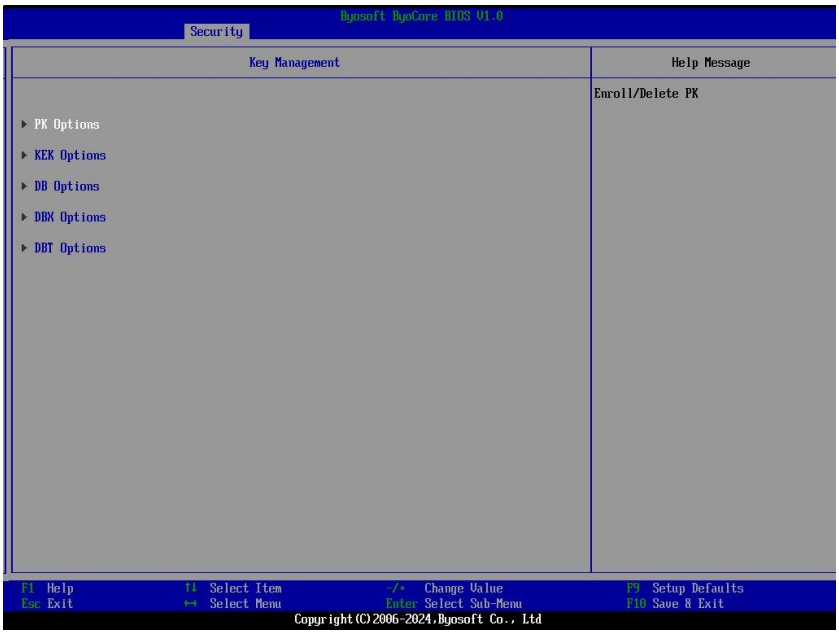
Item	Options	Description
Set HddPassword Hash Type	SHA-256 Hash**[Default]** SM3 Hash	Selection of hash algorithm for generating hard disk passwords: Sha256 or SM3

4.6.4.3 Secure Boot

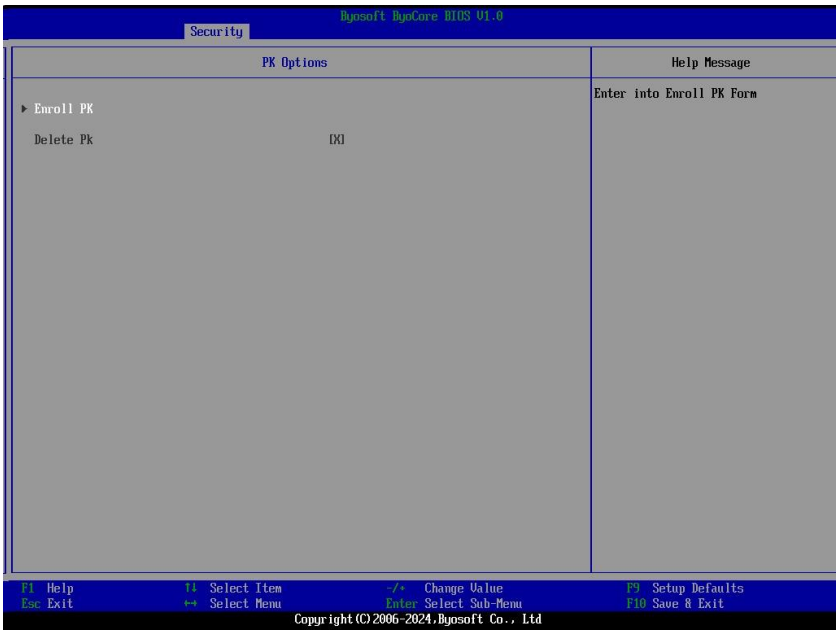


Item	Options	Description
Secure Boat	Disabled**[Default]** Enabled	[Enabled] Enables Secure Boot, BIOS will prevent un-author ised OS be loaded. [Disabled] Disables Secure Boat.
Restore Factory Keys	Enter	Restore Factory Keys will put secure boot into factory defaults
Reset Platform to Setup Mode	Enter	Reset Platform to Setup Mode
Enter Audit Mode	Enter	Entering audit mode. Entering audit mode form user mode will cause PK to be deleted.
Enter Deployed Mode	Enter	Enter Deployed Mode

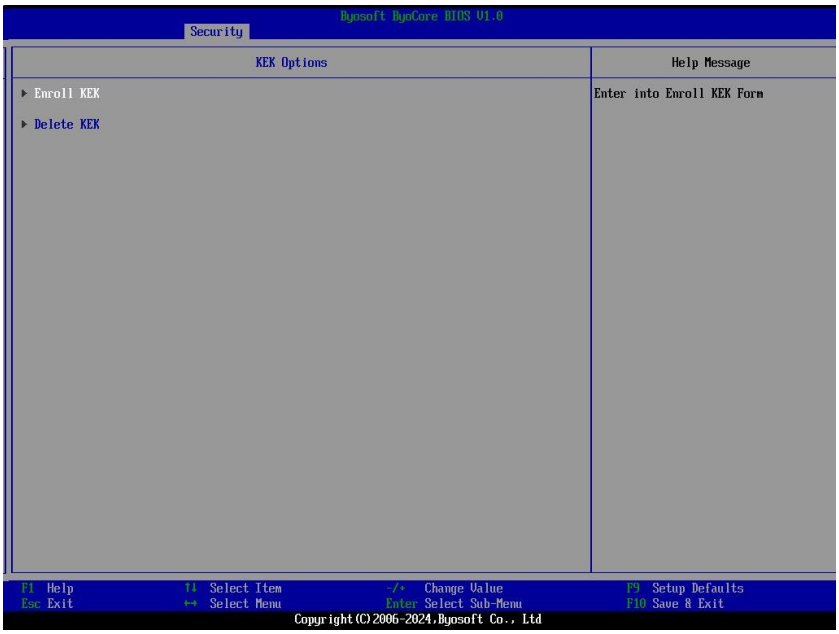
4.6.4.3.1 Key Management



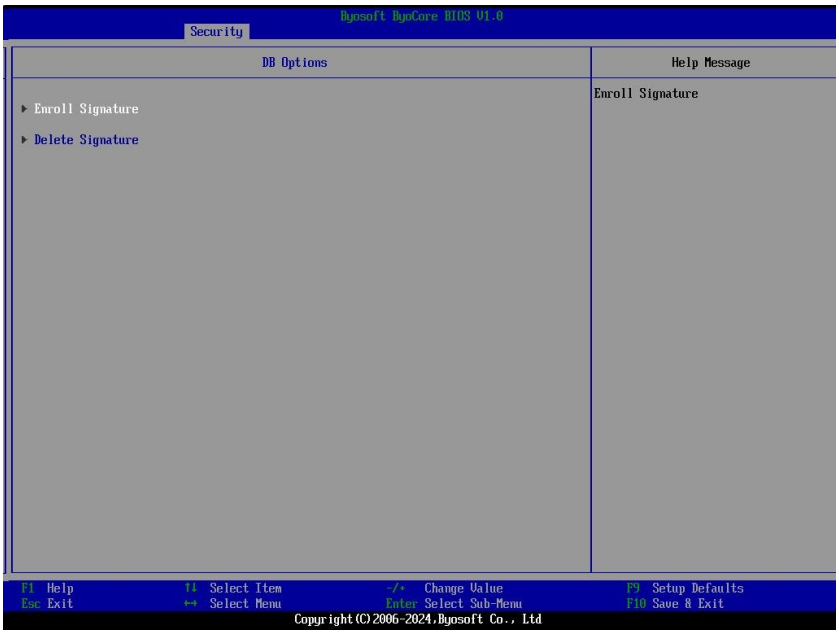
4.6.4.3.1.1 PK Options



4.6.4.3.1.2 KEK Options

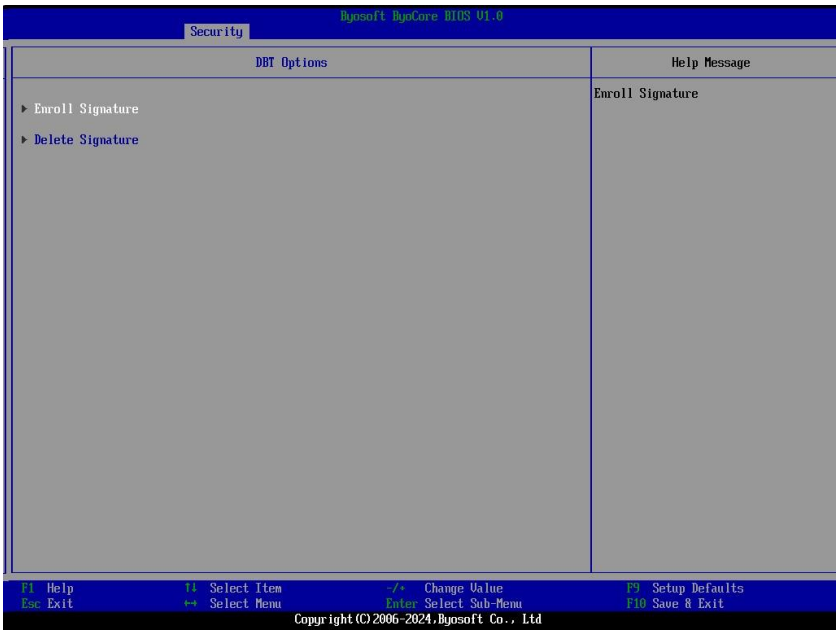


4.6.4.3.1.3 DB Options

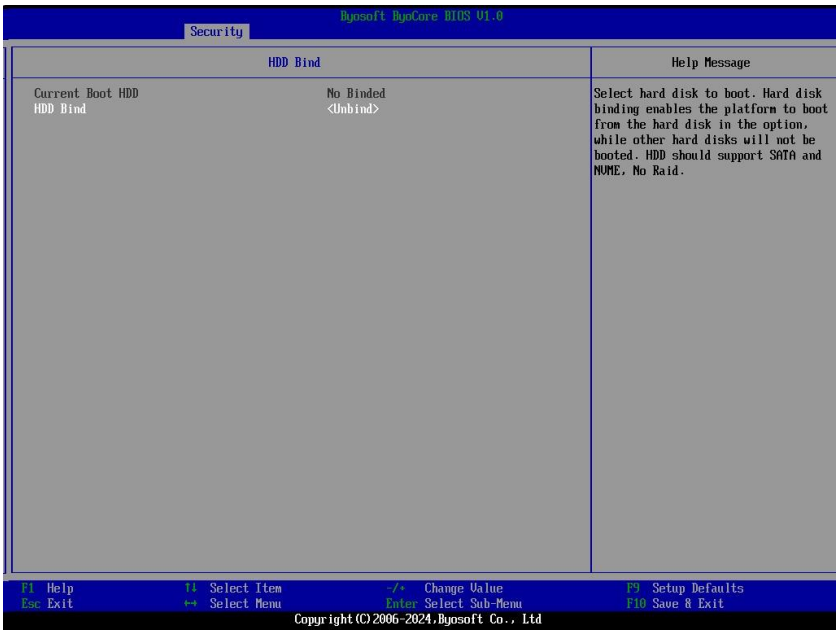


4.6.4.3.1.4 DBX Options

4.6.4.3.1.5 DBT Options



4.6.4.4 HDD Bind



Item	Options	Description
HDD Bind	Unbind	Select hard disk to boot. Hard disk binding enables the platform to boot from the hard disk in the option, while other hard disks will not be booted. HDD should support SATA and NVME, No Raid.

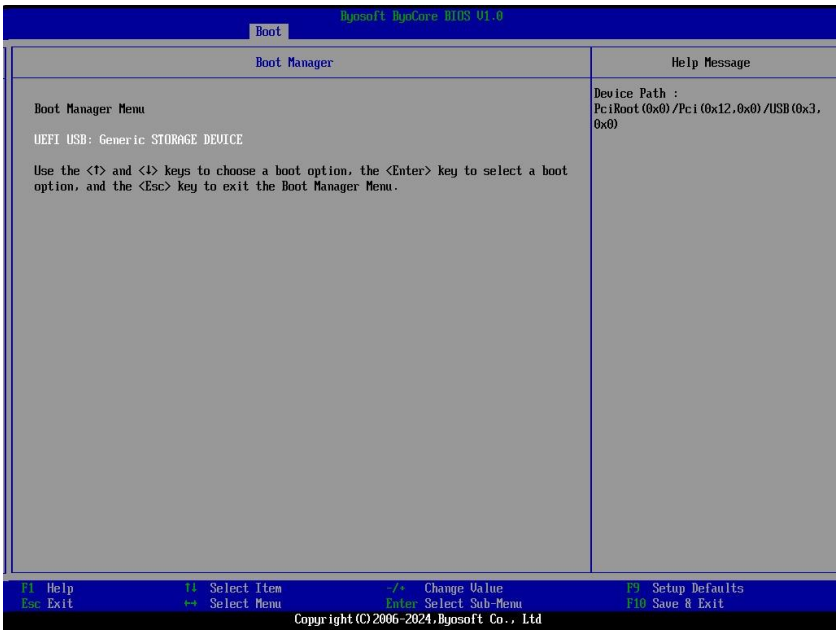
4.6.5 Boot

Item	Options	Description
User Wait Time	5	Number of second to wait for hot key activation. Valid range is from 1s to20s.
Bootup NumLock State	Off On**[Default]**	Select the keyboard NumLock state.
OPTION ROM Message	Disabled Enabled**[Default]**	Enable/Disable the display of Option Rom's message.
Internal ROM Message	Disabled Enabled**[Default]**	Internal SHELL enable/disable.
Fast Boot	Disabled Enabled**[Default]**	Fast Boot enable/disable.
Network Boot	Disabled Enabled**[Default]**	Enable or Disable Network Boot

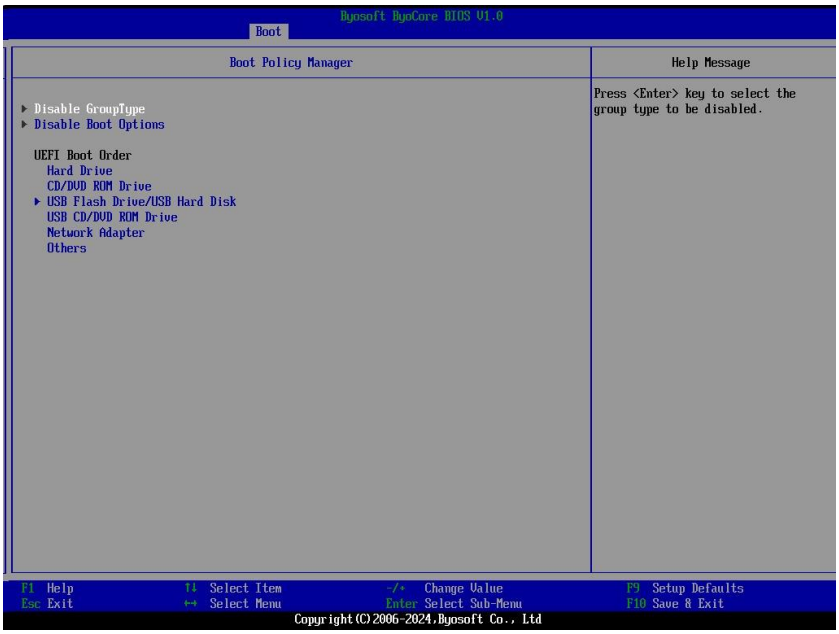
4.6.5.1 PCI ROM Priority

Item	Options	Description
Network Option Rom	UEFI First**[Default]** No Launch	Controls the execution of UEFI and Legacy Option ROM
Storage Option Rom	UEFI First No Launch**[Default]**	Controls the execution of UEFI and Legacy Option ROM
Other PCI Option Rom	UEFI First No Launch**[Default]**	Controls the execution of UEFI and Legacy Option ROM

4.6.5.2 Boot Manager



4.6.5.3 Boot Policy Manager



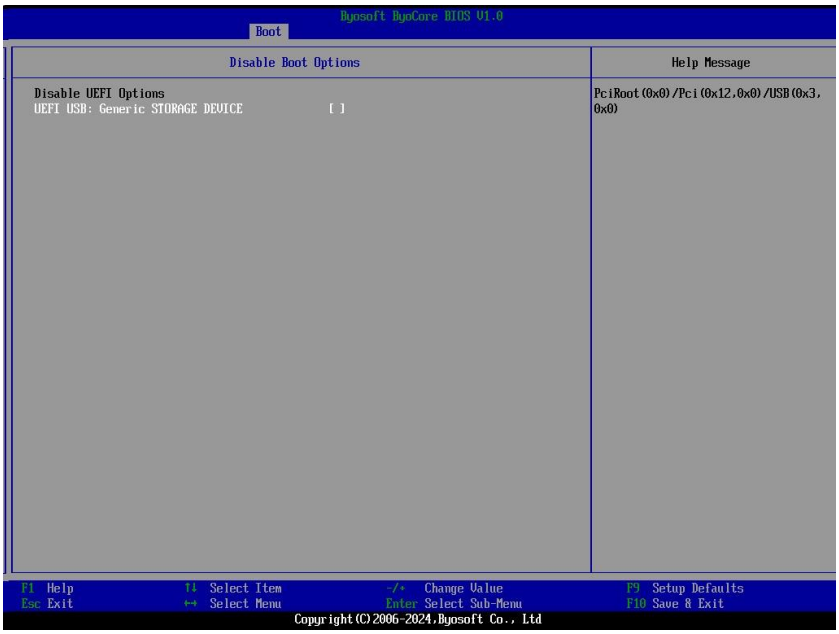
Item	Description
Hard Drive	Up and Down arrow keys select a device. <+> and <-> keys move the device up or down.
CD/DVD ROM Drive	Up and Down arrow keys select a device. <+> and <-> keys move the device up or down.
USB Flash Drive/USB Hard Disk	Up and Down arrow keys select a device. <+> and <-> keys move the device up or down.

USB CD/DVD ROM Drive	Up and Down arrow keys select a device. <+> and <-> keys move the device up or down.
Network Adapter	Up and Down arrow keys select a device. <+> and <-> keys move the device up or down.
Others	Up and Down arrow keys select a device. <+> and <-> keys move the device up or down.

4.6.5.3.1 Disable GroupType

Item	Description
Hard Drive	Press <Enter> key to select the group type to be disabled.
CD/DVD ROM Drive	Press <Enter> key to select the group type to be disabled.
USB Flash Drive/USB Hard Disk	Press <Enter> key to select the group type to be disabled.
USB CD/DVD ROM Drive	Press <Enter> key to select the group type to be disabled.
Network Adapter	Press <Enter> key to select the group type to be disabled.
Others	Press <Enter> key to select the group type to be disabled.

4.6.5.3.2 Disable Boot Options



4.6.6 Exit

Item	Options	Description
BIOS Update Parameters	Reserved Configuration**[Default]** Full Update	BIOS update parameters, choose to retain the setup configuration or full update BIOS. When the setup data (default value, structure, etc.) changes between different versions and the method of retaining the configuration refresh is selected, the option other than password-related will revert to the default value.
Load Setup Defaults	Load defaults values for all the Setup options.	

Save and Exit	Exit system Setup after saving the changes.
Shutdown system	Shutdown system
Reboot system	Reboot system
BIOS Update	BIOS Update

5. Product Application

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

6. Operating the Device

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