# MAB-T600-B1

**Barebone System with RX680H Chipset**

# Quick Reference Guide

**1st Ed –20 March 2024**




Part No. E2017GAR1A0R

## 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.

E300013

MEDICAL - GENERAL MEDICAL EQUIPMENT AS TO ELECTRICAL SHOCK, FIRE AND MECHANICAL HAZARDS ONLY IN ACCORDANCE ANSI/AAMI ES60601-1 (2005) + AMD 1 (2012)
CAN/CSA-C22.2 No. 60601-1 (2014)

## 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.

### 3.2 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.

### 3.3 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.

### 3.4 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.

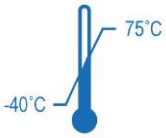
7. Make sure the voltage of the power source is correct before connecting the equipment to the power outlet.
8. Use a power cord that has been approved for using with the product and that it matches the voltage and current marked on the product's electrical range label. The voltage and current rating 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 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.

13. CAUTION: Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer.
14. 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. |
|  | | Storage &Transportation Temperature: -20°C ~ 60°C |
|  | | Storage &Transportation Humidity: 10% ~ 95% |
|  | | High Temperature |

# 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 Packing List

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

| Item | Description | Q'ty |
|---|---|---|
| **1** | MAB-T600-B1 Barebone system | 1 |
| **2** | Power cord | 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 box PC, follow the steps below.

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 box PC out of the boxes.

Step 6: Remove the peripheral parts box from the main box.

## 1.2 System Specifications

| | |
|---|---|
| **System** | |
| **Processor** | 12/13th Generation Intel® Core™ i3/i5/i7 Processors. Max TDP 65W |
| **Platform Controller Hub** | Intel® R680E PCH |
| **System Memory** | 4 x DIMM up to 128GB Max Dual Channel DDR5 4400 MHz with ECC Support |
| **I/O Chipset** | Nuvoton® |
| **BIOS Information** | AMI uEFI BIOS, 256Mbit SPI Flash ROM |
| **Watchdog Timer** | H/W Reset, 5~255 seconds/5~255 minutes |
| **H/W Status Monitor** | CPU temperature monitoring, Voltages monitoring, CPU fan speed control |
| **RAID** | Supports RAID 0, 1 |
| **TPM** | Support onboard TPM 2.0 |
| **iAMT** | Intel® Active Management Technology 16 |
| **SBC** | RX680R |
| **Expansion** | |
| **M.2 (Signal)** | 1 x M.2 M-Key 2242/2280/22110 NVMe (Gen 4 PCIe x4 + SATA III)<br>1 x M.2 M-Key 2242/2280/22110 NVMe (Gen 3 PCIe x4 + SATA III)<br>1 x M.2 E-Key 2230 with CNVi Support (PCIe x 1 + USB 2.0) |
| **PCIe (Gen X)** | 1 x Gen 5 PCIe x16<br>2 x Gen 4 PCIe x4 (x16 Physical Yellow)<br>1 x Gen 3 PCIe x4 Open Ended |
| **Storage** | |
| **M.2 (Signal)** | 1 x M.2 M-Key 2242/2280/22110 NVMe (Gen 4 PCIe x4 + SATA III)<br>1 x M.2 M-Key 2242/2280/22110 NVMe (Gen 3 PCIe x4 + SATA III)<br>1 x M.2 E-Key 2230 with CNVi Support (PCIe x 1 + USB 2.0) |
| **2.5” Drive Bay (Height)** | 2 x 2.5” HDD/SSD Drive<br>(2 x 3.5” HDD/SSD Drive as option) |
| **Front I/O** | |
| **USB Port** | 2 x USB 2.0 (Front I/O) |
| **Power Button** | 1 x Power Button (with LED indicator) |
| **Rear I/O** | |
| **USB Port** | 6 x USB 3.2 Gen 2x1 Ports<br>1 x USB 3.2 Gen 2x2 Type-C |
| **DP** | 4 x DP++ |
| **Audio** | Line-out, Mic-in |
| **LAN Port** | 2 x RJ-45 |
| **Onboard I/O** | |

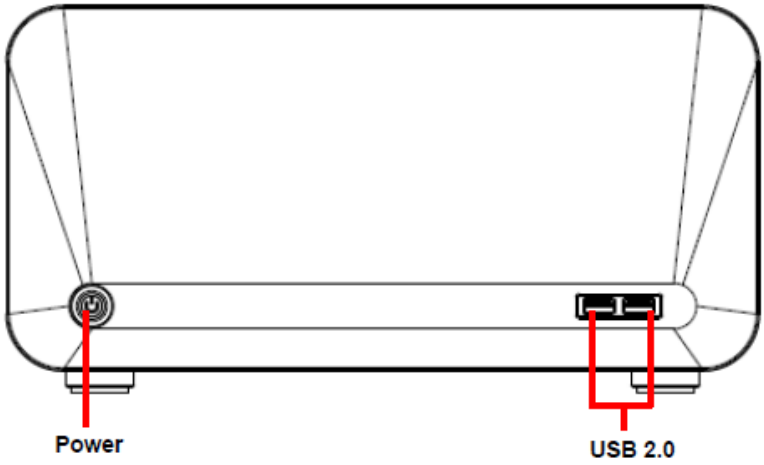
| | |
|---|---|
| **SATA Signal** | 4 x SATA III Headers |
| **GPIO** | 1 x 8-bit GPIO Header |
| **USB Port** | 1 x USB 3.2 Gen 2x1 Header (2 Ports)<br>4 x USB 2.0 Headers (8 Ports) |
| **CPU/System FAN** | JYC1L115ATP LGA1700 65W |
| **Display** | |
| **Graphic Chipset** | Intel® Integrated UHD Graphic with Xe Architecture (CPU Dependent) |
| **Resolution** | DP 1.4a (Max Resolution: 4096×2304@60Hz) |
| **Audio** | |
| **Audio Codec** | Realtek HD Audio Codec |
| **Ethernet** | |
| **LAN Chipset** | Intel® I225-LM 2.5 Gigabit Ethernet Controller |
| **Data Rate Per Port** | 2.5GbE (I225-LM)<br>2.5GbE (I225-LM) |
| **Power Requirement** | |
| **Power Mode** | AT/ATX Mode (Default: ATX mode) |
| **Power Supply Unit** | FSP500M-80PA PSU 100-240V (power 500W)—Medical Grade |
| **Mechanical & Environment** | |
| **Operating Temp.** | 0°C ~ 40°C (32°F ~ 104°F) with 0.5m/s air flow |
| **Storage Temp.** | -30°C ~ 70°C (-22 ~ 158°F) |
| **Operating Humidity** | 40°C @ 95% Relative Humidity, Non-condensing |
| **Dimension (W*L*H)** | 330*344*160mm (TBD) |
| **Weight** | 7 Kg |
| **Vibration Test** | Random Vibration Operation:<br>1. Test PSD : 0.00050513G²/Hz , 0.5 Grms<br>2. System condition : operation mode<br>3. Test frequency : 5~500 Hz<br>4. Test axis : X,Y and Z axis<br>5. Test time : 30 minutes per each axis<br>6. IEC60068-2-64 Test Fh<br>6 Storage : SSD<br><br>Sine Vibration test (Non-operation)<br>1 Test Acceleration : 2G<br>2 Test frequency : 5~500 Hz<br>3 Sweep：1 Oct/ per one minute. (logarithmic)<br>4 Test Axis : X,Y and Z axis<br>5 Test time :30 min. each axis |

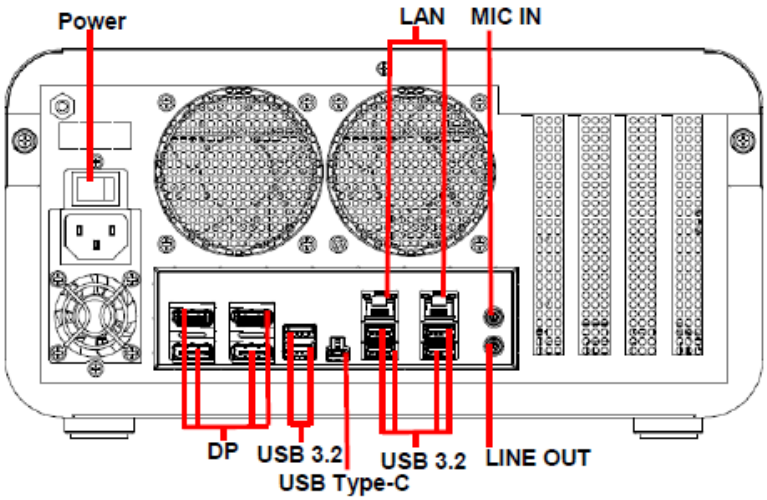
| | |
|---|---|
| | 6 System condition : Non-Operating mode<br>7. Reference IEC 60068-2-6 Testing procedures<br><br>Package Vibration Test:<br>1 Test PSD : 0.026G²/Hz , 2.16 Grms<br>2 Test frequency : 5~500 Hz<br>3 Test axis : X,Y and Z axis<br>4 Test time : 30 minutes per each axis<br>5 IEC 60068-2-64 Test Fh |
| **Shock Test** | 1. Wave form：Half Sine wave<br>2. Acceleration Rate：10g<br>3. Duration Time：11ms<br>4. No. of Shock：Z axis 300 times<br>5. Test Axis: Z axis<br>6. Operation mode<br>7. Reference IEC 60068-2-27 Testing procedures<br>Test Eb : Bump Test |
| **Package Vibration Test** | 1. Test PSD : 0.026G²/Hz , 2.16 Grms<br>2. Test frequency : 5~500 Hz<br>3. Test axis : X,Y and Z axis<br>4. Test time : 30 minutes per each axis<br>5. IEC 60068-2-64 Test Fh |
| **Drop Test** | Package Drop<br>Reference ISTA 2A, Method : IEC-60068-2-32 Test: Ed<br>Drop Test<br>1 One corner , three edges, six faces<br>2 ISTA 2A, IEC-60068-2-32 Test:Ed |
| **IP Rating** | IPX1 Grade Protection |
| **Software Support** | |
| **OS Information** | Windows 10, Windows 11, Linux |

**Note:** Specifications are subject to change without notice.

## 1.3 System Overview

### 1.3.1 I/O View

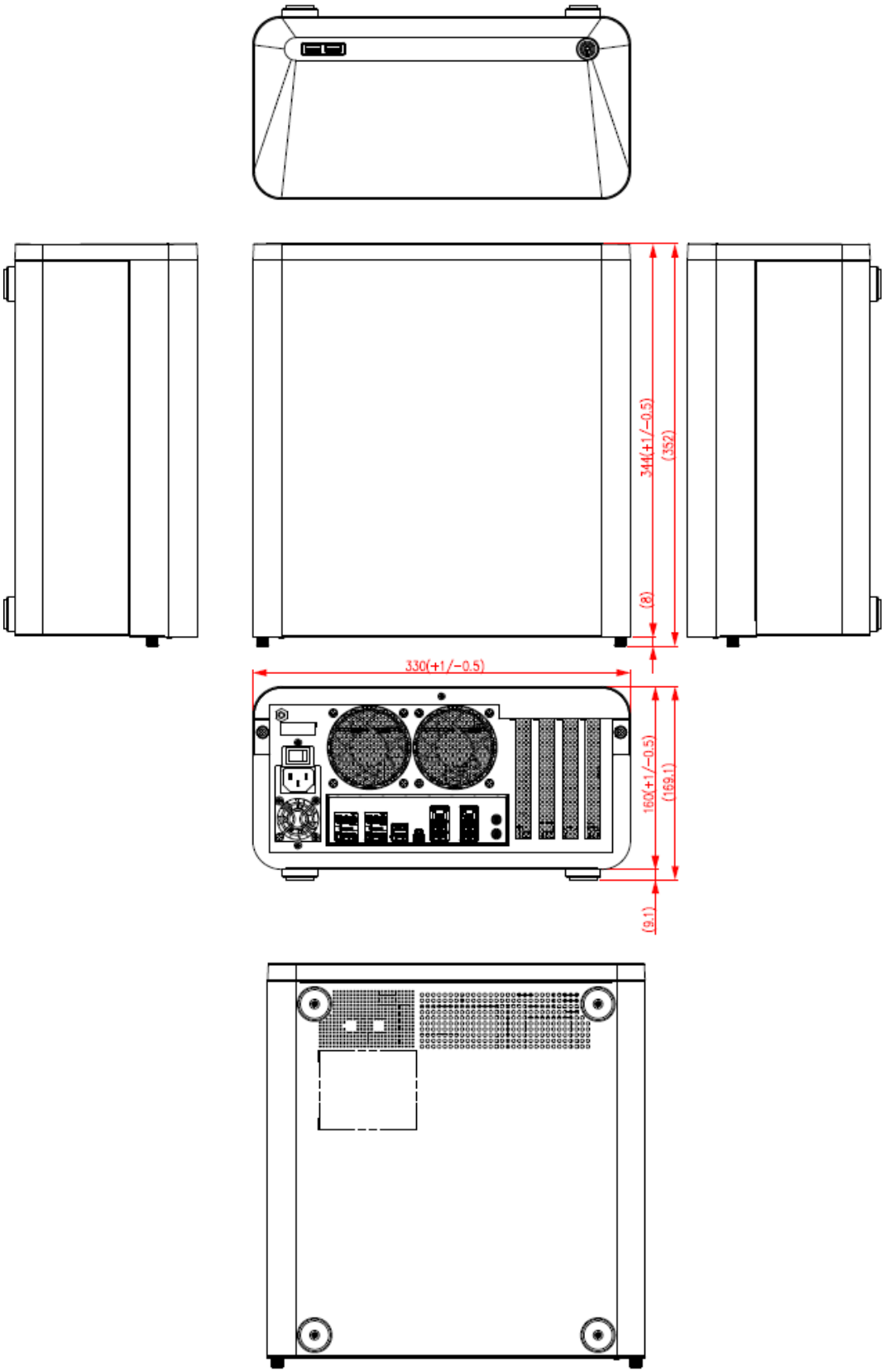



### Connectors

| Label | Function | Note |
|---|---|---|
| **Power** | Power on button | |
| **USB 2.0** | 2 x USB2.0 connector | |
| **USB 3.2** | 6 x USB3.2 connector | |
| **USB Type-C** | USB Type-C connector | |
| **LAN** | 2 x RJ-45 Ethernet | suggest using shielded LAN cables to increase stability. |
| **DP** | 4 x DP connector | |
| **LINE OUT** | Line-out audio jack | |
| **MIC IN** | Mic-in audio jack | |
| **Power** | Power switch | |

## 1.4 System Dimensions




**(Unit: mm)**

## 1.5 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 (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- RX680R included in this manual.

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

www.avalue.com

## 2.1 Powering On the System

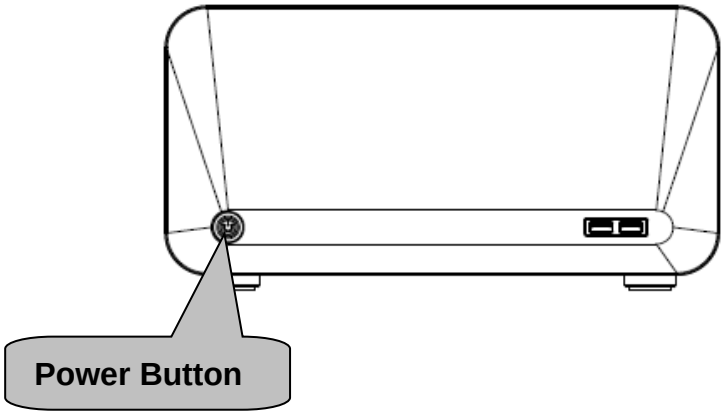
WARNING:

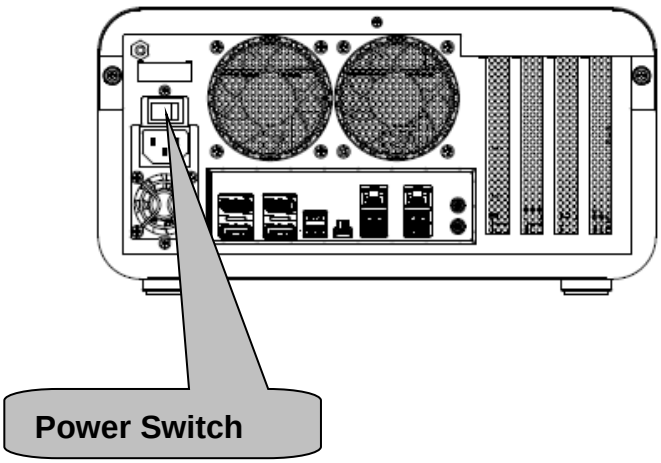
Make sure a power supply with the correct input voltage is being fed into the system. Incorrect voltages applied to the system may cause damage to the internal electronic components and may also cause injury to the user.

- Power on the system: press the power button for 3 seconds.
- Power off the system: press the power button for 6 seconds.

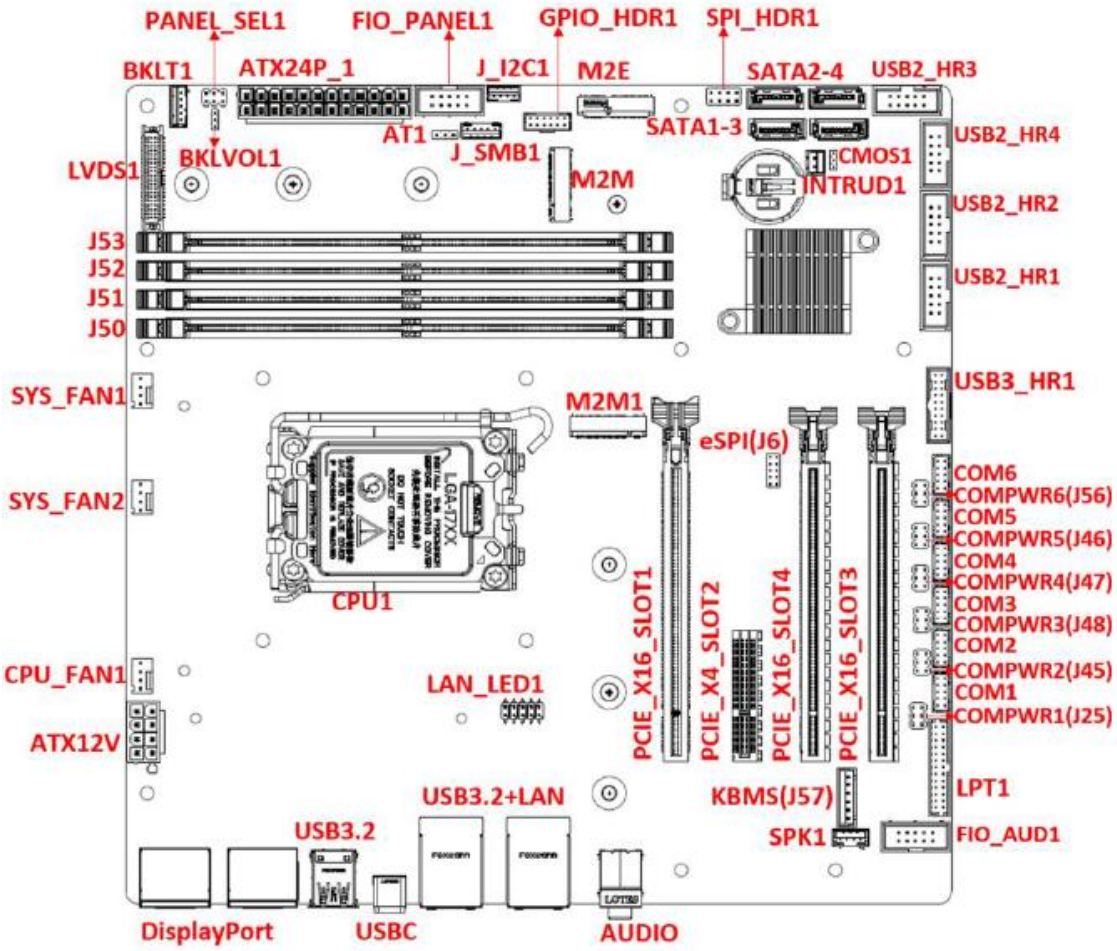
## 2.2 Connecting to Power Supply

Connect the power cord to the rear of the Box PC: First, insert the power cord into the power connector at the back of the device. Then, plug the power cord plug into the socket of the power source. Finally, turn on the power switch. The supported power input voltages is 100V-240V.



## 2.3 RX680R Overviews



## 2.4 RX680R Jumpers & Connectors list

**Jumpers**

| Label | Function | Note |
|---|---|---|
| **PANEL_SEL1** | LVDS Panel Power Select | 2 x 3 header, pitch 2.54mm |
| **BKLVOL1** | LVDS Blacklight Control | 1 x 3 header, pitch 2.00mm |
| **AT1** | AT/ATX Mode Select | 1 x 3 header, pitch 2.54mm |
| **CMOS1** | Clear CMOS | 1 x 3 header, pitch 2.00mm |
| **J56,J45~J48,J25** | COM1~COM6 Power Setting | 2 x 3 header, pitch 2.54mm |

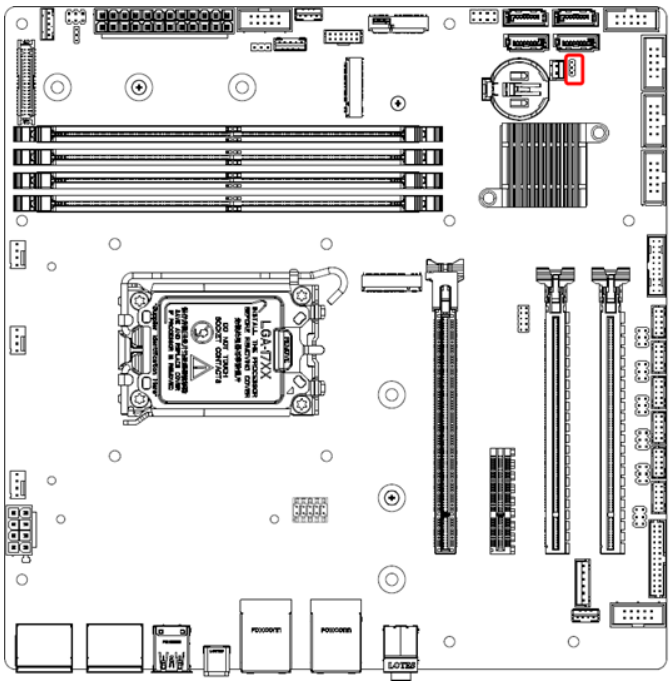
**Connectors**

| Label | Function | Note |
|---|---|---|
| **CPU1** | LGA 1700 Socket | |
| **J50~J53** | DDR5 UDIMM Slots | Dual channel (2DPC) |
| **PCIE_X16_SLOT1** | Gen 5 PCIe | x16 Physical Black (Slot1) |
| **PCIE_X4_SLOT2** | Gen 3 PCIe | x4 Open Ended (Slot 2) |
| **PCIE_X16_SLOT4** | Gen 4 PCIe | x4 (x16 Physical Yellow) (Slot 4) |
| **PCIE_X16_SLOT3** | Gen 4 PCIe | x4 (x16 Physical Yellow) (Slot 3) |
| **M2M1** | Gen 4 PCIe x4 + SATA III | M Key |
| **M2M** | Gen 3 PCIe x4 + SATA III | M Key |
| **M2E** | PCIe x 1 + USB 2.0 support | |
| **DisplayPort** | DisplayPort Connectors x4 | |
| **USB3.2** | USB 3.2 Type A Connectors x2 | |
| **USBC** | USB 3.2 Type C Connector x1 | |
| **USB3.2+LAN** | RJ45 Ethernet Connectors x2 | 2.5 Gigabit Ethernet |
| **AUDIO** | Audio Phone Jack | Lin-out, Mic-in |
| **CPU_FAN1** | CPU FAN Connector | WAFER 1x4, 2.54mm |
| **SYS_FAN1** | Chassis Fan Connector | WAFER 1x4, 2.54mm |
| **SYS_FAN2** | Chassis Fan Connector | WAFER 1x4, 2.54mm |
| **FIO_PANEL1** | Front Panel Connector | BOX header 2x5P, 2.54mm |
| **ATX24P_1** | ATX Power Connector | PWR Conn 2x12P |
| **ATX12V** | 12V ATX Power Connector | PWR Conn 2x4P |
| **COM1~COM6** | Serial Port Connectors | WAFER 2x5P, 2.00mm |
| **SATA1~4** | SATA Connectors | Male Connectors (RED) |
| **USB2_HR1~4** | Front USB 2.0 Headers | BOX header 2x5P, 2.54mm |

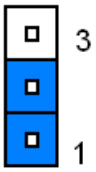
| | | |
|---|---|---|
| **USB3_HR1** | Front USB 3.2 Header | BOX header 2x10P, 2.00mm |
| **FIO_AUD1** | Front Audio Connector | BOX header 2x5P, 2.54mm |
| **SPK1** | Amplifier Connector | WAFER 1x4P, 2.00mm |
| **LVDS1** | LVDS signals connector | Con. 2x20P, 1.25mm |
| **INTRUD1** | Chassis Intrusion Header | WAFER 1x2P, 2.54mm |
| **LAN_LED1** | LAN LED Header | 2x5 header, 2.54mm |
| **BKLT1** | LVDS Backlight Control header | WAFER 1x5P, 2.00mm |
| **LPT1** | Parallel Port Connector | WAFER 2x13P, 2.0mm |
| **GPIO_HDR1** | GPIO 8 bits Connector | WAFER 2x6P, 2.00mm |
| **J_I2C1** | I2C Connector | WAFER 1x4P, 2.00mm |
| **J_SMB1** | SMBUS Connector | WAFER 1x5P, 2.00mm |
| **SPI_HDR1** | SPI Header | 2x4 header, 2.54mm |
| **J6** | eSPI Header | 2x5 header, 2.00mm |
| **J57** | KBMS Header | WAFER 1x 6P, 2.54mm |

## 2.5 RX680R Jumpers & Connectors settings

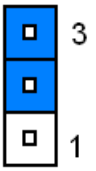
### 2.5.1 Clear CMOS (CMOS1)



Normal*

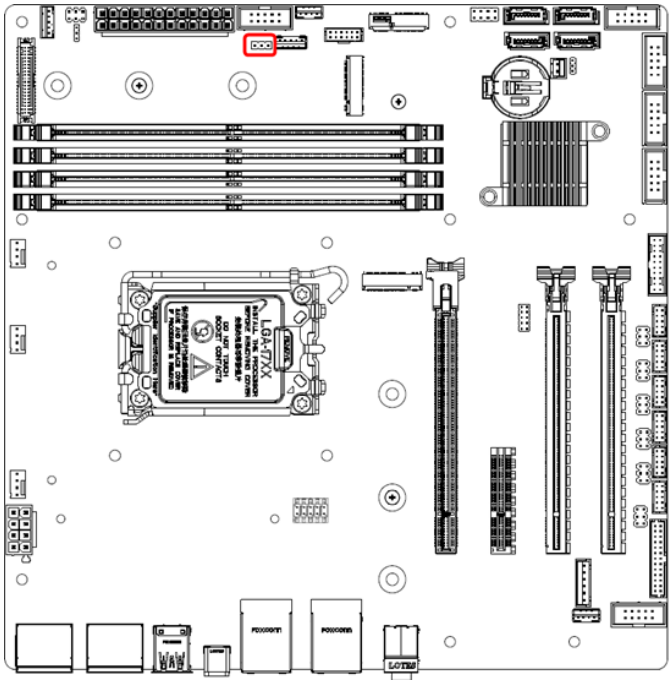



Clear CMOS

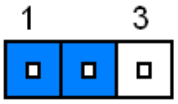



*** Default**

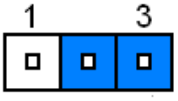
### 2.5.2 AT/ATX Mode Select (AT1)



ATX mode *

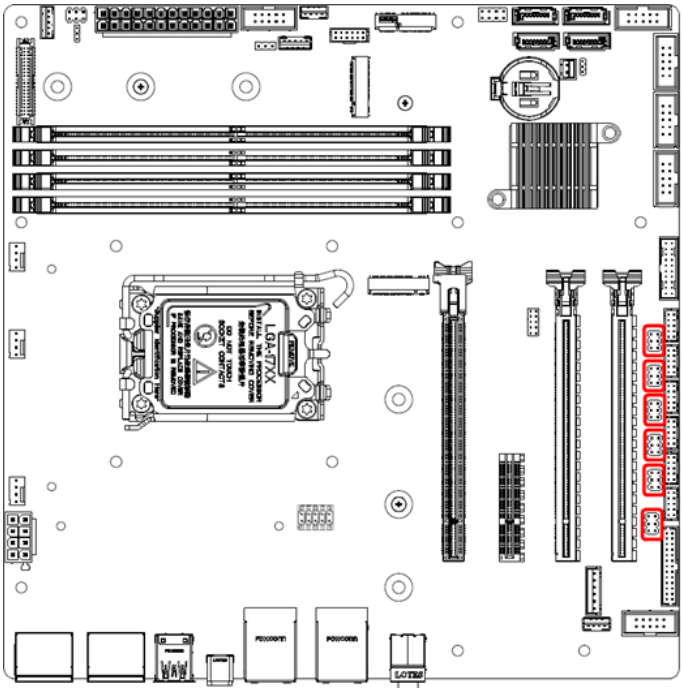



AT mode

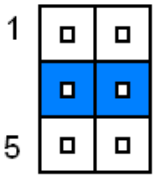



*** Default**

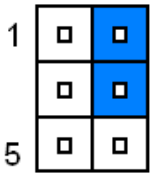
### 2.5.3 COM POWER SETTING (J56,J45~J48,J25)



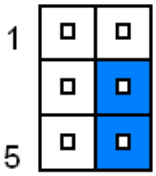
Ring*




+12V

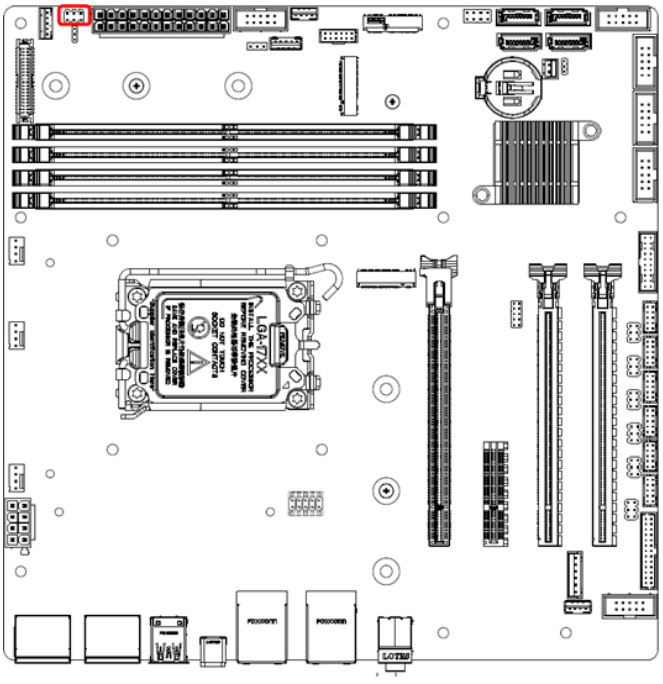



+5V

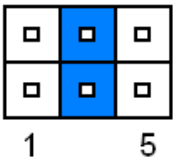



*** Default**

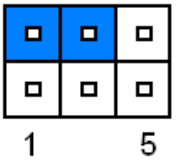
### 2.5.4 LVDS Panel Power Select (PANEL_SEL1)



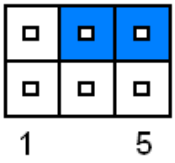
+12V




+3V

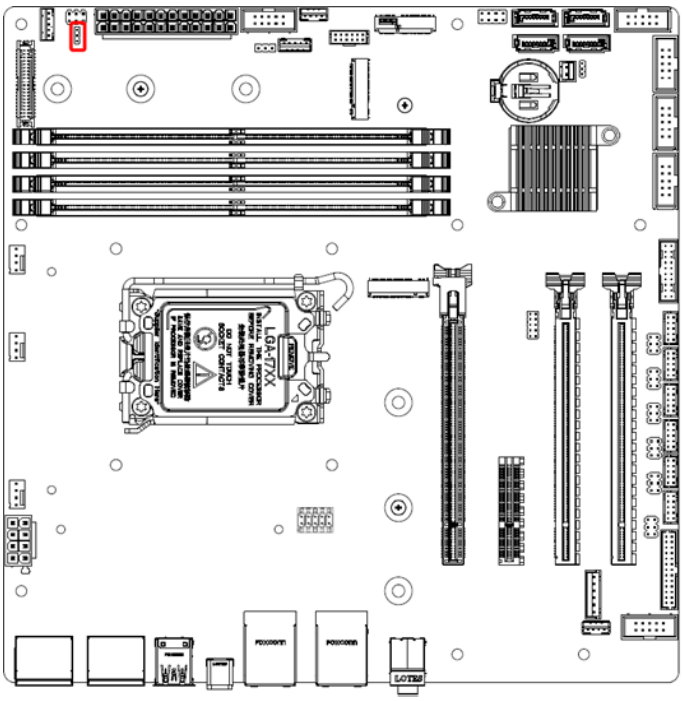


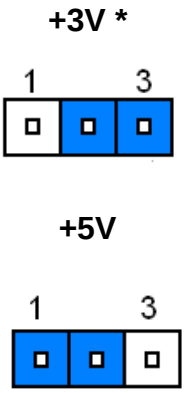

+5V*




*** Default**

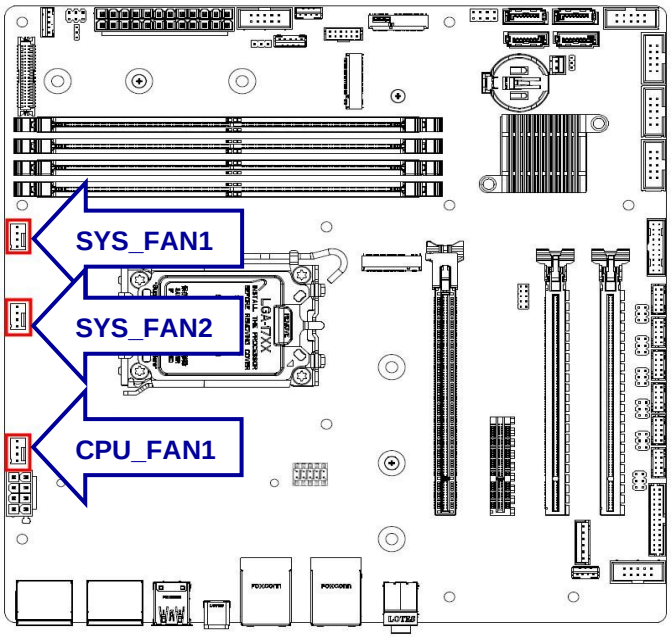
### 2.5.5 LVDS Blacklight Voltage Selection (BKLVOL1)






*** Default**

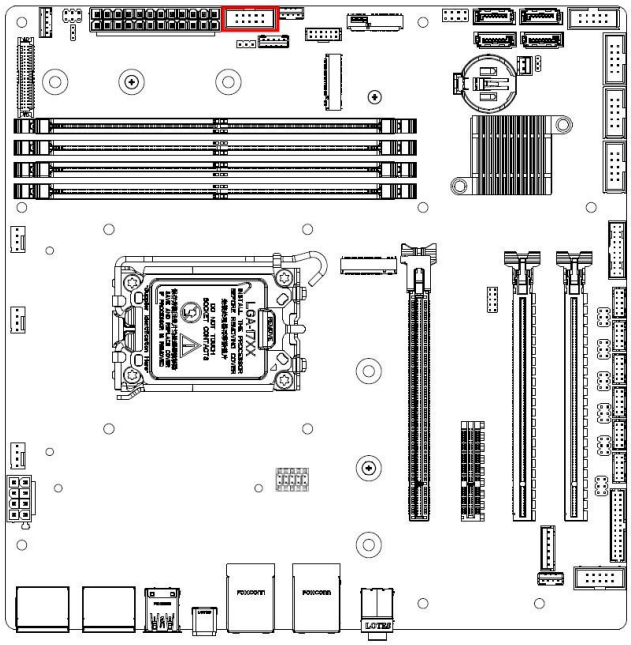
### 2.5.6 CPU and System fan connectors (CPU_FAN1, SYS_FAN1, SYS_FAN2)

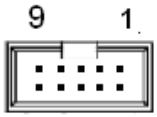




4.FAN CTRL
3.FAN_TACH
2.+12V
1.GND

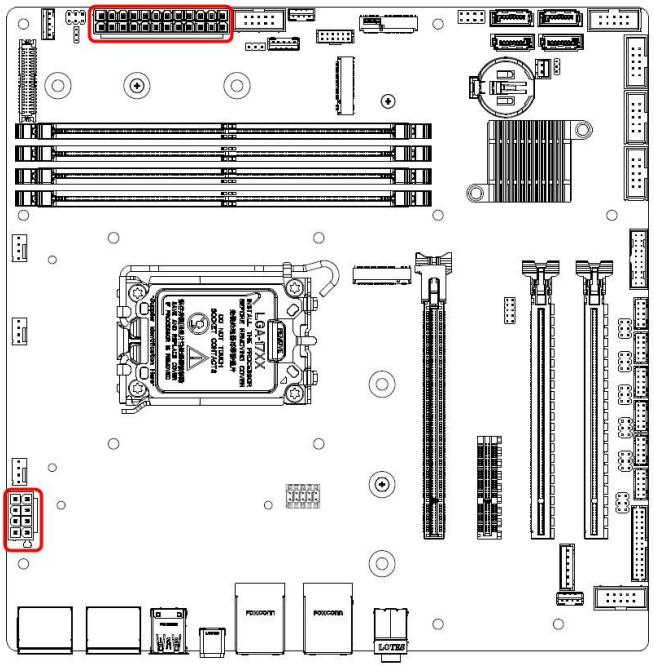
### 2.5.7 System Panel (FIO_PANEL1)



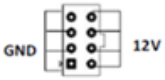



| | |
|---|---|
| 1.HDD LED+ | 2.PWR LED+ |
| 3.HDD LED- | 4.PWR LED- |
| 5.GND | 6.PWR_BTN |
| 7.RST | 8.GND |
| 9.NA | 10.KEY |

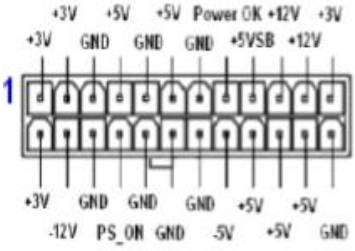
### 2.5.8 ATX power connectors (ATX24P_1 & ATX12V)



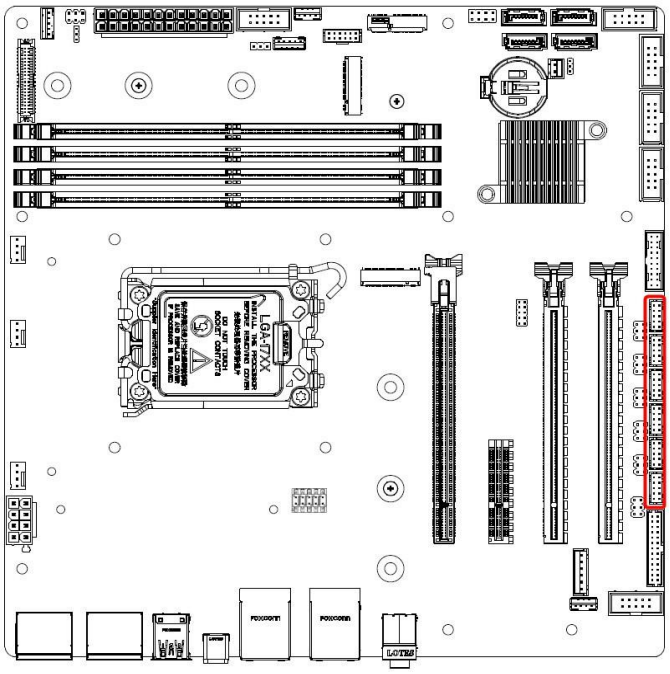
**ATX12V**

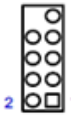



**ATX24P_1**



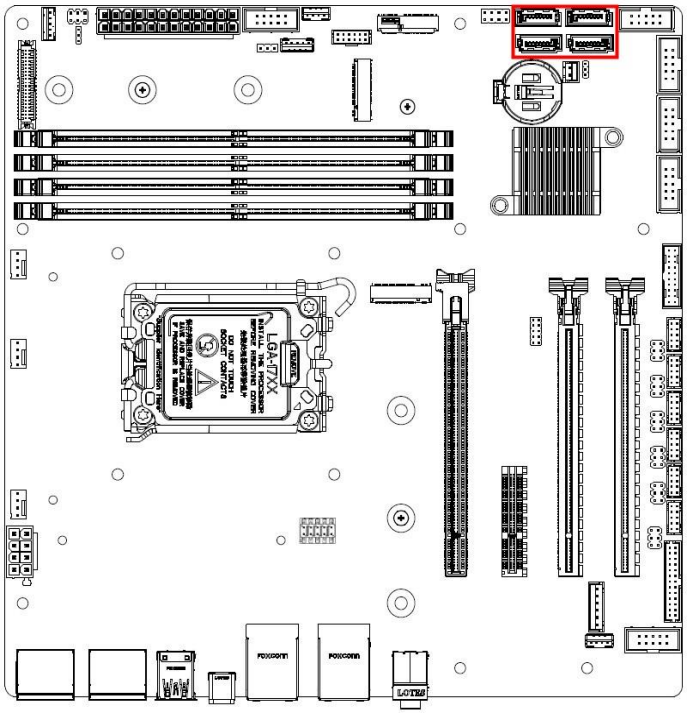
### 2.5.9 Serial Port connectors (COM1~6)





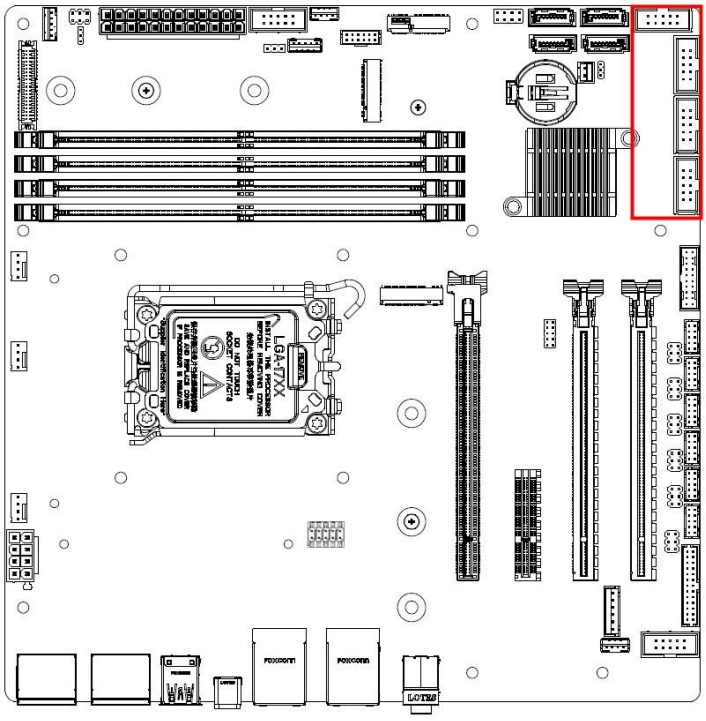

| | |
|---|---|
| | 9.IRxPWRxJMP |
| 8.NCTS | 7.NRTS |
| 6.NDSR | 5.GND |
| 4.NDTR | 3.NTX |
| 2.NRX | 1.NDCD |

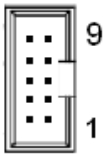
### 2.5.10 Serial ATA connectors (SATA1~4)




1. GND
2. TX+
3. TX-
4. GND
5. RX-
6. RX+
7. GND

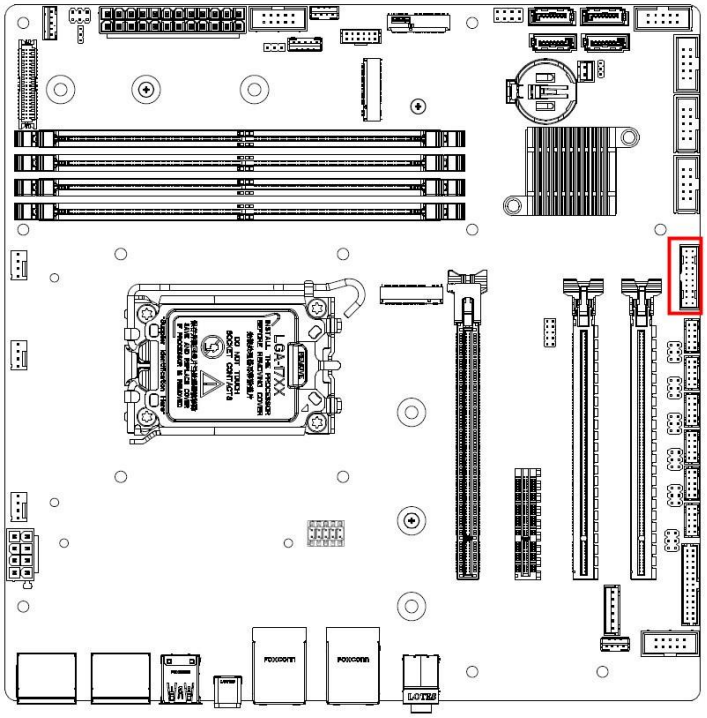
## 2.5.11 USB connectors (USB2_HR1, USB2_HR2, USB2_HR3, USB2_HR4)

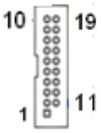





| | |
|---|---|
| 10.KEY | 9.NC |
| 8.GND | 7.GND |
| 6.USB2 D+ | 5.USB2 D+ |
| 4.USB2 D- | 3.USB2 D- |
| 2.+5V USB | 1.+5V USB |

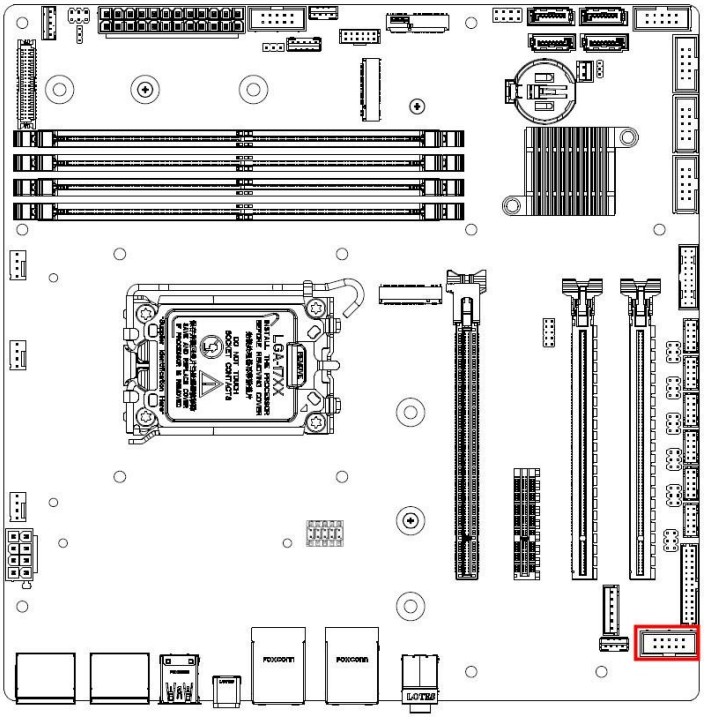
## 2.5.12 USB3.2 connector (USB3_HR1)





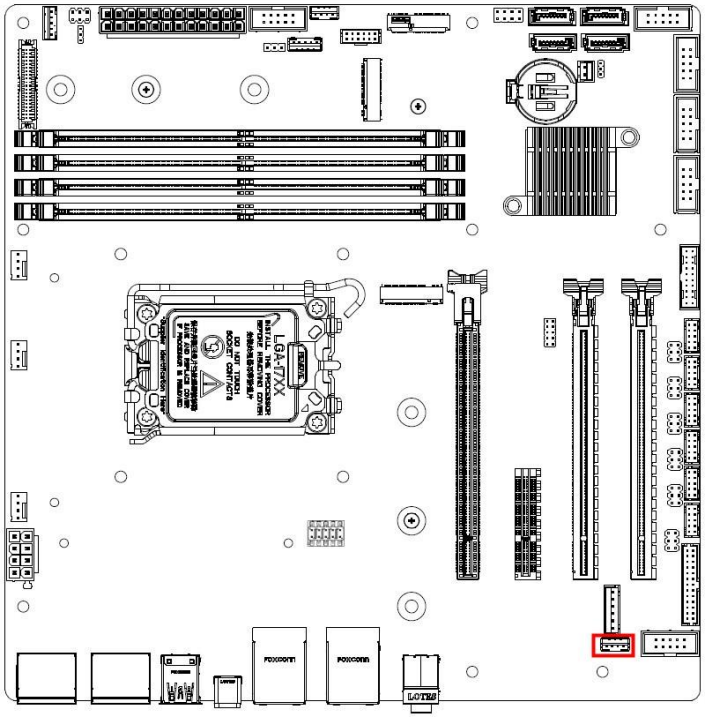

| | |
|---|---|
| 10.NC | 19.+5V USB |
| 9.USB2 D+ | 18.USB3 RX- |
| 8.USB2 D- | 17.USB3 RX+ |
| 7.GND | 16.GND |
| 6.USB3_TX+ | 15.USB3 TX- |
| 5.USB3_TX- | 14.USB3 TX+ |
| 4.GND | 13.GND |
| 3.USB3_RX+ | 12.USB2 D- |
| 2.USB3_RX- | 11.USB2 D+ |
| 1.+5V USB | |

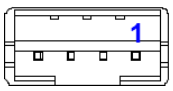
## 2.5.13 Front Audio connector (FIO_AUD1)




| | |
|---|---|
| 1.MIC2_L | 2.GND |
| 3.MIC2_R | 4.FP_HDADET |
| 5.LINE2_R | 6.MIC2_JD |
| 7.FR-IO-SENSE | 8.KEY |
| 9.LINE2_L | 10.LINE2_JD |

## 2.5.14 Amplifier connector (SPK1)





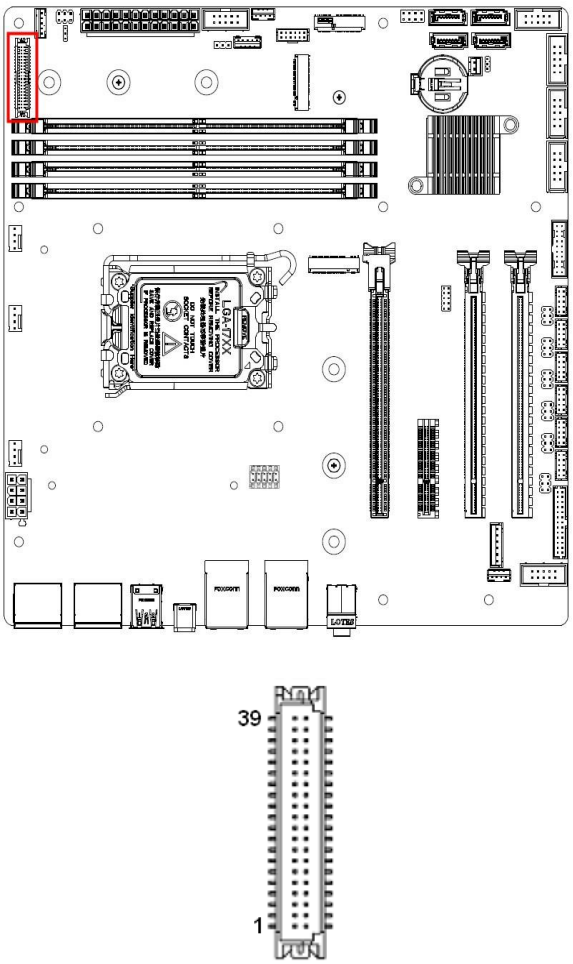

1.ROUT-

2.ROUT+

3.LOUT-

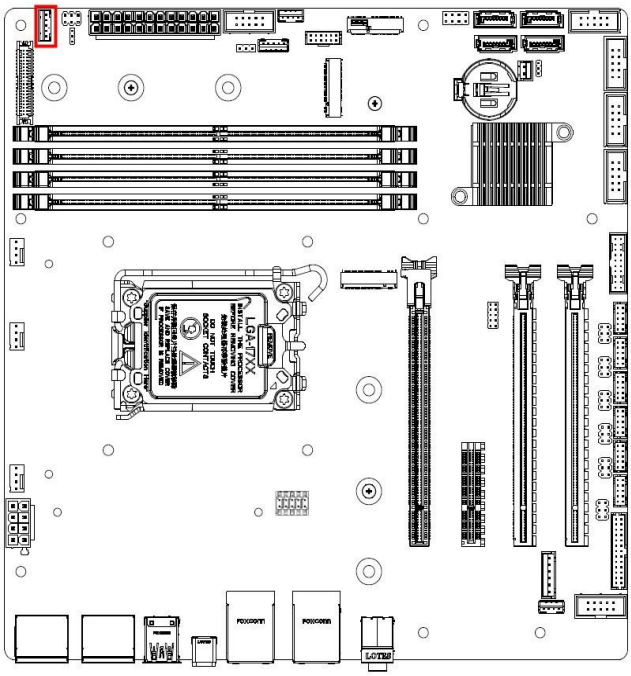
4.LOUT+

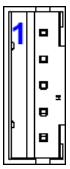
## 2.5.15 LVDS connector (LVDS1)




| | |
|---|---|
| 39.BKLT_+12V | 40.BKLT_+12V |
| 37.GND | 38.GND |
| 35.LS1_CLK_D- | 36.LS0_CLK_D- |
| 33.LS1_CLK_D+ | 34.LS0_CLK_D+ |
| 31.GND | 32.GND |
| 29.LS1_L3_D- | 30.LS1_L2_D- |
| 27.LS1_L3_D+ | 28.LS1_L2_D+ |
| 25.GND | 26.GND |
| 23.LS1_L1_D- | 24.LS1_L0_D- |
| 21.LS1_L1_D+ | 22.LS1_L0_D+ |
| 19.GND | 20.GND |
| 17.LS0_L3_D- | 18.LS0_L2_D- |
| 15.LS0_L3_D+ | 16.LS0_L2_D+ |
| 13.GND | 14.GND |
| 11.LS0_L1_D- | 12.LS0_L0_D- |
| 9.LS0_L1_D+ | 10.LS0_L0_D+ |
| 7.CABLE_ID1 | 8.GND |
| 5.LS_SCL | 6.LS_SDA |
| 3.+3V | 4.+5V(PANEL_PWR) |
| 1.+3V | 2.+5V(PANEL_PWR) |

## 2.5.16 LVDS Backlight connector (BKLT1)






1.+12V_BL

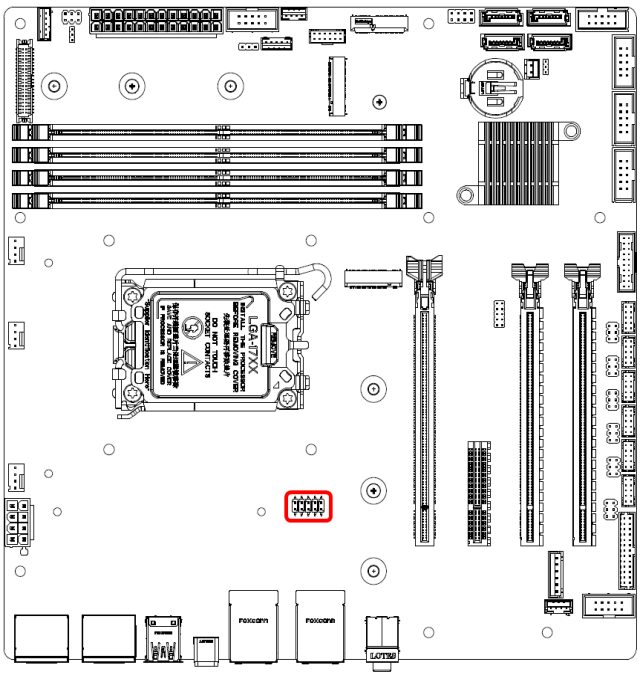
2.GND

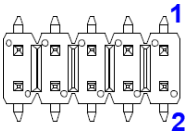
3.BKLT_EN

4.BKLT_PWM

5.+5V_BL

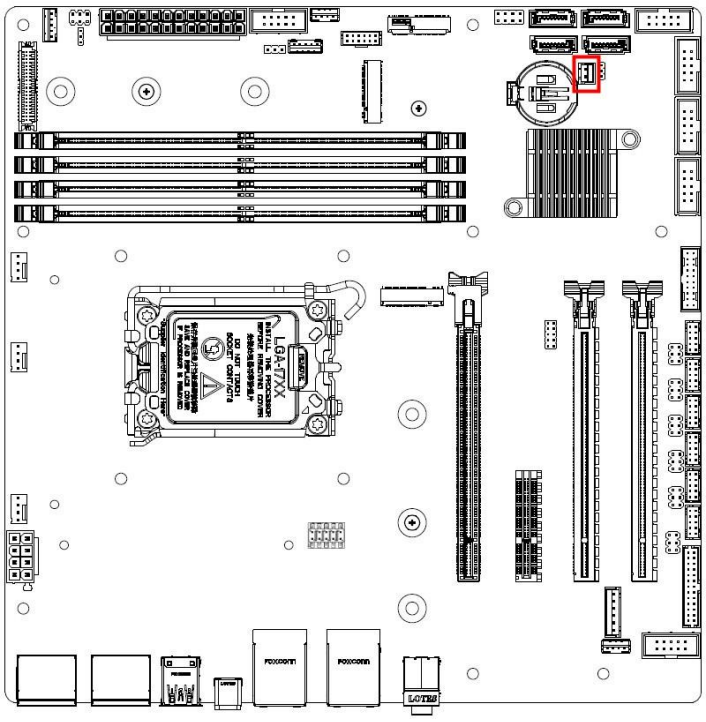
## 2.5.17 LAN LED status connector (LAN_LED1)

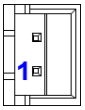





| | |
|---|---|
| 1. 1G_LAN1_LED | 2. 1G_LAN2_LED |
| 3. GND | 4. GND |
| 5. 2.5G_LAN1_LED | 6. 2.5G_LAN2_LED |
| 7. GND | 8. GND |
| 9. LAN1_ACT | 10. LAN2_ACT |

## 2.5.18 Chassis intrusion connector (INTRUD1)

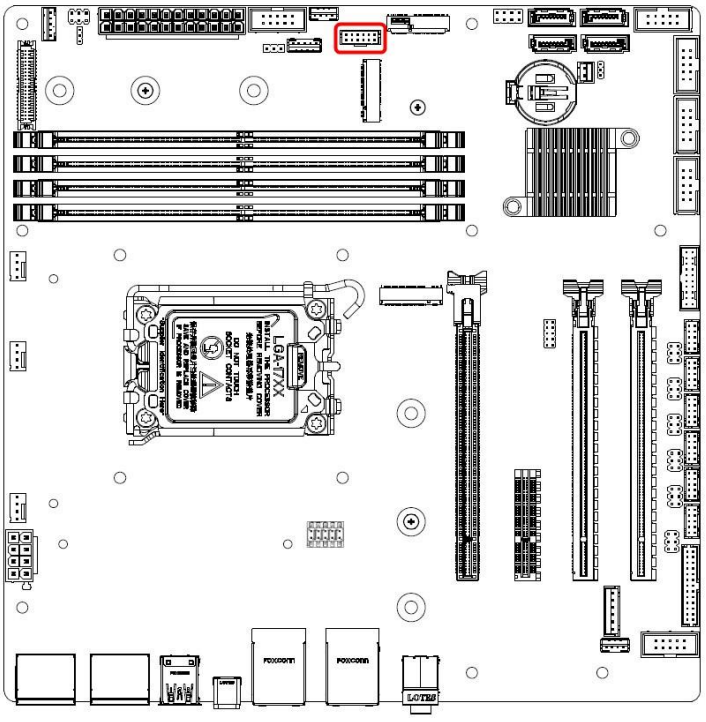


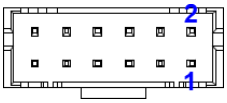



1.PCH_INTRUDER#

2.GND

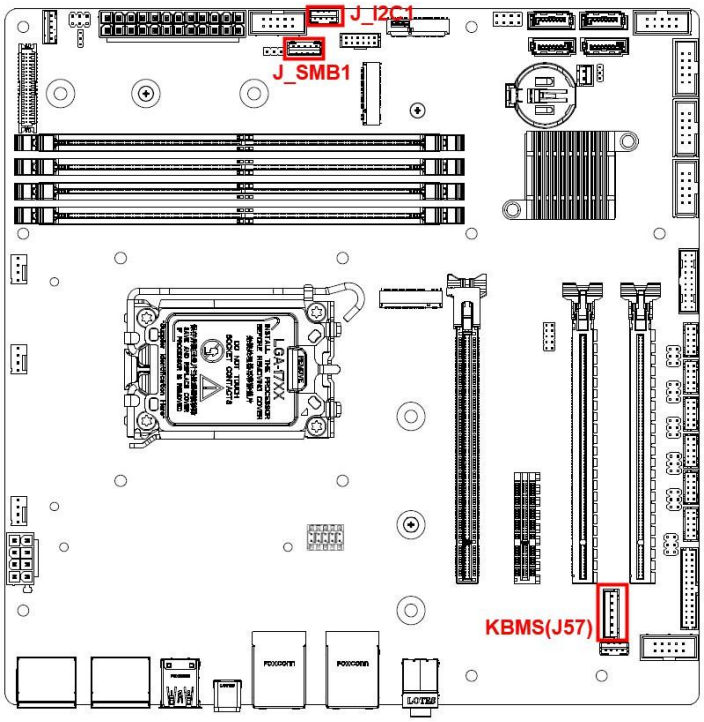
## 2.5.19 8-bit GPIO header (GPIO_HDR1)

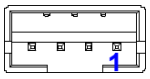




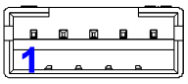

| | |
|---|---|
| 1. AP_GPIO1 | 2. AP_GPIO5 |
| 3. AP_GPIO2 | 4. AP_GPIO6 |
| 5. AP_GPIO3 | 6. AP_GPIO7 |
| 7. AP_GPIO4 | 8. AP_GPIO8 |
| 9. SMB_CLK | 10. SMB_DATA |
| 11.GND | 12. +3V_DUAL |

## 2.5.20 SMBUS/I2C/KMBS connectors (J_SMB1, J_I2C1, J57)

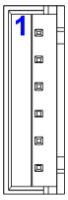



1. +3V_DUAL
2. I2C1_SCL
3. I2C1_SDA
4. GND




1. SMB_CLK
2. SMB_DATA
3. SMB_ALERT
4. GND
5. +3.3V




1. KCLK
2. KDAT
3. MDAT
4. GND
5. +5V_DUAL
6. MCLK

# 3.BIOS Setup

## 3.1 Introduction

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

## 3.2 Starting Setup

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

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

**Press <Del> or <F2> to enter SETUP**

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

**Press F1 to Continue, DEL to enter SETUP**

## 3.3 Using Setup

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

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

- **Navigating Through The Menu Bar**

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

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

- **To Display a Sub Menu**

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

## 3.4 Getting Help

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

## 3.5 In Case of Problems

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

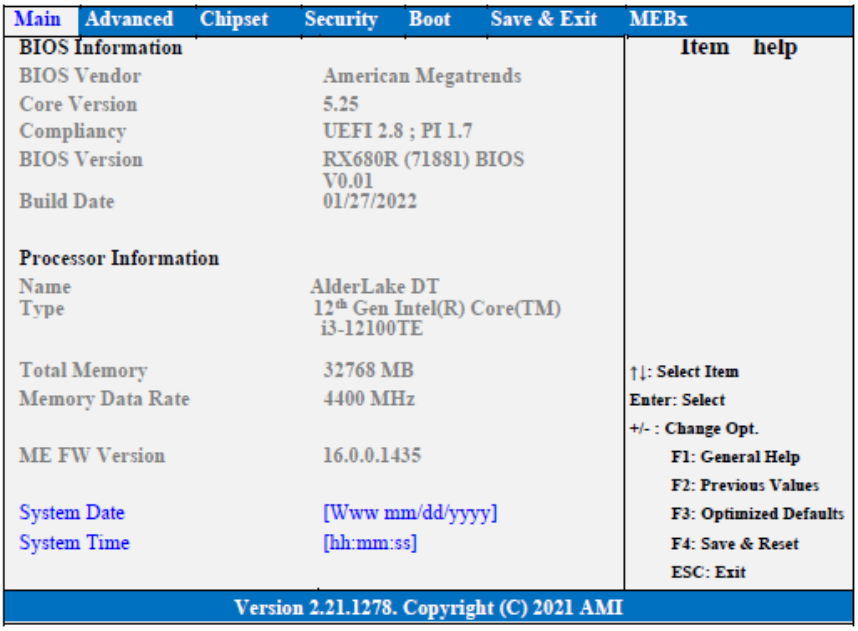
The best advice is to only alter settings which you thoroughly understand. To this end, we strongly recommend that you avoid making any changes to the chipset defaults. These defaults have been carefully chosen by both BIOS Vendor and your systems manufacturer to provide the absolute maximum performance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

## 3.6 BIOS setup

When you enter the BIOS, the following screen appears. The BIOS menu screen displays the items that allow you to make changes to the system configuration. To access the menu items, press the up/down/right/left arrow key on the keyboard until the desired item is highlighted, then press [Enter] to open the specific menu.

### 3.6.1 Main Menu

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




#### 3.6.1.1 System Date

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

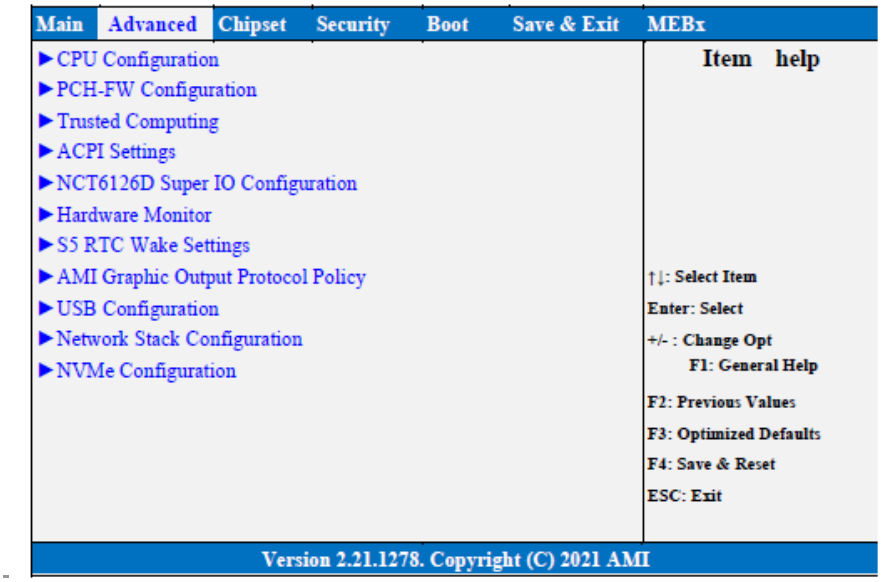
#### 3.6.1.2 System Time

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

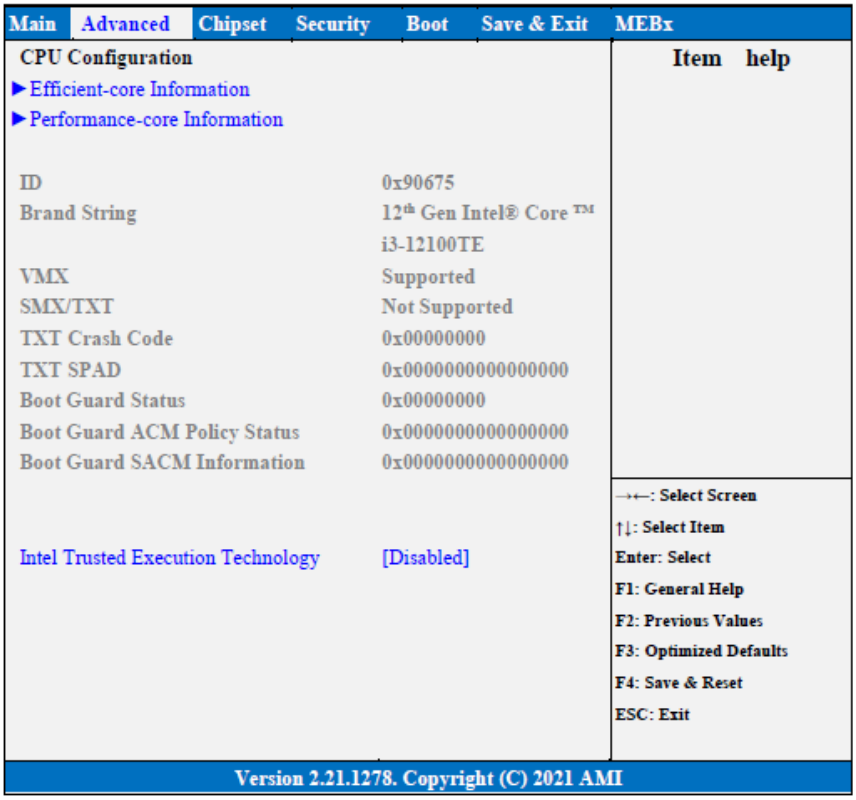
**Note:** The BIOS setup screens shown in this chapter are for reference purposes only, and may not exactly match what you see on your screen.
Visit the Avalue website (www.avalue.com) to download the latest product and BIOS information.

### 3.6.2 Advanced Menu

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

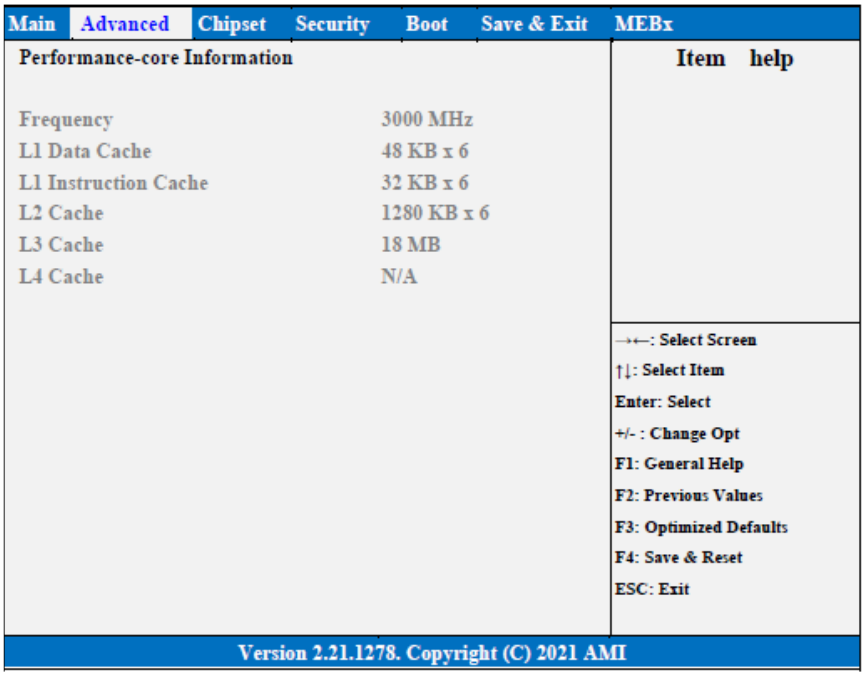



#### 3.6.2.1 CPU Configuration



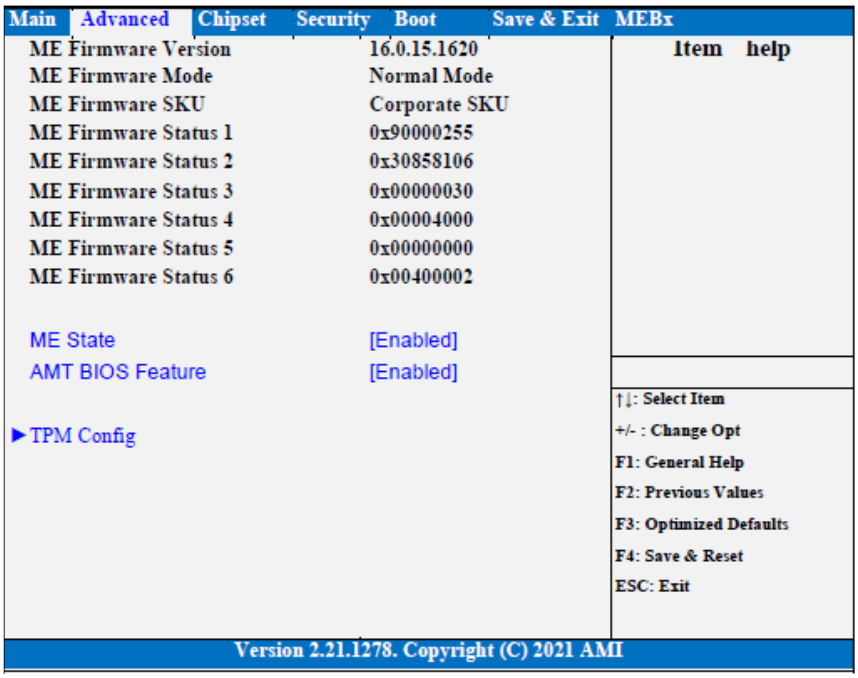

- **Intel Trusted Execution Technology [Disabled]**
  Enables utilization of additional hardware capabilities provided by Intel ® Trusted Execution Technology. Changes require a full power cycle to take effect
  Configuration options: [Disabled] [Enabled]

#### 3.6.2.1.1 Power & Performance



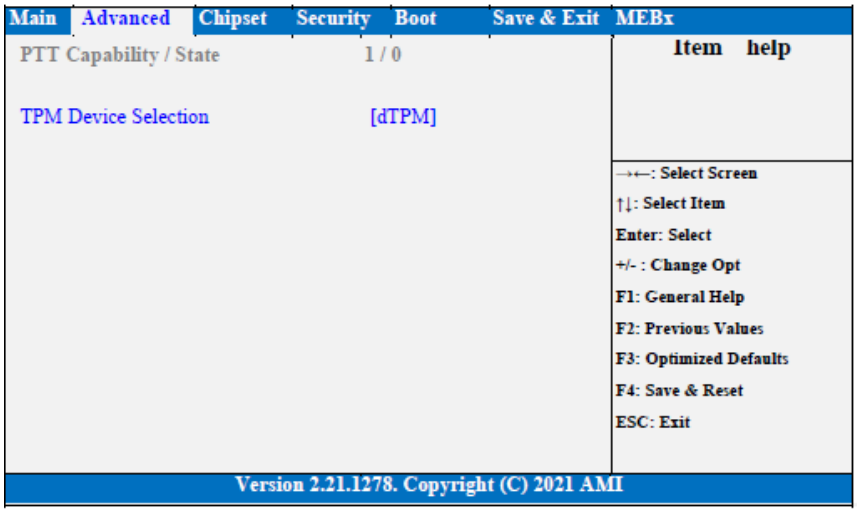

### 3.6.2.2 PCH-FW configuration

Configure Management Engine Technology Parameters




- **ME State [Enabled]**
  When Disabled ME will be put into ME Temporarily Disabled Mode
  options: [Disabled] [Enabled]
- **AMT BIOS Features [Enabled]**
  When disabled AMT BIOS Features are no longer supported and user is no longer able to access MEBx Setup. Note: This option does not disable Manageability Features in FW
  options: [Disabled] [Enabled]

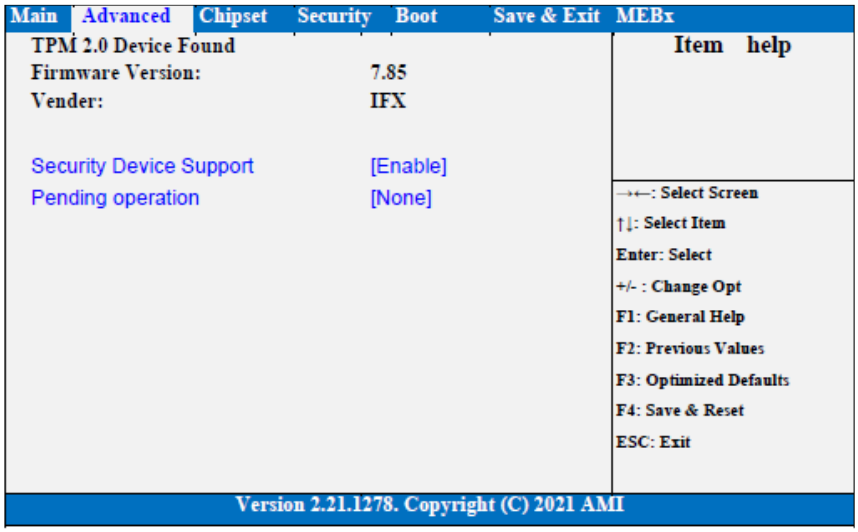
### 3.6.2.2.1 TPM Config




- **TPM Device Selection [dTPM]**

  Selects TPM device: PTT or dTPM. PTT – Enables PTT in SkuMgr
  dTPM 1.2 – Disables PTT in SkuMgr Warning ! PTT/dTPM will be disabled and all dat saved on it will be lost
  options: [dTPM] [PTT]

### 3.6.2.3 Trusted Computing



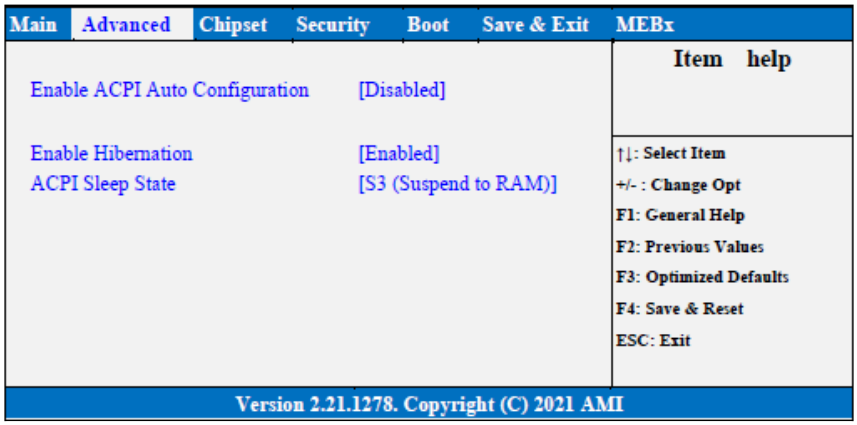

- **Security Device support [Disabled]**

  Enable or Disable BIOS support security device
  Configuration options: [Enable] [Disable]

- **Pending operation [None]**

  Schedule an Operation for the Security Device. NOTE: Your Computer will reboot during restart in order to change State of Security Device
  Configuration options: [None] [TPM Clear]

### 3.6.2.4 ACPI Settings




- **Enable ACPI Auto Configuration [Disabled]**

  Enables or Disables BIOS ACPI Auto Configuration

  Configuration options: [Disabled] [Enabled]

- **Enable Hibernation [Enabled]**

  Enable or Disable system ability to Hibernation (OS/S4 Sleep State).

  This option may not be effective with some operating systems

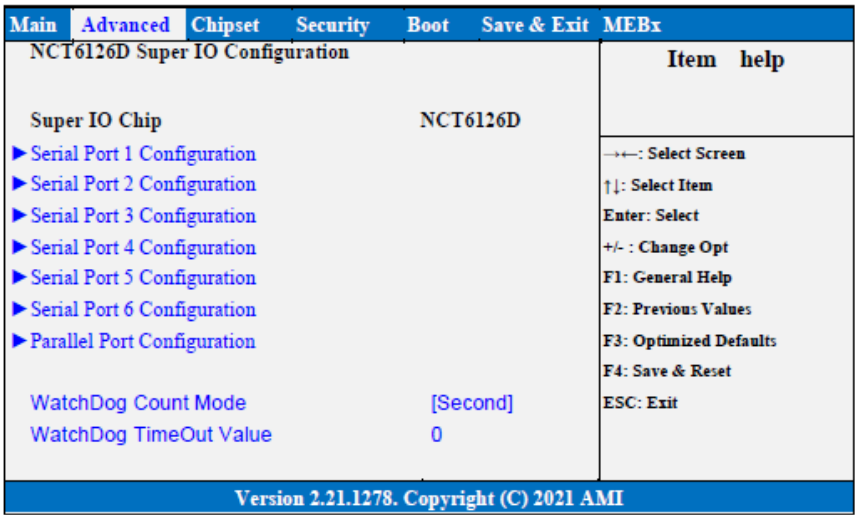
  Configuration options: [Disabled] [Enabled]

- **ACPI Sleep State [S3 (Suspend to RAM)]**

  Select the highest ACPI sleep state the system will enter the SUSPEND button is pressed.

  Configuration options: [Suspend Disabled] [S3 (suspend to RAM)]

### 3.6.2.5 NCT6126D Super IO configuration




- **WatchDog Count Mode [Second]**

  Configure watchDog count mode

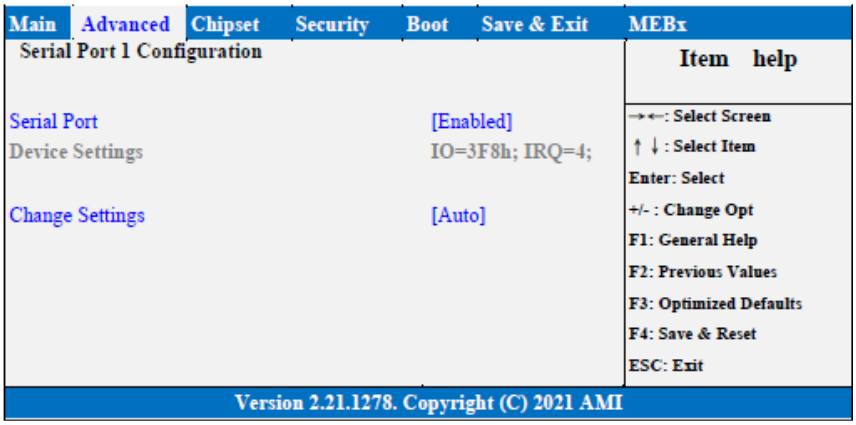
  Configuration options: [Second] [Minute]

- **WatchDog Timeout value [0]**

  Configure watchdog Timeout Value

  Configuration options: 0~255

#### 3.6.2.5.1 Serial Port 1 Configuration




- **Serial Port [Enabled]**

  Enable or Disable serial Port (COM)

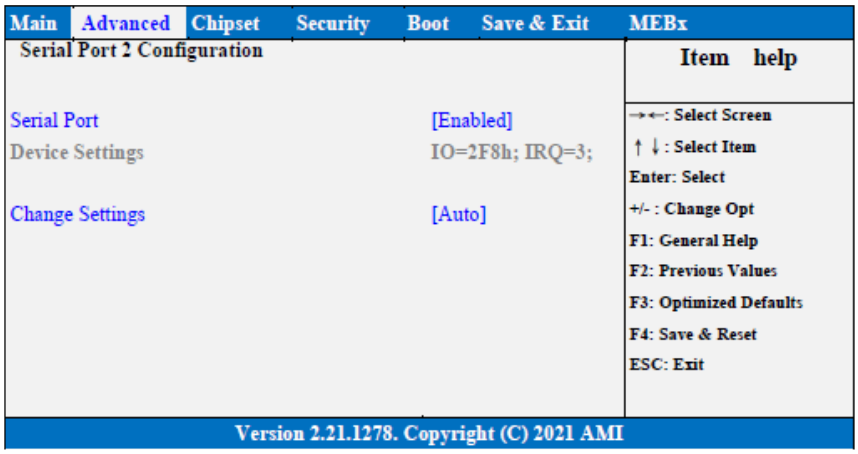
  Configuration options: [Disabled] [Enabled]

- **Change Setting [Auto]**

  Select an optimal settings for super IO device

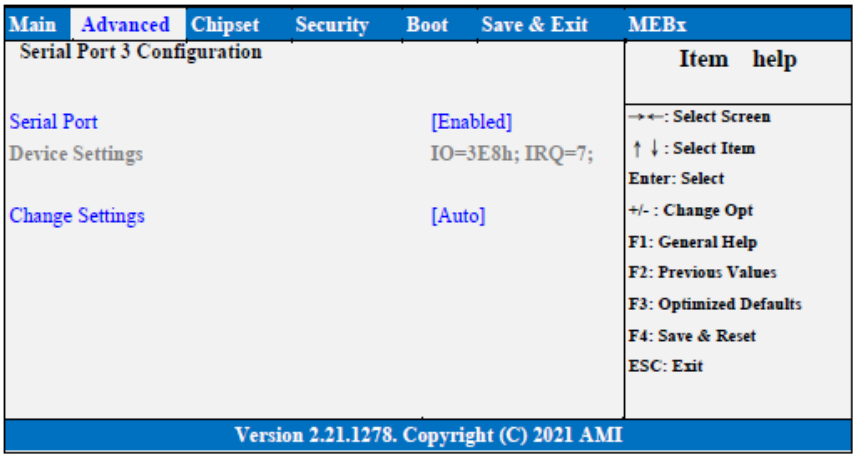
  Configuration options: [Auto] [IO=3F8h; IRQ4] [IO=3F8h; IRQ3,4,5,6,7,9,10,11,12] [IO=2F8h; IRQ3,4,5,6,7,9,10,11,12] [IO=3E8h; IRQ3,4,5,6,7,9,10,11,12] [IO=2E8h; IRQ3,4,5,6,7,9,10,11,12]

### 3.6.2.5.2 Serial Port 2 Configuration



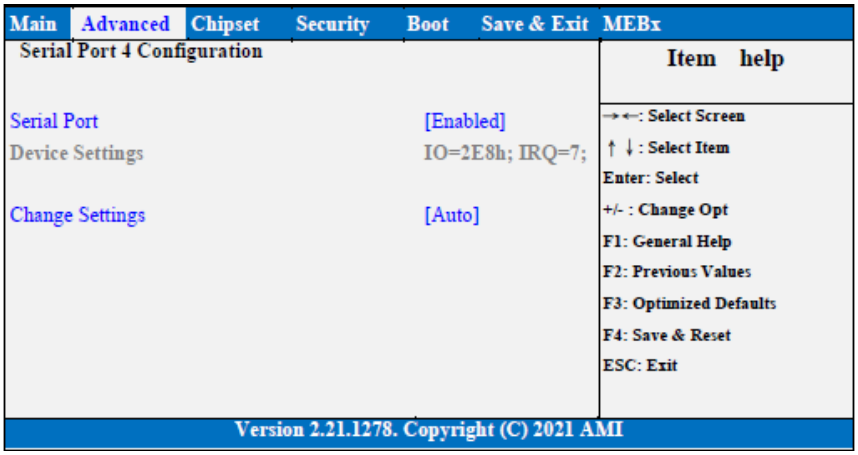

- **Serial Port [Enabled]**
  Enable or Disable serial Port (COM)
  Configuration options: [Disabled] [Enabled]
- **Change Setting [Auto]**
  Select an optimal settings for super IO device
  Configuration options: [Auto] [IO=2F8h; IRQ4] [IO=3F8h; IRQ3,4,5,6,7,9,10,11,12] [IO=2F8h; IRQ3,4,5,6,7,9,10,11,12] [IO=3E8h; IRQ3,4,5,6,7,9,10,11,12] [IO=2E8h; IRQ3,4,5,6,7,9,10,11,12]

### 3.6.2.5.3 Serial Port 3 Configuration



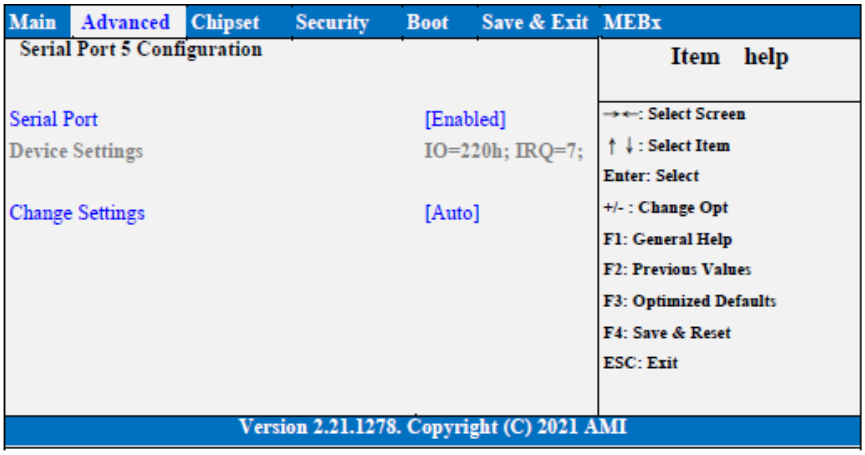

- **Serial Port [Enabled]**
  Enable or Disable serial Port (COM)
  Configuration options: [Disabled] [Enabled]
- **Change Setting [Auto]**
  Select an optimal settings for super IO device
  Configuration options: [Auto] [IO=3E8h; IRQ7] [IO=3E8h; IRQ3,4,5,6,7,9,10,11,12] [IO=2E8h; IRQ3,4,5,6,7,9,10,11,12] [IO=220h; IRQ3,4,5,6,7,9,10,11,12] [IO=228h; IRQ3,4,5,6,7,9,10,11,12]

### 3.6.2.5.4 Serial Port 4 Configuration



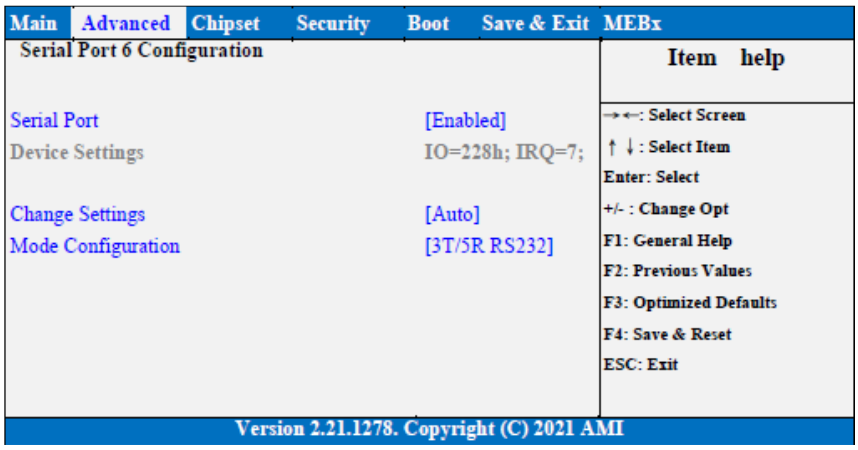

- **Serial Port [Enabled]**
  Enable or Disable serial Port (COM)
  Configuration options: [Disabled] [Enabled]
- **Change Setting [Auto]**
  Select an optimal settings for super IO device
  Configuration options: [Auto] [IO=2E8h; IRQ6] [IO=3E8h; IRQ3,4,5,6,7,9,10,11,12] [IO=2E8h; IRQ3,4,5,6,7,9,10,11,12] [IO=220h; IRQ3,4,5,6,7,9,10,11,12] [IO=228h; IRQ3,4,5,6,7,9,10,11,12]

### 3.6.2.5.5 Serial Port 5 Configuration



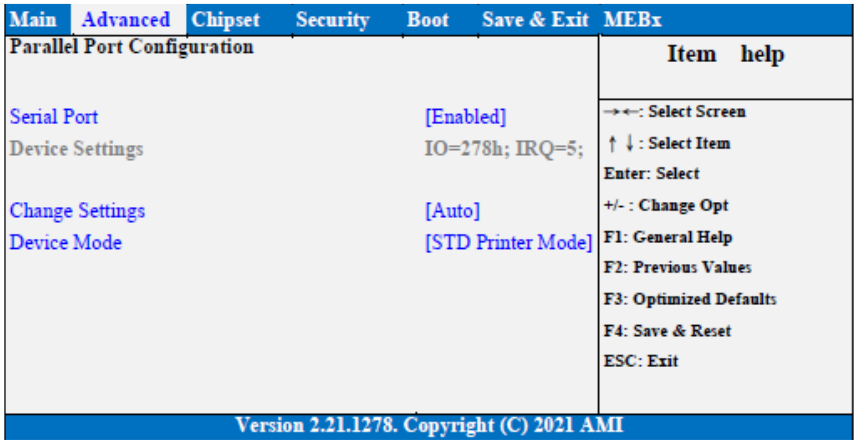

- **Serial Port [Enabled]**
  Enable or Disable serial Port (COM)
  Configuration options: [Disabled] [Enabled]
- **Change Setting [Auto]**
  Select an optimal settings for super IO device
  Configuration options: [Auto][IO=220h; IRQ10][IO=3E8h; IRQ3,4,5,6,7,9,10,11,12] [IO=2E8h; IRQ3,4,5,6,7,9,10,11,12] [IO=220h; IRQ3,4,5,6,7,9,10,11,12] [IO=228h; IRQ3,4,5,6,7,9,10,11,12]

### 3.6.2.5.6 Serial Port 6 Configuration




- **Serial Port [Enabled]**
  Enable or Disable serial Port (COM)
  Configuration options: [Disabled] [Enabled]
- **Change Setting [Auto]**
  Select an optimal settings for super IO device
  Configuration options: [Auto][IO=228h; IRQ11][IO=3E8h; IRQ3,4,5,6,7,9,10,11,12] [IO=2E8h; IRQ3,4,5,6,7,9,10,11,12] [IO=220h; IRQ3,4,5,6,7,9,10,11,12] [IO=228h; IRQ3,4,5,6,7,9,10,11,12]

### 3.6.2.5.7 Parallel Port Configuration

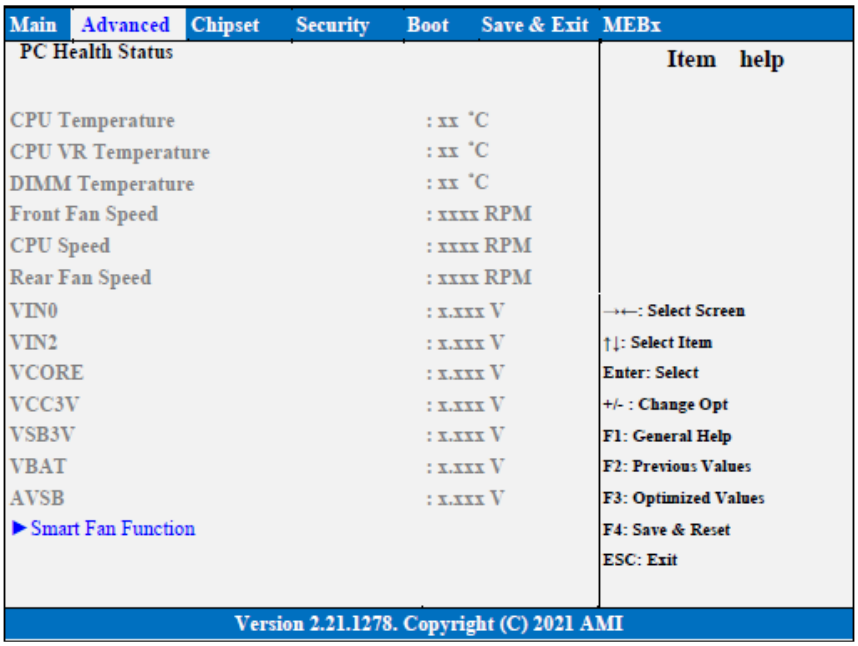



- **Serial Port [Enabled]**
  Enable or Disable serial Port (COM)
  Configuration options: [Disabled] [Enabled]
- **Change Setting [Auto]**
  Select an optimal settings for super IO device
  Configuration options: [Auto][IO=378h; IRQ5][IO=378h; IRQ5,6,7,9,10,11,12] [IO=378h; IRQ5,6,7,9,10,11,12] [IO=278h; IRQ5,6,7,9,10,11,12] [IO=3BCh; IRQ5,6,7,9,10,11,12]

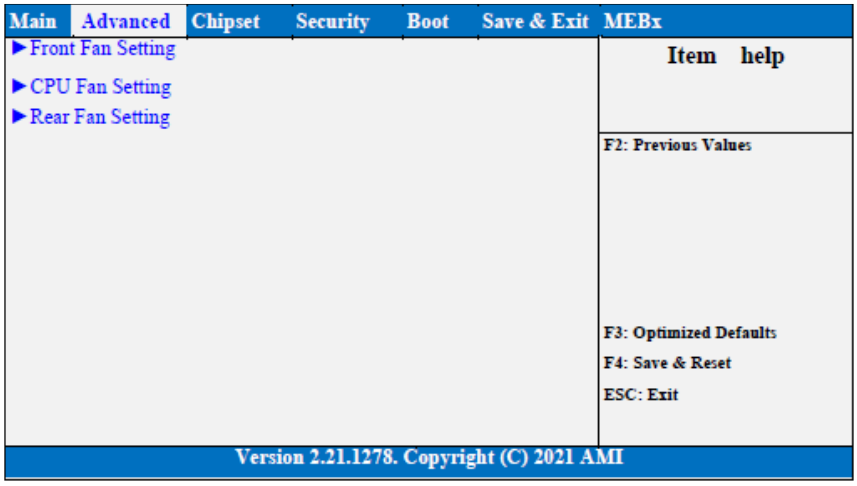
- **Device Mode [STD Printer Mode]**
  Change the Printer Port mode
  Configuration options: [STD Printer Mode SPP Mode]
  [EPP-1.9 and SPP Mode] [EPP-1.7 and SPP Mode ECP Mode]
  [ECP and EPP 1.9 Mode] [ECP and EPP 1.7 Mode]

### 3.6.2.6 Hardware monitor

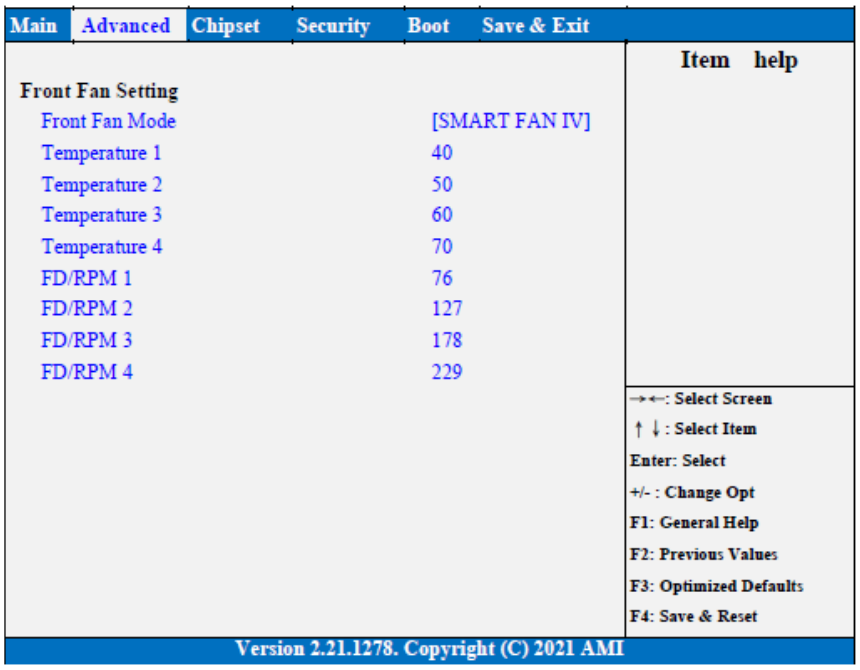
Display Hardware monitor information




#### 3.6.2.6.1 Smart FAN



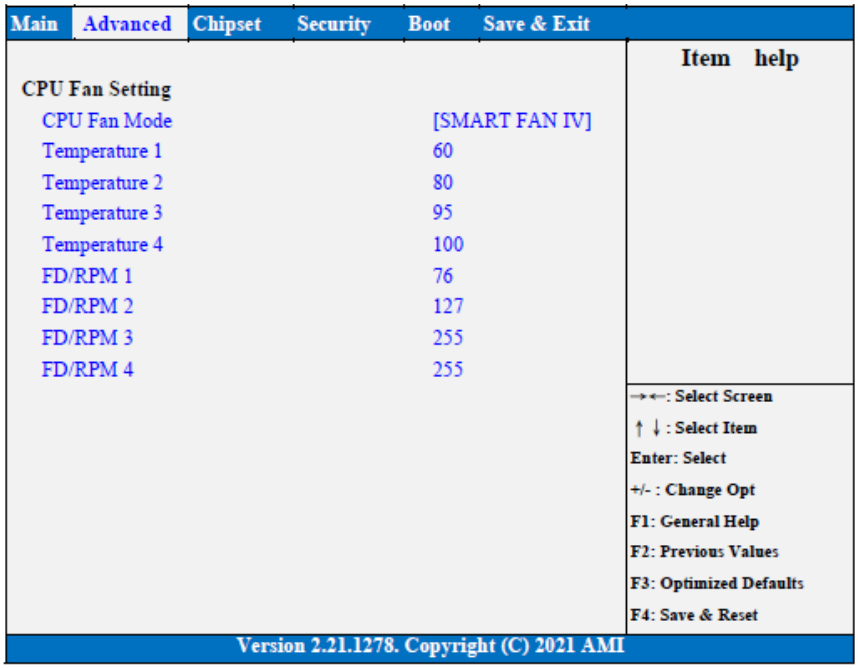
#### 3.6.2.6.1.1 Front FAN Setting




- **Front Fan Mode [SMART FAN IV]**
  Fan control mode select
  Configuration options: [Manual mode] [SMART FAN IV]
- **Temperature 1 [40]**
  The value of temperature 1
  Configuration options: By temperature
- **Temperature 2 [50]**
  The value of temperature 2
  Configuration options: By temperature
- **Temperature 3 [60]**
  The value of temperature 3
  Configuration options: By temperature
- **Temperature 4 [70]**
  The value of temperature 4
  Configuration options: By temperature
- **FD / RPM 1 [76]**
  The value of Fan Duty/RPM 1 when temperature is T1
  Configuration options: By Fan Duty
- **FD / RPM 2 [127]**
  The value of Fan Duty/RPM 2 when temperature is T2
  Configuration options: By Fan Duty
- **FD / RPM 3 [178]**
  The value of Fan Duty/RPM 3 when temperature is T3
  Configuration options: By Fan Duty

- **FD / RPM 4 [229]**
  The value of Fan Duty/RPM 4 when temperature is T4
  Configuration options: By Fan Duty

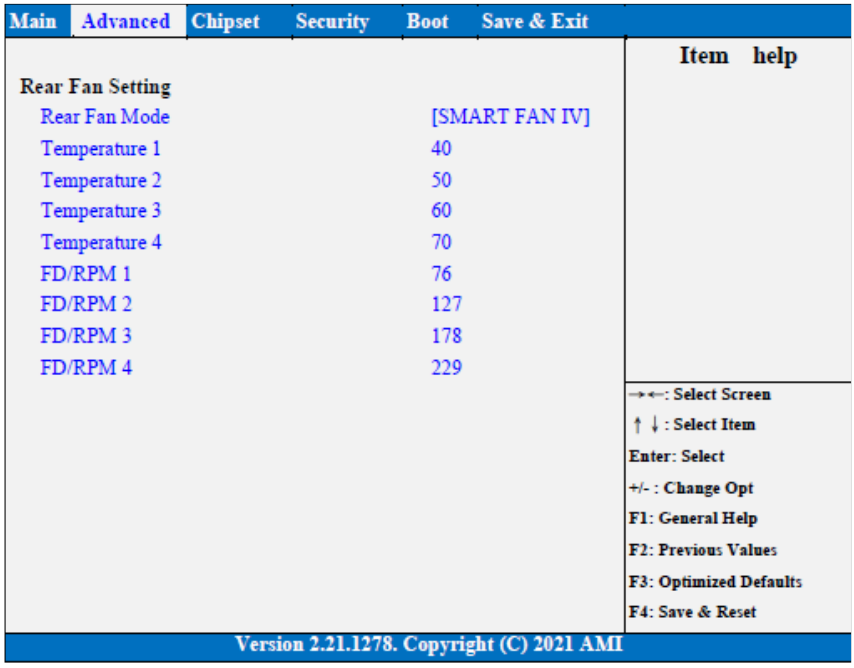
### 3.6.2.6.1.2 CPU FAN Setting




- **CPU Fan Mode [SMART FAN IV]**
  Fan control mode select
  Configuration options: [Manual mode] [SMART FAN IV]
- **Temperature 1 [60]**
  The value of temperature 1
  Configuration options: By temperature
- **Temperature 2 [80]**
  The value of temperature 2
  Configuration options: By temperature
- **Temperature 3 [95]**
  The value of temperature 3
  Configuration options: By temperature
- **Temperature 4 [100]**
  The value of temperature 4
  Configuration options: By temperature
- **FD / RPM 1 [76]**
  The value of Fan Duty/RPM 1 when temperature is T1
  Configuration options: By Fan Duty
- **FD / RPM 2 [127]**
  The value of Fan Duty/RPM 2 when temperature is T2
  Configuration options: By Fan Duty

- **FD / RPM 3 [255]**
  The value of Fan Duty/RPM 3 when temperature is T3
  Configuration options: By Fan Duty
- **FD / RPM 4 [255]**
  The value of Fan Duty/RPM 4 when temperature is T4
  Configuration options: By Fan Duty

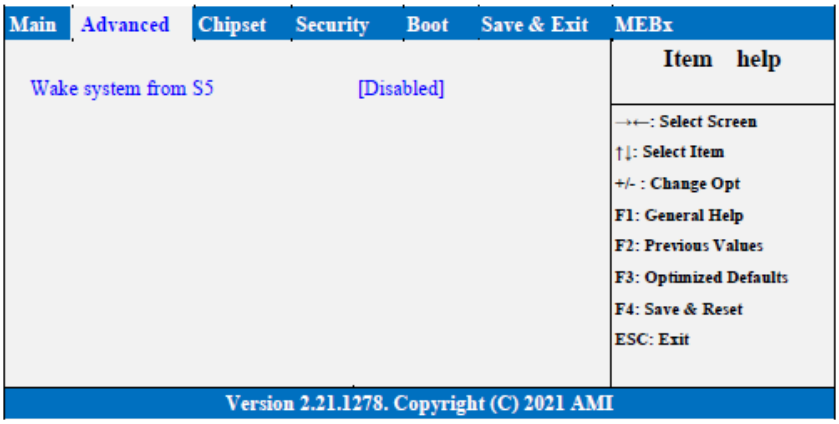
#### 3.6.2.6.1.3 Rear FAN Setting




- **Rear Fan Mode [SMART FAN IV]**
  Fan control mode select
  Configuration options: [Manual mode] [SMART FAN IV]
- **Temperature 1 [40]**
  The value of temperature 1
  Configuration options: By temperature
- **Temperature 2 [50]**
  The value of temperature 2
  Configuration options: By temperature
- **Temperature 3 [60]**
  The value of temperature 3
  Configuration options: By temperature
- **Temperature 4 [70]**
  The value of temperature 4
  Configuration options: By temperature
- **FD / RPM 1 [76]**
  The value of Fan Duty/RPM 1 when temperature is T1
  Configuration options: By Fan Duty

- **FD / RPM 2 [127]**
  The value of Fan Duty/RPM 2 when temperature is T2
  Configuration options: By Fan Duty
- **FD / RPM 3 [178]**
  The value of Fan Duty/RPM 3 when temperature is T3
  Configuration options: By Fan Duty
- **FD / RPM 4 [229]**
  The value of Fan Duty/RPM 4 when temperature is T4
  Configuration options: By Fan Duty

### 3.6.2.7 S5 RTC wake settings

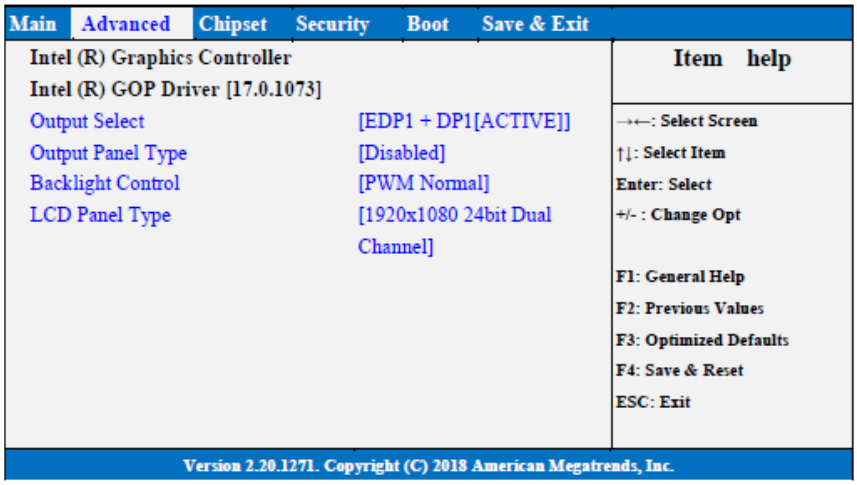



- **Wake system from S5 [Disabled]**

  Enable or disable System wake on alarm event. Select FixedTime, system will wake on the hr::min::sec specified. Select DynamicTime. System will wake on the current time+Increase minute(s).

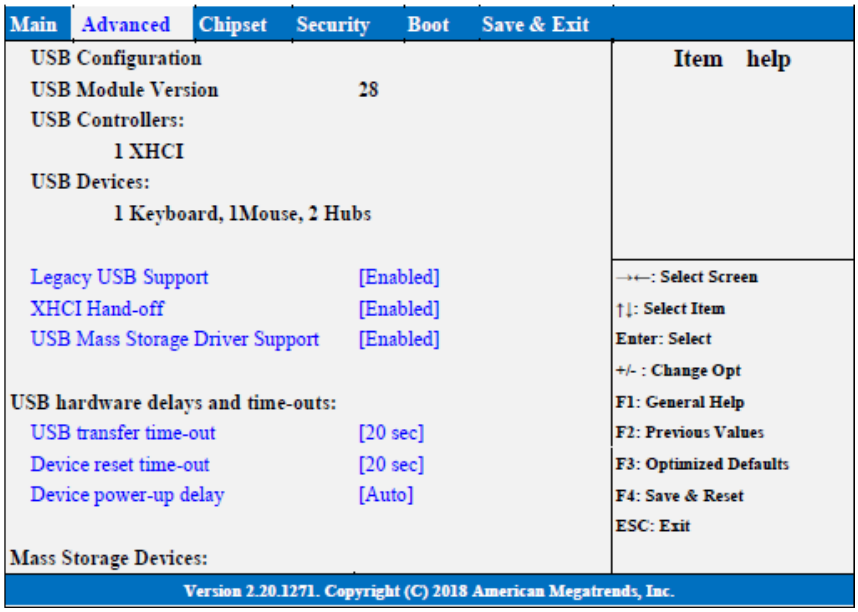
  Configuration options: [Disabled] [Fixed Time] [Dynamic Time]

### 3.6.2.8 AMI Graphic Output Protocol Policy




- **Output Select [EDP1 + DP1[ACTIVE]]**
  Output Interface
  Configuration options: [eDP] [DP1] [DP2] [DP3] [DP4]
- **Output Panel Type [Disabled]**
  Select Output Panel Type
  Configuration options: [eDP] [LVDS] [Disabled]
- **Backlight Control [PWM Normal]**
  Back Light Control Setting
  Configuration options: [PWM Inverted] [PWM Normal]
- **LVDS Panel Type [1920x1080 24bit Dual Channel]**
  Select LVDS panel used by Internal Graphics Device by selecting the appropriate setup item
  Configuration options: [800x600 18bit Single Channel]
  [1024x768 18bit Single Channel] [1024x768 24bit Single Channel]
  [1280x768 18bit Single Channel] [1280x800 24bit Single Channel]
  [1280x960 18bit Single Channel] [1280x1024 24bit Single Channel]
  [1366x768 18bit Single Channel] [1366x768 24bit Single Channel]
  [1440x900 24bit Single Channel] [1440x1050 24bit Single Channel]
  [1600x900 24bit Single Channel] [1680x1050 24bit Single Channel]
  [1600x1200 24bit Single Channel] [1920x1080 24bit Single Channel]
  [1920x1200 24bit Single Channel]

### 3.6.2.9 USB Configuration




- **Legacy USB Support [Enabled]**

  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.

  Configuration options: [Disabled] [Enabled]

- **EHCI Hand-off [Enabled]**

  This is a workaround for OSes without XHCI hand-off support. The XHCI ownership change should be claimed by XHCI driver.

  Configuration options: [Disabled] [Enabled]

- **USB Mass Storage Driver Support [Enabled]**

  Enable/Disable USB Mass Storage Driver Support.

  Configuration options: [Disabled] [Enabled]

- **USB transfer time-out [20 sec]**

  The time-out value for Control, Bulk, and Interrupt transfers.

  Configuration options: [10 sec] [20 sec] [[30 sec] [40 sec]

- **Device reset time-out [20 sec]**

  USB mass storage device Start Unit command time-out.

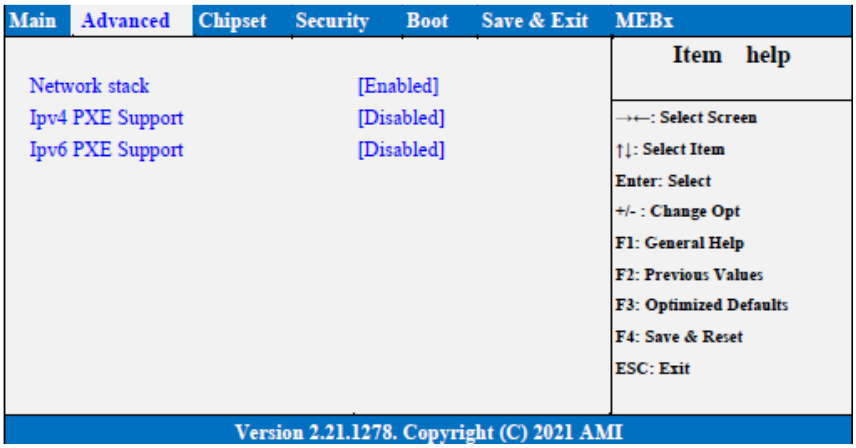
  Configuration options: [10 sec] [20 sec] [[30 sec] [40 sec]

- **Device power-up delay [Auto]**

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 100 ms, for a Hub port the delay is taken from Hub descriptor.

Configuration options: [Auto] [Manual]

### 3.6.2.10 Network Stack Configuration




- **Network Stack [Enabled]**

  Enabled/Disabled UEFI Network Stack

  Configuration options: [Disabled] [Enabled]

- **IPv4 PXE Support [Disabled]**

  Enable/Disable Ipv4 PXE Boot Support. If disabled IPV4 PXE boot support will not be available.

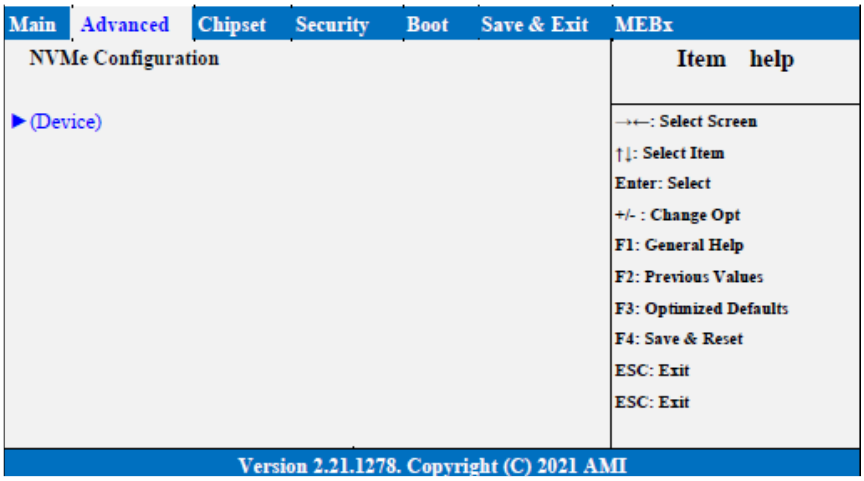
  Configuration options: [Disabled] [Enabled]

- **IPv6 PXE Support [Disabled]**

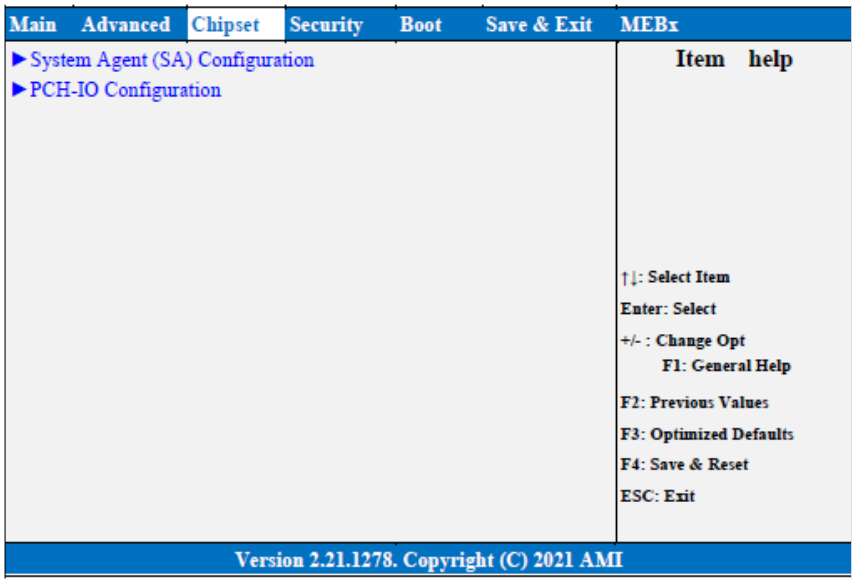
  Enable/Disable Ipv6 PXE Boot Support. If disabled IPV6 PXE boot support will not be available.

  Configuration options: [Disabled] [Enabled]

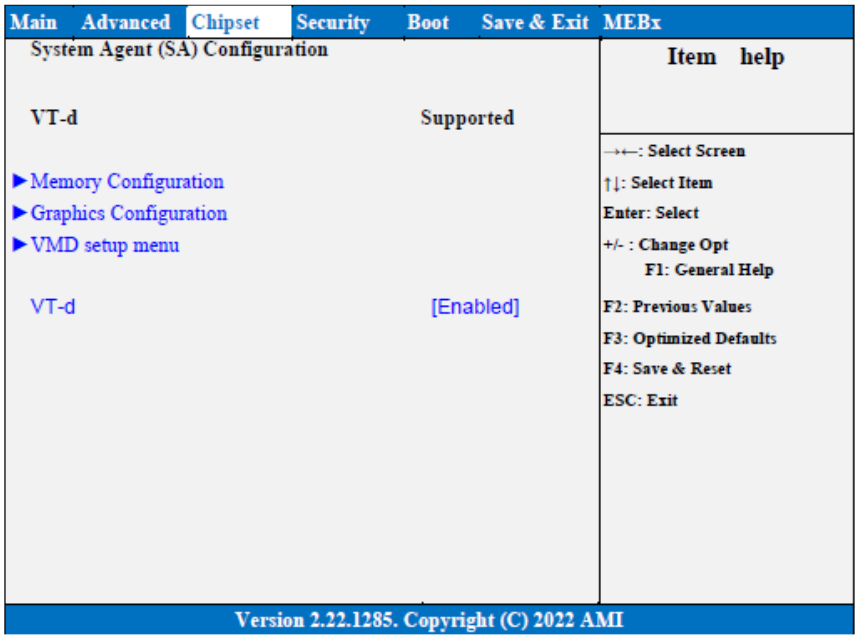
### 3.6.2.11 NVMe Configuration




## 3.6.3 Chipset



### 3.6.3.1 System Agent (SA) Configuration

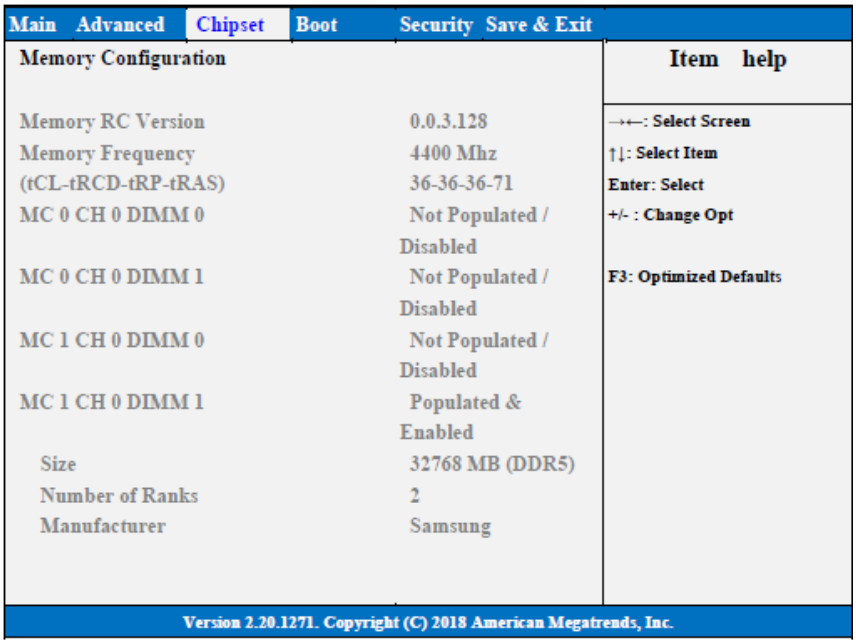



- **VT-d [Enabled]**

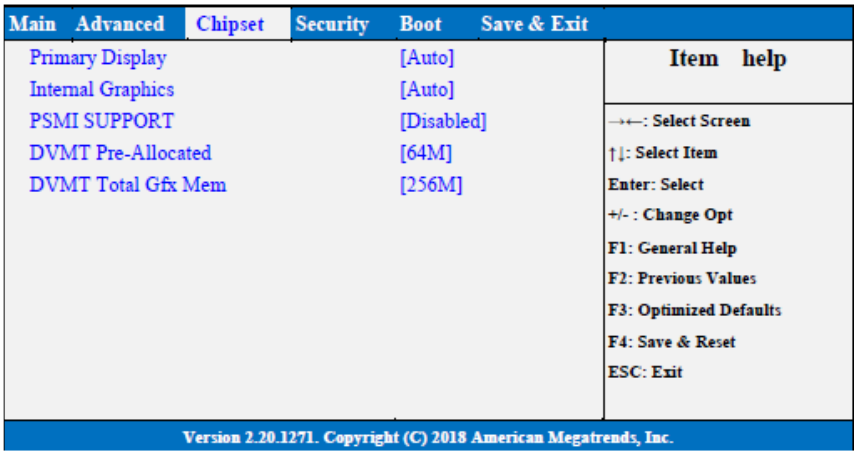
  VT-d capability

  Configuration options: [Disabled] [Enabled]

#### 3.6.3.1.1 Memory Configuration



### 3.6.3.1.2 Graphics Configuration




- **Primary Display [Auto]**

  Select which of IGFX/PEG/PCIE graphic device should be primary display or select HG for Hybrid Gfx.
  Configuration options: [Auto] [IGFX][PEG slot][PCH PCI] [HG]

- **Internal Graphics [Auto]**

  Keep IGFX enabled based on the setup options

  Configuration options: [Auto] [Disabled][Enabled]

- **PSMI Support [Disabled]**

  PSMI eabled/Disabled

  Configuration options: [Disabled][Enabled]

- **DVMT Pre-allocated [64M]**

  Select DVMT 5.0 Pre-allocated (Fixed) Graphics memory size used by the internal graphics device.

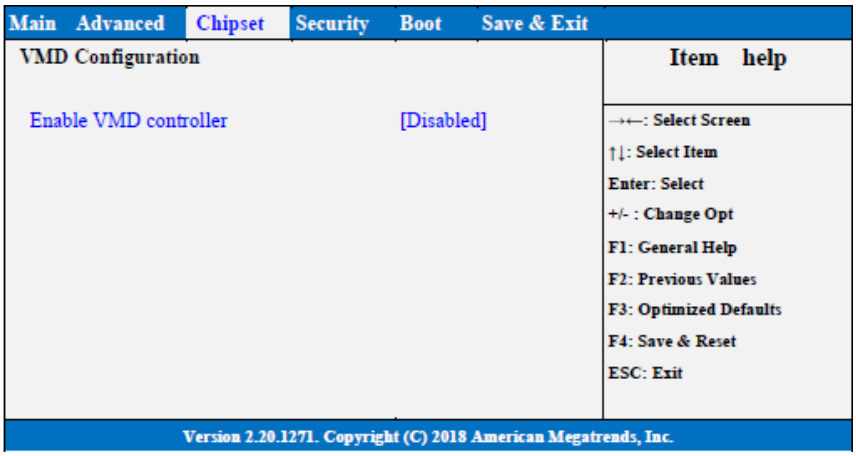
  Configuration options: [64M] [32M/F7] [36M] [40M] [44M] [48M] [52M] [56M] [60M]

- **DVMT Total Gfx Mem [256M]**

  Select DVMT5.0 Total Graphic Memory size used by the Internal Graphics Device.

  Configuration options: [128M] [256M] [MAX]

#### 3.6.3.1.3 VMD setup menu

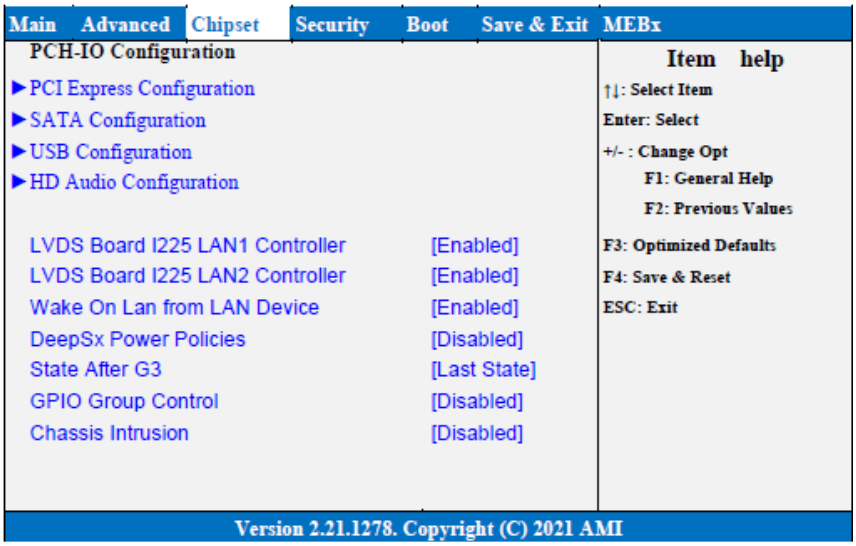



- **Enable VMD controller [Disabled]**

  Enable/Disable to VMD controller

  Configuration options: [Disabled][Enabled]

### 3.6.3.2 PCH-IO Configuration




- **LVDS Board I225 LAN1 Controller [Enabled]**

  Enable or disable onboard I225 LAN 1.

  Configuration options: [Enabled] [Disabled]

- **LVDS Board I225 LAN2 Controller [Enabled]**

  Enable or disable onboard I225 LAN 2.

  Configuration options: [Enabled] [Disabled]

- **Wake On Lan from LAN Device [Enabled]**

  Enable or disable WOL from I225 LAN Device.

Configuration options: [Enabled] [Disabled]

- **DeepSx Power Policies [Disabled]**

  Configure the DeepSx Mode configuration.

  Configuration options: [Disabled] [Enabled in S4-S5] [Enabled in S5]

- **State After G3 [Last State]**

  Specify what state to go to when power is re-applied after a power failure (G3 state).

  Configuration options: [S0 State] [S5 State] [Last State]

- **GPIO Group Control [Disabled]**

  GPIO Header Control Enable/Disable.

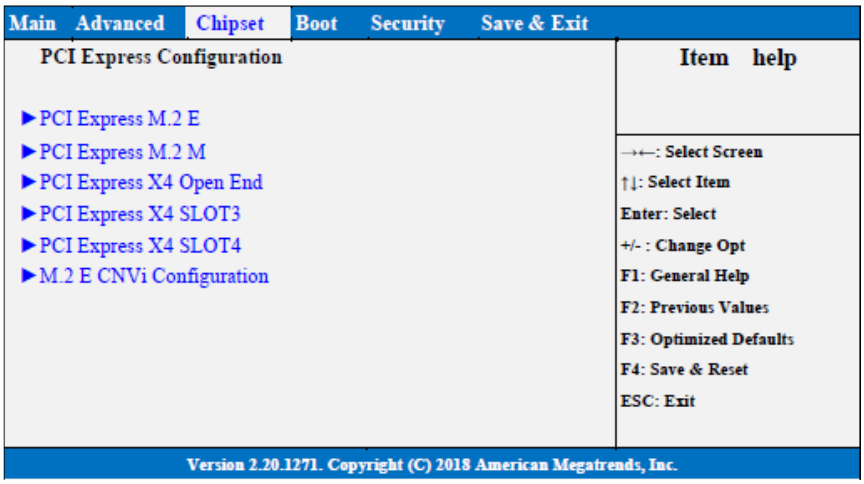
  Configuration options: [Disabled] [Enabled]

- **Chassis Intrusion [Disabled]**

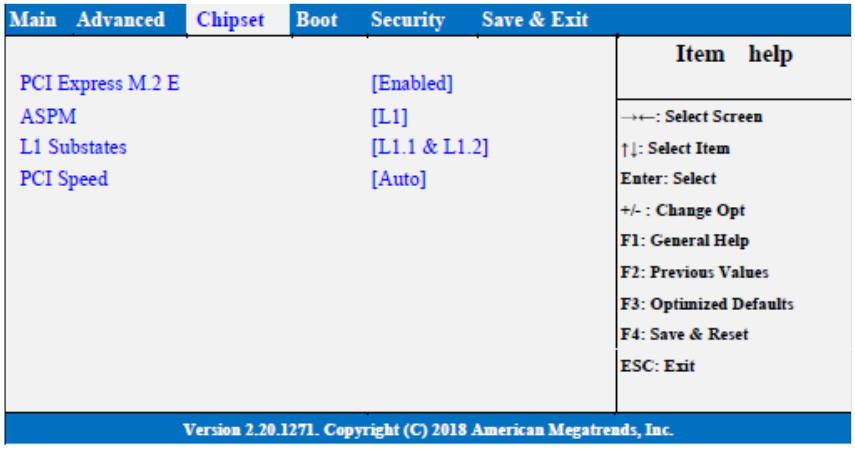
  Configure Chassis Intrusion.

  Configuration options: [Disabled] [Enabled] [Reset]

#### 3.6.3.2.1 PCI Express Configuration



#### 3.6.3.2.1.1 PCI Express M.2 E




- **PCI Express M.2 E [Enabled]**

  Control the PCI Express Root Port.

  Configuration options: [Disabled] [Enabled]

- **ASPM [L1]**

  Set the ASPM Level:Force L0s - Force all links to L0s State AUTO - BIOS auto configure DISABLE - Disables ASPM

  Configuration options: [Disabled] [L1] [Auto]

- **L1 Substates [L1.1 & L1.2]**

  PCI Express L1 Substates settings.

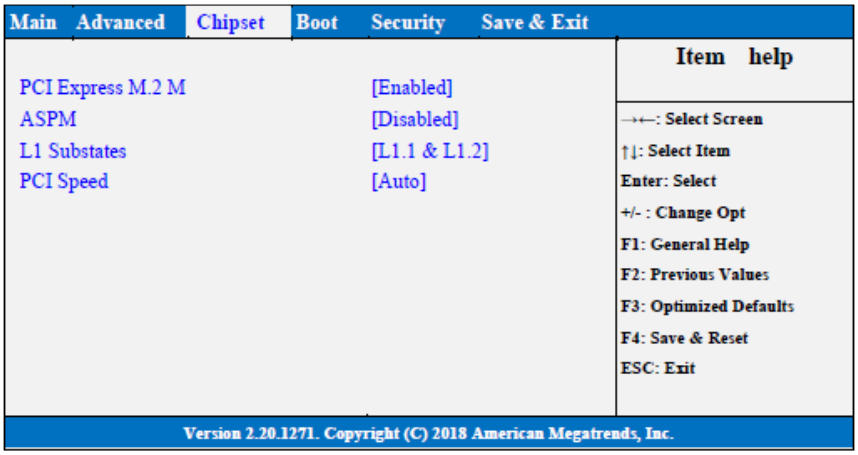
  Configuration options: [Disabled] [L1.1] [L1.1 & L1.2]

- **PCIe Speed [Auto]**

  Configure PCIe Speed

  Configuration options: [Auto][Gen1][Gen2][Gen3]

#### 3.6.3.2.1.2 PCI Express M.2 M




- **PCI Express M.2 M [Enabled]**

  Control the PCI Express Root Port.

  Configuration options: [Disabled] [Enabled]

- **ASPM [Disabled]**

  Set the ASPM Level:Force L0s - Force all links to L0s State AUTO - BIOS auto configure DISABLE - Disables ASPM

  Configuration options: [Disabled] [L1] [Auto]

- **L1 Substates [L1.1 & L1.2]**

  PCI Express L1 Substates settings.

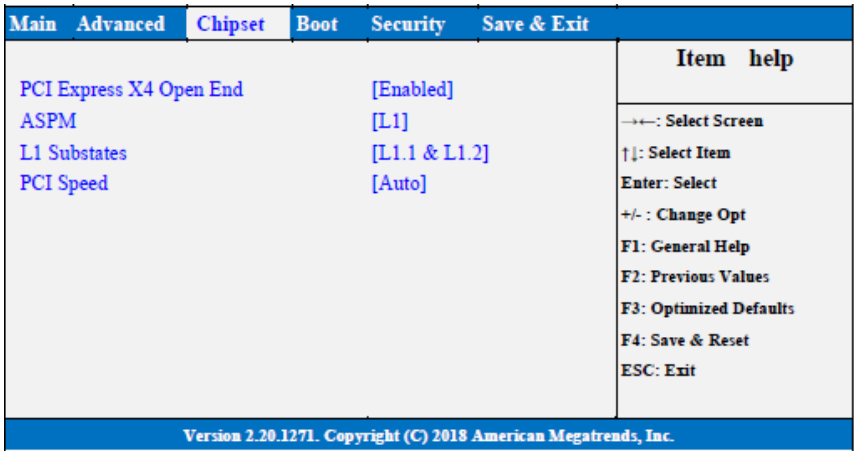
  Configuration options: [Disabled] [L1.1] [L1.1 & L1.2]

- **PCIe Speed [Auto]**

  Configure PCIe Speed

  Configuration options: [Auto] [Gen1] [Gen2] [Gen3]

### 3.6.3.2.1.3 PCI Express X4 Open End




- **PCI Express X4 Open End [Enabled]**

  Control the PCI Express Root Port.

  Configuration options: [Disabled] [Enabled]

- **ASPM [L1]**

  Set the ASPM Level:Force L0s - Force all links to L0s State AUTO - BIOS auto configure DISABLE - Disables ASPM

  Configuration options: [Disabled] [L1] [Auto]

- **L1 Substates [L1.1 & L1.2]**

  PCI Express L1 Substates settings.

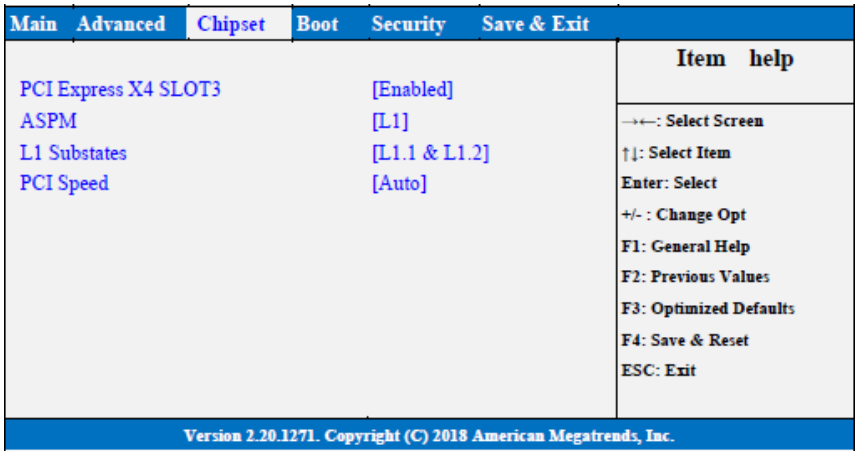
  Configuration options: [Disabled] [L1.1] [L1.1 & L1.2]

- **PCIe Speed [Auto]**

  Configure PCIe Speed

  Configuration options: [Auto][Gen1][Gen2][Gen3]

#### 3.6.3.2.1.4 PCI Express X4 SLOT3




- **PCI Express X4 SLOT3 [Enabled]**

  Control the PCI Express Root Port.

  Configuration options: [Disabled] [Enabled]

- **ASPM [L1]**

  Set the ASPM Level:Force L0s - Force all links to L0s State AUTO - BIOS auto configure DISABLE - Disables ASPM

  Configuration options: [Disabled] [L1] [Auto]

- **L1 Substates [L1.1 & L1.2]**

  PCI Express L1 Substates settings.

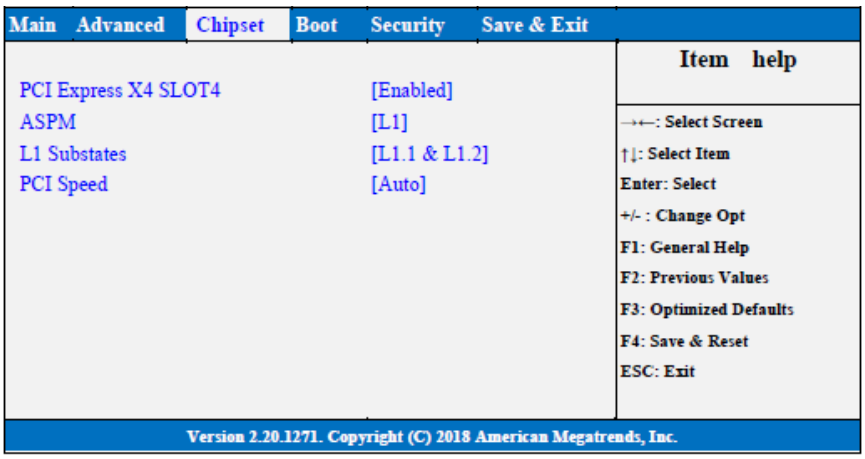
  Configuration options: [Disabled] [L1.1] [L1.1 & L1.2]

- **PCIe Speed [Auto]**

  Configure PCIe Speed

  Configuration options: [Auto][Gen1][Gen2][Gen3]

### 3.6.3.2.1.5 PCI Express X4 SLOT4




- **PCI Express X4 SLOT4 [Enabled]**

  Control the PCI Express Root Port.

  Configuration options: [Disabled] [Enabled]

- **ASPM [L1]**

  Set the ASPM Level:Force L0s - Force all links to L0s State AUTO - BIOS auto configure DISABLE - Disables ASPM

  Configuration options: [Disabled] [L1] [Auto]

- **L1 Substates [L1.1 & L1.2]**

  PCI Express L1 Substates settings.

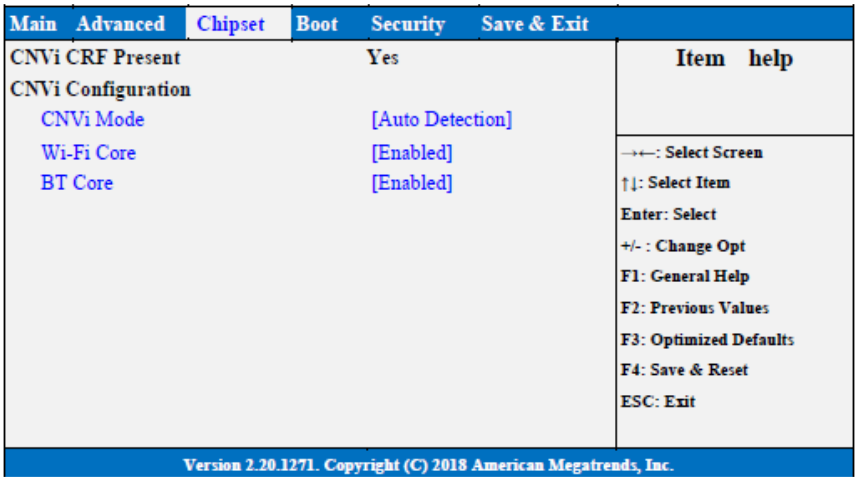
  Configuration options: [Disabled] [L1.1] [L1.1 & L1.2]

- **PCIe Speed [Auto]**

  Configure PCIe Speed

  Configuration options: [Auto][Gen1][Gen2][Gen3]

#### 3.6.3.2.1.6 M.2 E CNVi Configuration




- **CNVi Mode [Auto Detection]**

  This option configures Connectivity. [Auto Detection] means that if Discrete solution is discovered it will be enabled by default. Otherwise Integrated solution (CNVi) will be enabled. And [Disable Integrated] is disables Integrated Solution.

  NOTE: When CNVi is present, the GPIO pins that are used for radio interface cannot b assigned to the other native function.

  Configuration options: [Disable Integrated] [Auto Detection]

- **Wi-Fi Core [Enabled]**

  This is an option intended to Enable/Disable Wi-Fi Core in CNVi

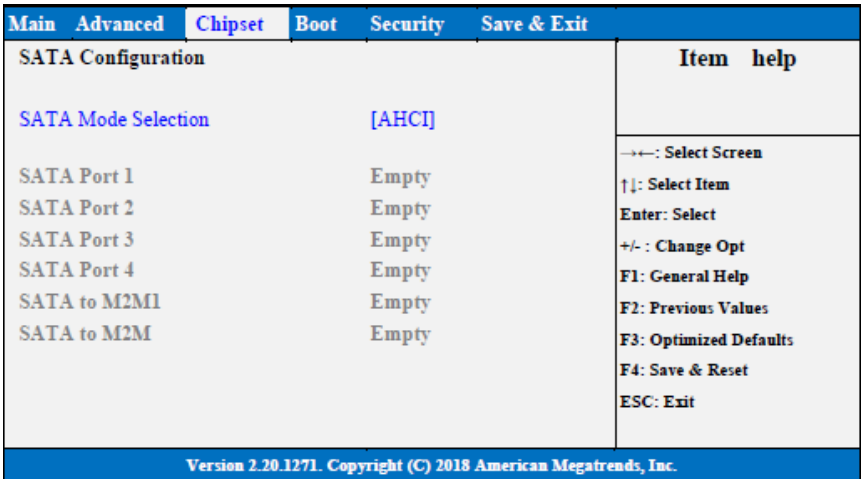
  Configuration options: [Disabled] [Enabled]

- **BT Core [Enabled]**

  This is an option intended to Enable/Disable BT Core in CNVi

  Configuration options: [Enabled] [Disabled]

### 3.6.3.2.2 SATA Configuration

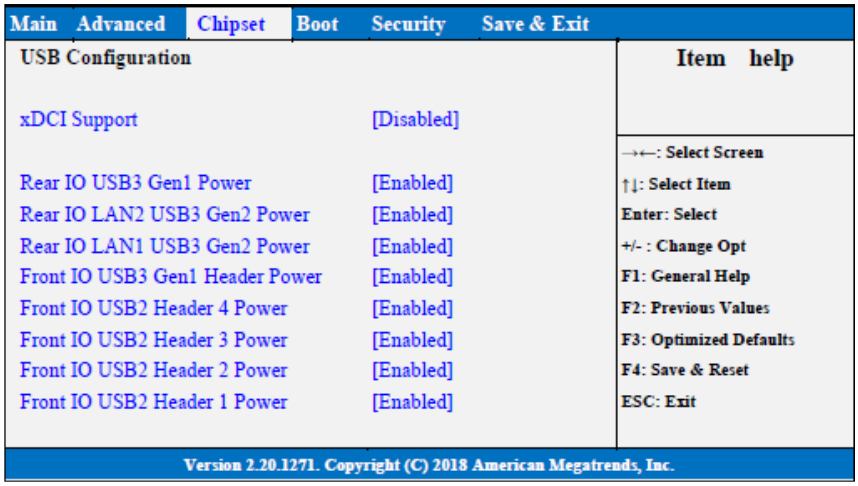



- **SATA Mode Selection [AHCI]**

  Determines how SATA controller(s) operate.

  Configuration options: [AHCI] [Intel RST Premium With Intel Optane System Acceleration]

### 3.6.3.2.3 USB Configuration




- **xDCI Support [Disabled]**

  Enable/Disable xDCI (USB OTG Device).

  Configuration options: [Disabled] [Enabled]

- **Rear IO USB3 Gen1 Power [Enabled]**

  Enable/Disable Upper/Lower USB ports of HDMI Rack.

  Configuration options: [Disabled] [Enabled]

- **Rear IO LAN2 USB3 Gen2 Power [Enabled]**

  Enable/Disable Upper/Lower USB ports of i211 RJ45 Rack.

Configuration options: [Disabled] [Enabled]

- **Rear IO LAN1 USB3 Gen2 Power [Enabled]**

  Enable/Disable Upper/Lower USB ports of i219 RJ45 Rack.

  Configuration options: [Disabled] [Enabled]

- **Front IO USB3 Gen1 Header Power [Enabled]**

  Enable/Disable USB3 Gen1 ports of USB3 Header.

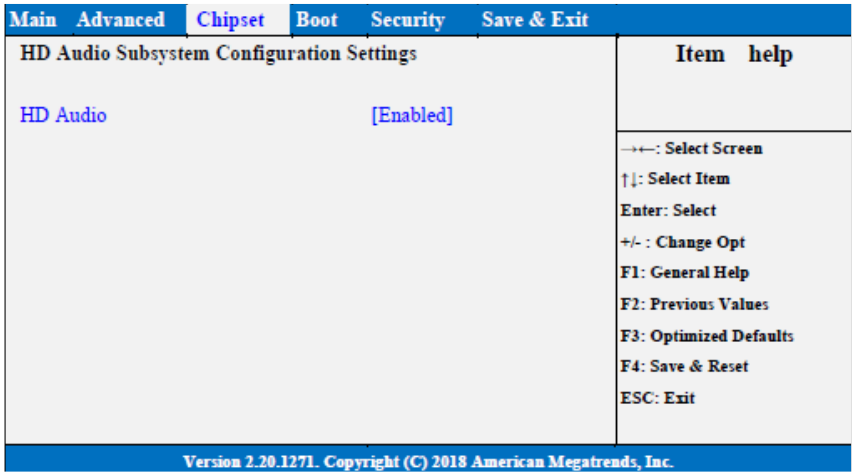
  Configuration options: [Disabled] [Enabled]

- **Front IO USB2 Header 4 Power [Enabled]**

  Enable/Disable USB ports of USB2 Header 4.

  Configuration options: [Disabled] [Enabled]

#### 3.6.3.2.4 HD Audio Configuration




- **HD Audio [Enabled]**

  Control Detection of HD-Audio device.

  Disabled = HDA will be unconditionally disabled Enabled = HDA will be unconditionally enabled

  Configuration options: [Enabled] [Disabled]

### 3.6.4 Security


- **Administrator Password**

  Set Administrator Password

- **User Password**

  Set User Password

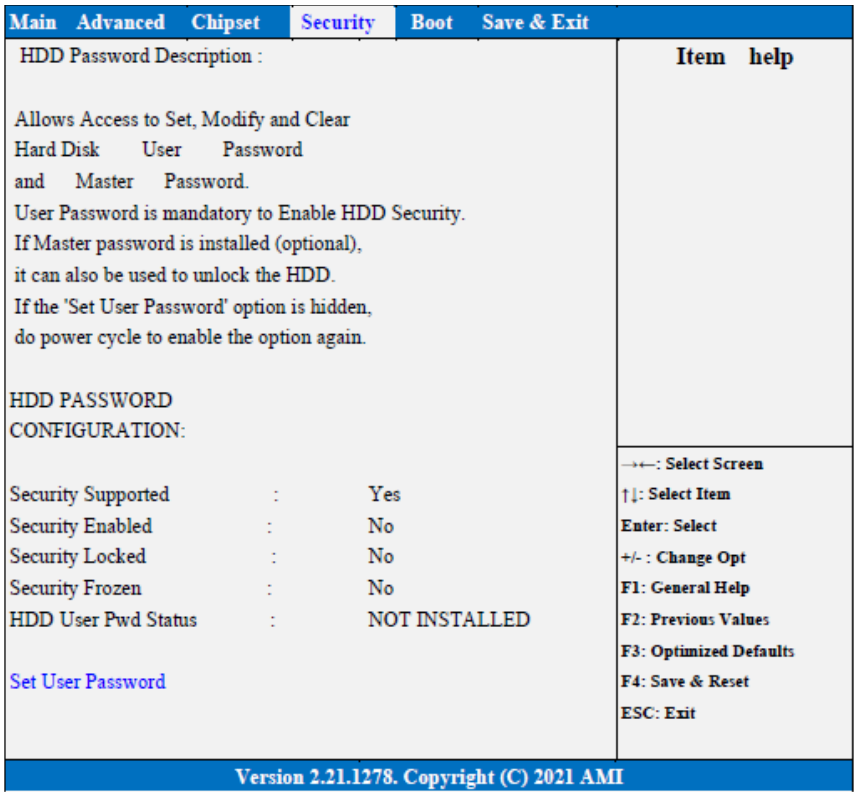
- **HDD Security drive**

  Press Enter when selected to go into the associated Sub-Menu.

- **SSD Security drive**

  Press Enter when selected to go into the associated Sub-Menu.

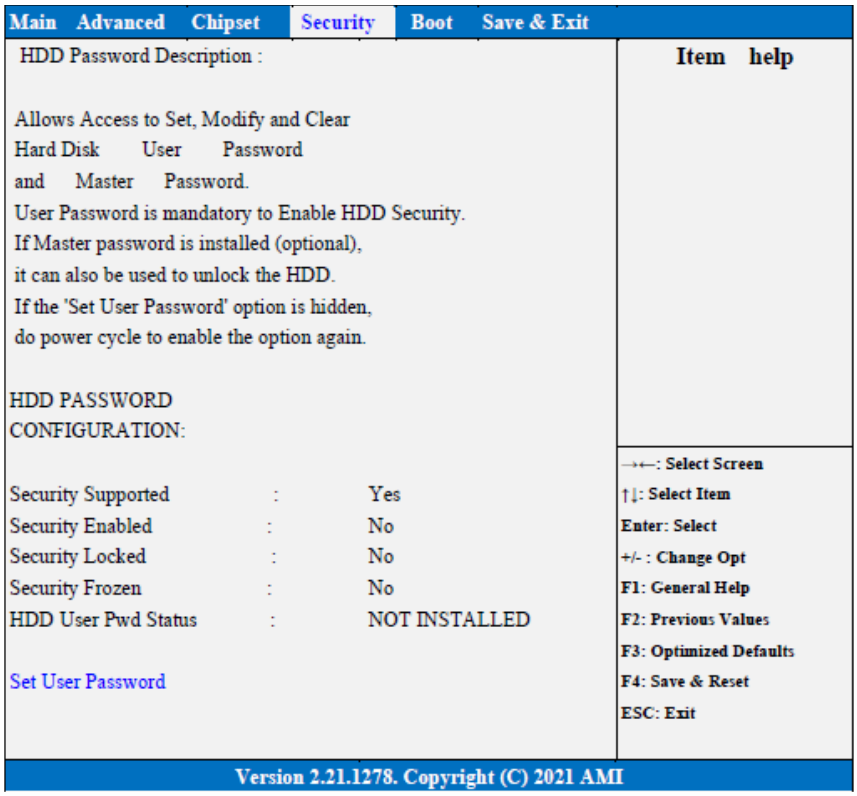
### 3.6.4.1 HDD Security




- **Set User Password**

  Set HDD User Password. *** Advisable to Power Cycle System after Setting Hard Disk Passwords ***.Discard or Save changes option in setup does not have any impact on HDD when password is set or removed. If the 'Set HDD User Password' option is hidden, do power cycle to enable the option again.

### 3.6.4.2 Security Boot




- **Secure Boot [Disabled]**

  Secure Boot feature is Active if Secure Boot is Enabled,Platform Key(PK) is enrolled and the System is in User mode. The mode change requires platform reset

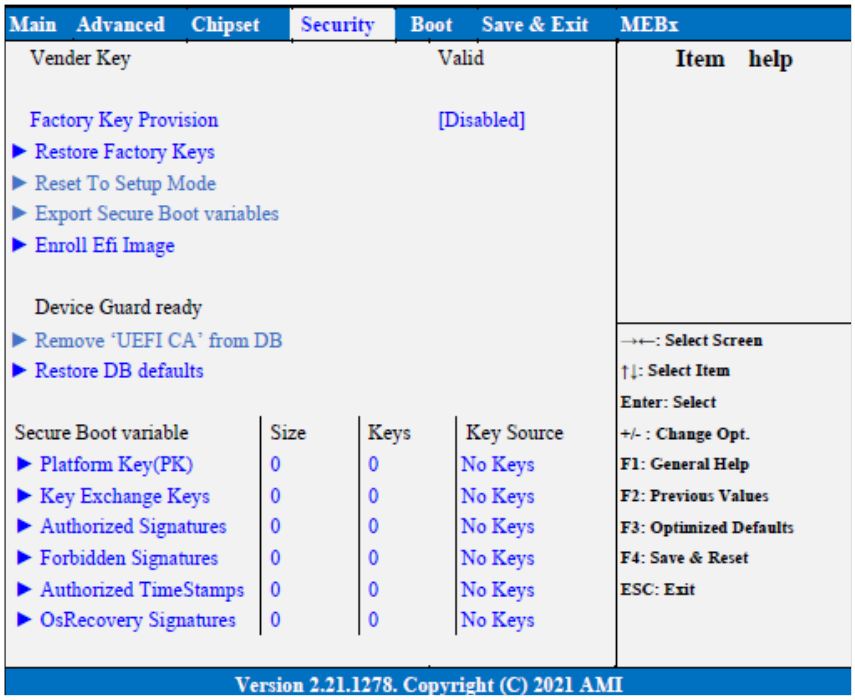
  Configuration options: [Enabled] [Disabled]

- **Secure Boot Mode [Custom]**

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

  Configuration options: [Standard] [Custom]

### 3.6.4.2.1 Key Management

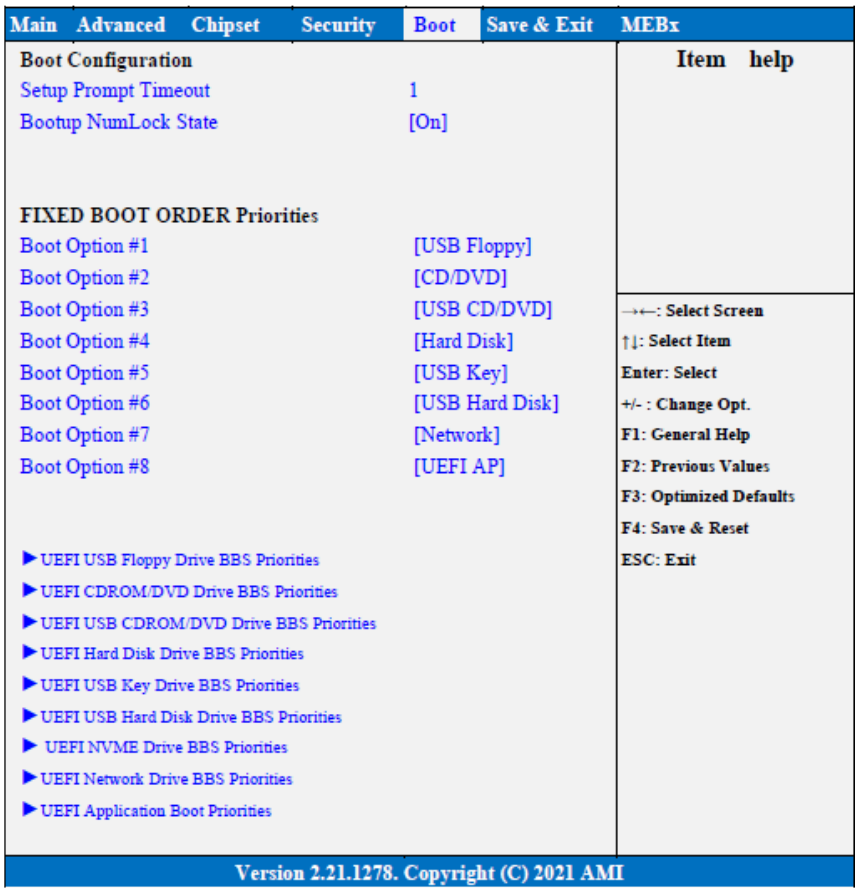



- **Factory Key Provision [Disabled]**

  Install factory default Secure Boot keys after the platform reset and while the System is in Setup mode

  Configuration options: [Enabled] [Disabled]

### 3.6.5 Boot




- **Setup Prompt Timeout [1]**

  Number of seconds to wait for setup activation key. 65535(0xFFFF) means indefinite waiting.

- **Bootup NumLock State [On]**

  Select the keyboard NumLock state.

  Configuration options: [On] [Off]

- **Boot Option #1 [USB Floppy]**

  Sets the system boot order.

  Configuration options: [USB Floppy] [CD/DVD] [USB CD/DVD] [Hard Disk] [USB Key] [USB Hard Disk] [NVME] [Network] [UEFI AP] [Disabled]

- **Boot Option #2 [CD/DVD]**

  Sets the system boot order.

  Configuration options: [USB Floppy] [CD/DVD] [USB CD/DVD] [Hard Disk] [USB Key] [USB Hard Disk] [NVME] [Network] [UEFI AP] [Disabled]

- **Boot Option #3 [USB CD/DVD]**

  Sets the system boot order.

Configuration options: [USB Floppy] [CD/DVD] [USB CD/DVD] [Hard Disk] [USB Key] [USB Hard Disk] [NVME] [Network] [UEFI AP] [Disabled]

- **Boot Option #4 [Hard Disk]**

  Sets the system boot order.

  Configuration options: [USB Floppy] [CD/DVD] [USB CD/DVD] [Hard Disk] [USB Key] [USB Hard Disk] [NVME] [Network] [UEFI AP] [Disabled]

- **Boot Option #5 [USB Key]**

  Sets the system boot order.

  Configuration options: [USB Floppy] [CD/DVD] [USB CD/DVD] [Hard Disk] [USB Key] [USB Hard Disk] [NVME] [Network] [UEFI AP] [Disabled]

- **Boot Option #6 [USB Hard Disk]**

  Sets the system boot order.

  Configuration options: [USB Floppy] [CD/DVD] [USB CD/DVD] [Hard Disk] [USB Key] [USB Hard Disk] [NVME] [Network] [UEFI AP] [Disabled]

- **Boot Option #7 [Network]**

  Sets the system boot order.

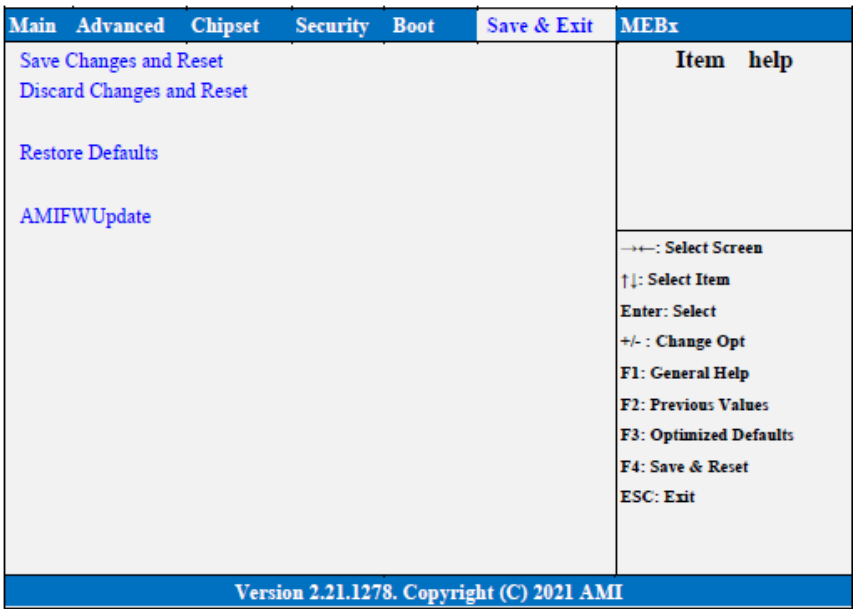
  Configuration options: [USB Floppy] [CD/DVD] [USB CD/DVD] [Hard Disk] [USB Key] [USB Hard Disk] [NVME] [Network] [UEFI AP] [Disabled]

- **Boot Option #8 [UEFI AP]**

  Sets the system boot order.

  Configuration options: [USB Floppy] [CD/DVD] [USB CD/DVD] [Hard Disk] [USB Key] [USB Hard Disk] [NVME] [Network] [UEFI AP] [Disabled]

### 3.6.6 Save & Exit




- **Save Changes and Reset**

  Reset the system after saving the changes.

- **Discard Changes and Reset**

  Reset system setup without saving any changes.

- **Restore Defaults**

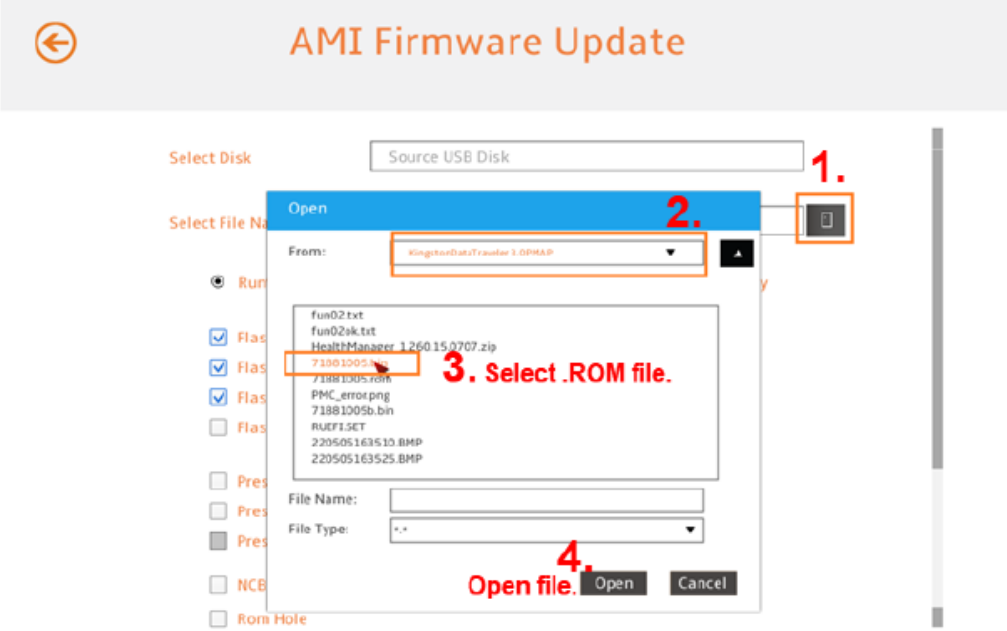
  Restore/Load default values for all the setup option.

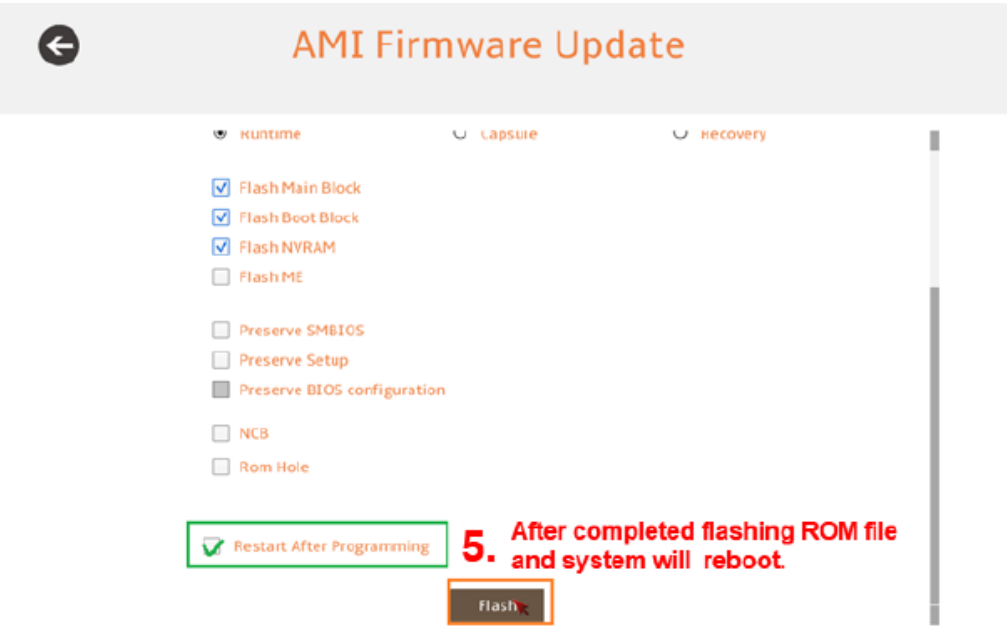
- **AMIFWUpdate**

  Launches AMIFWUpdate.

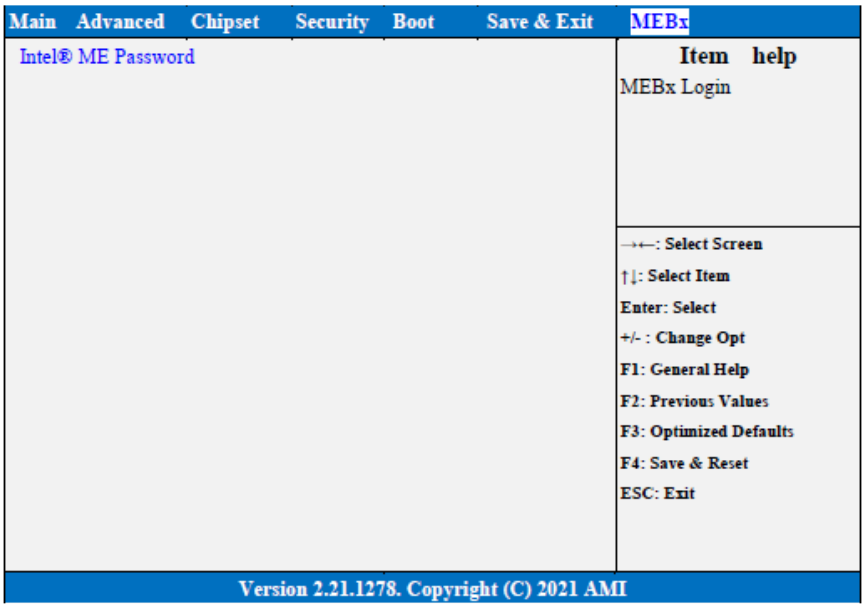
### 3.6.6.1 AMI FW update interface

Update ROM file via the AMI Firmware Update interface, Click “AMIFWupdate” on BIOS setup menu’s “Save and Exit” page and following below steps to update the BIOS.



### 3.6.7 MEBx




- **Intel® ME Password**

  MEBx Login.

# 4. Maintenance & Troubleshooting

System Maintenance Introduction

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

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

# General Safety Precautions

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

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

- Drop the device against a hard surface.
- 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 box PC before cleaning.
- If you dropped any material or liquid such as water onto the box 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.

- Never spray or squirt liquids directly onto any other components. To clean the box PC, 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 box 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 box 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.<br>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.<br>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.<br>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.<br>The beep code is generated when platform cannot be reset because reset protocol is not available. |
| 8 | Platform PCI resource requirements cannot be met |

# 5. Product Application

For detailed instructions on the operation of the Watchdog Timer and Digital I/O (DIO) features of this box 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 box PC.