



MODEL:

TANK-XM813 Series

**Fanless Embedded System with Intel® Core™ Ultra Processors (Series 2),
Two DDR5 Slots, Two 2.5 GbE, USB 3.2 Gen2, M.2 M Key, M.2 A Key,
Expansion Backplanes, HDMI, DP, USB4, RS-232/422/485, RoHS**

User Manual



Revisions

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Manual Conventions

**WARNING**

Warnings appear where overlooked details may cause damage to the equipment or result in personal injury. Warnings should be taken seriously.

**CAUTION**

Cautionary messages should be heeded to help reduce the chance of losing data or damaging the product.

**NOTE**

These messages inform the reader of essential but non-critical information. These messages should be read carefully as any directions or instructions contained therein can help avoid making mistakes.

**HOT SURFACE**

This symbol indicates a hot surface that should not be touched without taking care.

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Chapter

1

Introduction



1.1 Overview



Figure 1-1: TANK-XM813 Series

The TANK-XM813 Series is a fanless, embedded system that supports wall mounting. It is powered by Intel® Core™ Ultra Processors (Series 2) and features two 5600 MHz DDR5 SO-DIMM memory modules up to 96 GB.

The TANK-XM813 Series provides two 2.5 GbE Ethernet ports via Intel® I226-LM and Intel® I226-V controllers. It also includes three independent display outputs: DP++, HDMI and USB4.

When it comes to expansion slots, the TANK-XM813 Series offers extensive options, including one M.2 2230 A-key slot for Wi-Fi and Bluetooth modules, one M.2 2280 M-key slot and various expansion backplanes. In addition, the TANK-XM813 Series provides multiple I/O interfaces including seven USB 3.2 Gen 2 connectors (10 Gb/s) and two 2.5" SATA 6 Gb/s HDD/SSD bays. Serial device connectivity is achieved by both two RS-232/422/485 connectors and four RS-232 connectors.

TANK-XM813

1.2 Model Variations

The model variations of the TANK-XM813 Series are listed below.

Model No.	CPU
TANK-XM813-U5AD	Intel® Core™ Ultra 5 225T 2.5 GHz (up to 4.9 GHz, 14-core, TDP 35W)
TANK-XM813-U5BD	Intel® Core™ Ultra 5 225 3.3 GHz (up to 4.9 GHz, 14-core, TDP 65W)
TANK-XM813-U7AD	Intel® Core™ Ultra 7 265T 1.5 GHz (up to 5.3 GHz, 20-core, TDP 35W)
TANK-XM813-U7BD	Intel® Core™ Ultra 7 265 2.4 GHz (up to 5.3 GHz, 20-core, TDP 65W)
TANK-XM813-U9AD	Intel® Core™ Ultra 9 285T 1.4 GHz (up to 5.4 GHz, 24-core, TDP 35W)
TANK-XM813-U9BD	Intel® Core™ Ultra 9 285 2.5 GHz (up to 5.6 GHz, 24-core, TDP 65W)

Table 1-1: TANK-XM813 Series Model Variations

1.3 Features

The TANK-XM813 Series features are listed below:

- Intel® Core™ Ultra Processors (Series 2)
- Two DDR5 SO-DIMM slots (16 GB pre-installed, up to 96 GB)
- Two 2.5 GbE LAN ports via Intel® I226-LM and Intel® I226-V controllers
- Three independent displays with DP++, HDMI and USB4 support
- Rich options for USB and serial connectors
- Multiple M.2 and PCIe expansions
- Two 2.5" 6Gb/s HDD/SSD SATA bays
- RoHS compliant

1.4 Technical Specifications

The TANK-XM813 Series' technical specifications are listed in **Table 1-2**.

Model		TANK-XM813
Chassis	Color	Black C
	Dimensions (W x D x H)	230.6 mm x 255.2 mm x 68.7 mm
	System Fan	Fanless
	Chassis Construction	Extruded aluminum alloys



TANK-XM813

Model		TANK-XM813
Motherboard	CPU	Intel® Core™ Ultra Processors (Series 2) Intel® Core™ Ultra 9 285T 1.4 GHz (up to 5.4 GHz, 24-core, 35W TDP) Intel® Core™ Ultra 9 285 2.5 GHz (up to 5.6 GHz, 24-core, 65W TDP) Intel® Core™ Ultra 7 265T 1.5 GHz (up to 5.3 GHz, 20-core, 35W TDP) Intel® Core™ Ultra 7 265 2.4 GHz (up to 5.3 GHz, 20-core, 65W TDP) Intel® Core™ Ultra 5 225T 2.5 GHz (up to 4.9 GHz, 10-core, 35W TDP) Intel® Core™ Ultra 5 225 3.3 GHz (up to 4.9 GHz, 10-core, 65W TDP)
	Chipset	W880
	Memory	2 x SO-DIMM DDR5 5600 (16GB pre-installed) (up to 96GB)
Storage	Hard Drive	2 x 2.5" SATA 6Gb/s HDD/SSD bay (RAID 0/1 supported)
I/O Interfaces	Ethernet	1 x 2.5 GbE by Intel® I226-LM controller 1 x 2.5 GbE by Intel® I226-V controller
	USB	7 x USB 3.2 Gen 2 (10 Gb/s)
	COM	2 x RS-232/422/485 4 x RS-232
	Digital I/O	12-bit (6-in/6-out) DB15
	Display	1 x DP++ 1 x HDMI 1.4 1 x USB4 (Display+USB 3.2 Gen 2x2)
	Audio	1 x Mic 1 x Line out
	TPM	1 x Intel TPM 1 x 20-pin TPM connector (optional TPM-IN03 module)
Internal Expansions	M.2	1 x M.2 2230 A-key slot (PCIe Gen3 x1 & USB 2.0, supports vPRO) 1 x M.2 2280 M-key slot (PCIe Gen4 x4)
	Backplane	Optional (see Section 2.4.1)



TANK-XM813

Model		TANK-XM813
Power	Power Input	12 ~ 28V DC
	Remote Power	1 x 2-pin terminal block
Reliability	Mounting	Wall mount
	Operating Temperature	-20°C ~ 60°C (CPU TDP 35W & SSD) -20°C ~ 50°C (CPU TDP 65W & SSD), 10% ~ 95% non-condensing
	Storage Temperature	-40°C ~ 85°C, 10% ~ 95%, non-condensing
	Operating Shock	IEC68-2-27 half-sine, 5G, 11ms, 100 shocks with SSD
	Operating Vibration	MIL-STD-810H 514.8C-I with SSD
	Weight (Net/Gross)	3.24 kg /3.6 kg
	Safety/EMC	CE, FCC
	Watchdog Timer	Programmable 1 ~ 255 sec
OS	Supported OS	Windows® 10/11 IoT Enterprise, Linux

Table 1-2: Technical Specifications

1.5 Front Panel

The front panel of the TANK-XM813 Series is shown in **Figure 1-2**.

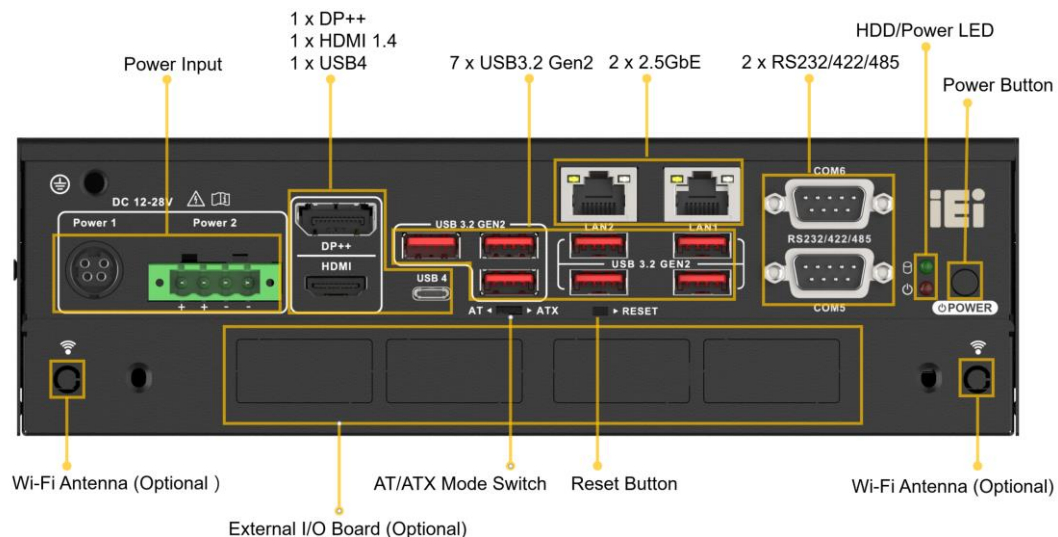


Figure 1-2: Front Panel

1.6 Rear Panel

The rear panel of the TANK-XM813 Series is shown in **Figure 1-3**

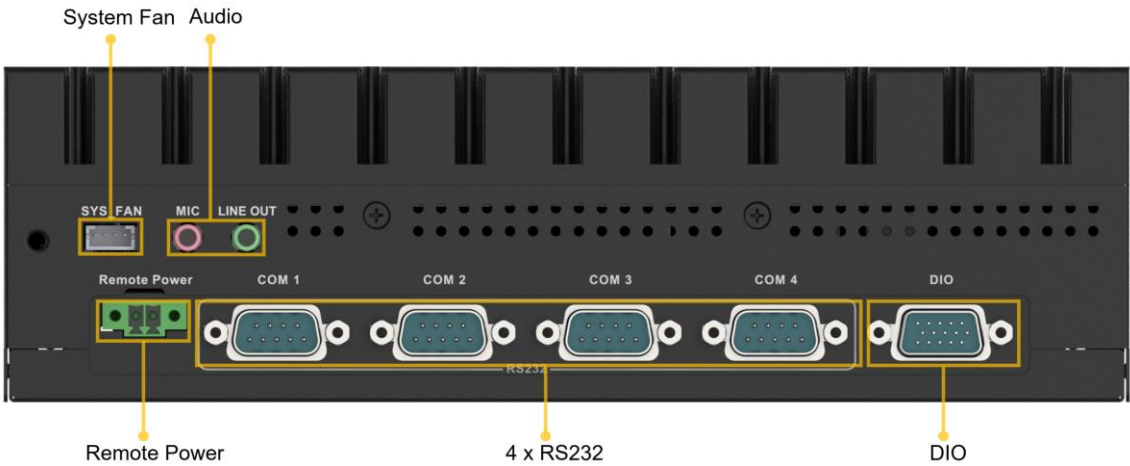


Figure 1-3: Rear Panel

TANK-XM813

1.7 Physical Dimensions

The physical dimensions of the TANK-XM813 Series are shown in **Figure 1-4**

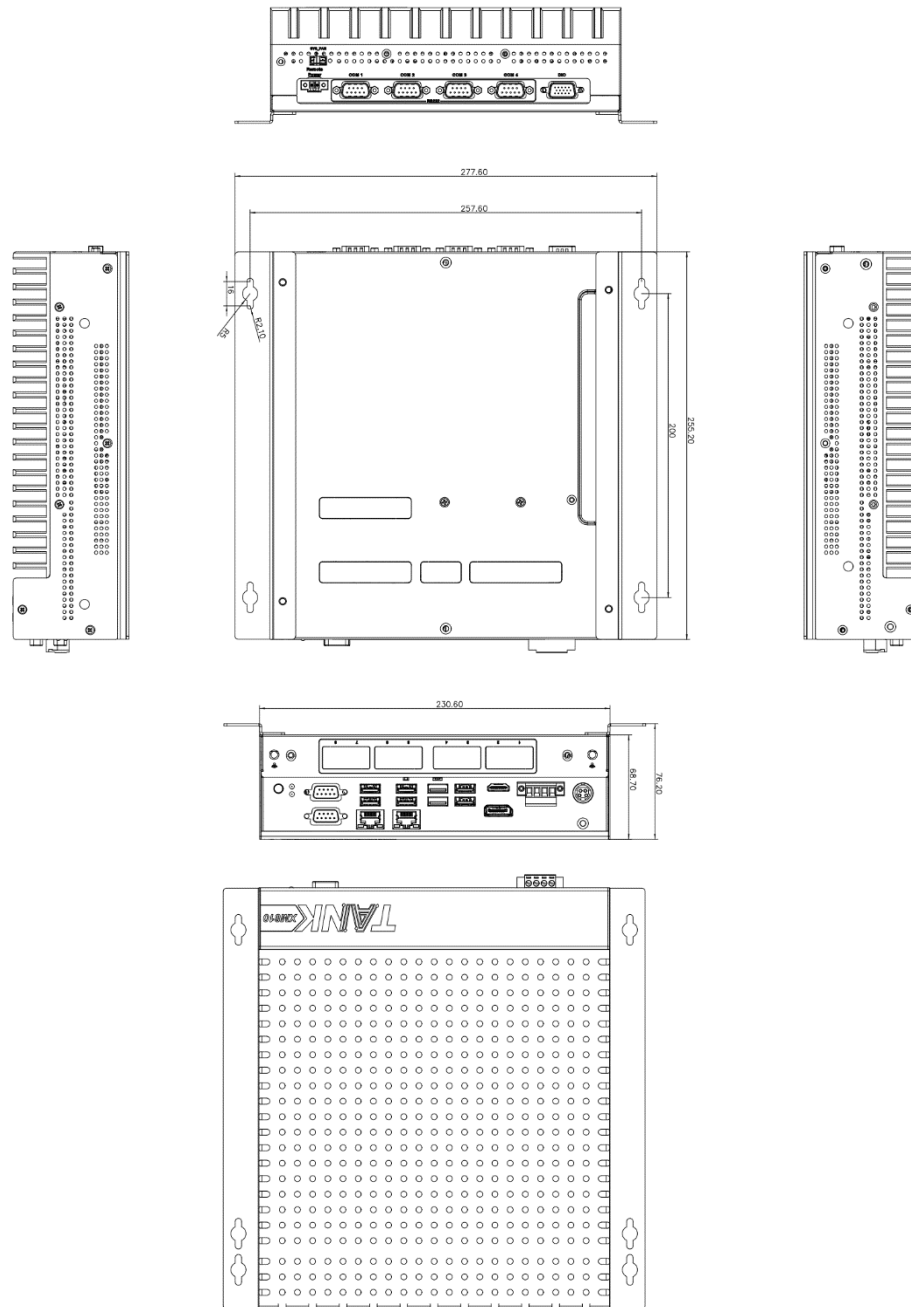


Figure 1-4: Physical Dimensions (mm)

Chapter

2

Unpacking

TANK-XM813

2.1 Anti-static Precautions



WARNING:

Failure to take ESD precautions during installation may result in permanent damage to the TANK-XM813 Series and severe injury to the user.

Electrostatic discharge (ESD) can cause serious damage to electronic components, including the TANK-XM813 Series. Dry climates are especially susceptible to ESD. It is therefore critical that whenever the TANK-XM813 Series or any other electrical component is 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 the board.
- ***Self-grounding:*** Before handling the device, touch any grounded conducting material. During the time the device is handled, frequently touch any conducting materials that are connected to the ground.
- ***Use an anti-static pad:*** When configuring the TANK-XM813 Series, place it on an anti-static pad. This reduces the possibility of ESD damaging the TANK-XM813 Series.

2.2 Unpacking Precautions

When the TANK-XM813 Series is unpacked, please do the following:

- Follow the anti-static precautions outlined in **Section 2.1**.
- Make sure the packing box is facing upwards so the TANK-XM813 Series does not fall out of the box.
- Make sure all the components shown in **Section 2.3** are present.

2.3 Unpacking Checklist



NOTE:

If some of the components listed in the checklist below are missing, please do not proceed with the installation. Contact the IEI reseller or vendor you purchased the TANK-XM813 Series from or contact an IEI sales representative directly. To contact an IEI sales representative, please send an email to sales@ieiworld.com.

The TANK-XM813 Series is shipped with the following components:

Quantity	Item and Part Number	Image
1	TANK-XM813 Series	
1	Mounting bracket	
1	2-pin Terminal block	
1	4-pin Terminal block	
1	Screw pack	

Table 2-1: Unpacking Checklist

TANK-XM813**2.4 Optional Items**

The following table lists the optional items that can be purchased separately.

Optional	
Wi-Fi module (P/N: EMB-WIFI-KIT02I3-R10)	
Power Adapter (P/N: 63040-010180-200-RS)	
Power Cord (P/N: 32702-000202-100-RS)	
Expansion fan module (P/N: SF-TANK-XM81-R10)	
SPI TPM 2.0 module (P/N: TPM-IN03-R10)	

Table 2-2: Optional Items

2.4.1 Optional Expansion Backplane

Part No.	Description
TXCBP-XM81-2A	Expansion backplane for TANK 81 Series, 2 slots, 1 x PCIe Gen4 x16 & 1 x PCIe Gen3 x4
TXCBP-XM81-2B	Expansion backplane for TANK 81 Series, 2 slots, 1 x PCIe Gen4 x16(x8 signal) & 1 x PCIe Gen3 x16(x8 signal)



Part No.	Description
TXCBP-XM81-4A	Expansion backplane for TANK 81 Series, 4 slots, 1 x PCIe Gen4 x16 & 2 x PCIe Gen3 x4 & 1 x PCIe Gen3 x1 w/ Ext. PWR Conn.
TXCBP-XM81-4B	Expansion backplane for TANK 81 Series, 4 slots, 1 x PCIe Gen4 x16(x8 signal) & 1 x PCIe Gen3 x16(x8 signal) & 2 x PCIe Gen3 x4 w/ Ext. PWR Conn.
TXCBP-XM81-4C	Expansion backplane for TANK 81 Series, 4 slots, 1 x PCIe Gen4 x16 & 2 x PCI & 1 x PCIe Gen3 x4
TXCBP-XM81-G2-PW	Expansion backplane for TANK 81 Series, 6 slots, 1 x PCIe Gen4 x16(x8 signal) & 1 x PCIe Gen3 x16(x8 signal) & 2 x PCIe Gen3 x4 w/ Ext. PWR Conn.
IDD-X1228150*	Extended Power Board for TANK-XM81 Series, 150W@16~28V or 380W@12V DC input 12V output Power Module

* For expansion cards (such as graphics cards or accelerator cards) that require an independent power supply, the system must be equipped with a backplane that supports external power delivery.

Table 2-3: Optional Expansion Backplane

2.4.2 Optional Expansion Chassis

Part No.	Description
TXC-XM81-3S	3-slot expansion chassis for TANK 81 Series
TXC-XM81-4S	4-slot expansion chassis for TANK 81 Series
TXC-XM81-G1	4-slot One GPU expansion chassis for TANK 81 Series
TXC-XM81-G2	6-slot Dual GPU expansion chassis for TANK 81 Series

Table 2-4: Optional Expansion Chassis



TANK-XM813**2.4.3 Optional Internal Expansion Boards**

Part No.	Description
GPOE-XM81-8P	I/O expansion module for TANK 81 Series, 8 x 2.5 GbE LAN with PoE
TXIOB-XM81-A	I/O expansion module for TANK 81 Series, 2 x M.2 B key, 1 x M.2 A key, 1 x PCIe Mini

Table 2-5: Optional Internal Expansion Boards

Chapter

3

Installation

3.1 Installation Precautions

**CAUTION:**

The TANK-XM813 Series has more than one power supply connection point.

To reduce the risk of electric shock, disconnect all power sources before installing or servicing the TANK-XM813 Series.

During installation, be aware of the precautions below:

- **Read the user manual:** The user manual provides a complete description of the TANK-XM813 Series, installation instructions and configuration options.
- **DANGER! Disconnect power:** Power to the TANK-XM813 Series must be disconnected during the installation process, or before any attempt is made to access the rear panel. Electric shock and personal injury might occur if the rear panel of the TANK-XM813 Series is opened while the power cord is still connected to an electrical outlet.
- **Qualified personnel:** The TANK-XM813 Series must be installed and operated only by trained and qualified personnel. Maintenance, upgrades, or repairs may only be carried out by qualified personnel who are familiar with the associated dangers.
- **Air circulation:** Make sure there is sufficient air circulation when installing the TANK-XM813 Series. The TANK-XM813 Series' cooling vents must not be obstructed by any objects. Leave at least 5 cm of clearance around the TANK-XM813 Series to prevent overheating.
- **Grounding:** The TANK-XM813 Series should be properly grounded. The voltage feeds must not be overloaded. Adjust the cabling and provide external overcharge protection per the electrical values indicated on the label attached to the back of the TANK-XM813 Series.

3.2 Cover Removal

Before installing or maintaining the internal components, the cover must be removed from the TANK-



XM813. Follow the steps below to complete the task.

Step 1: Turn the TANK-XM813 over and remove the six screws on the cover.

Step 2: Detach the cover from the TANK-XM813 (**Figure 3-1**).

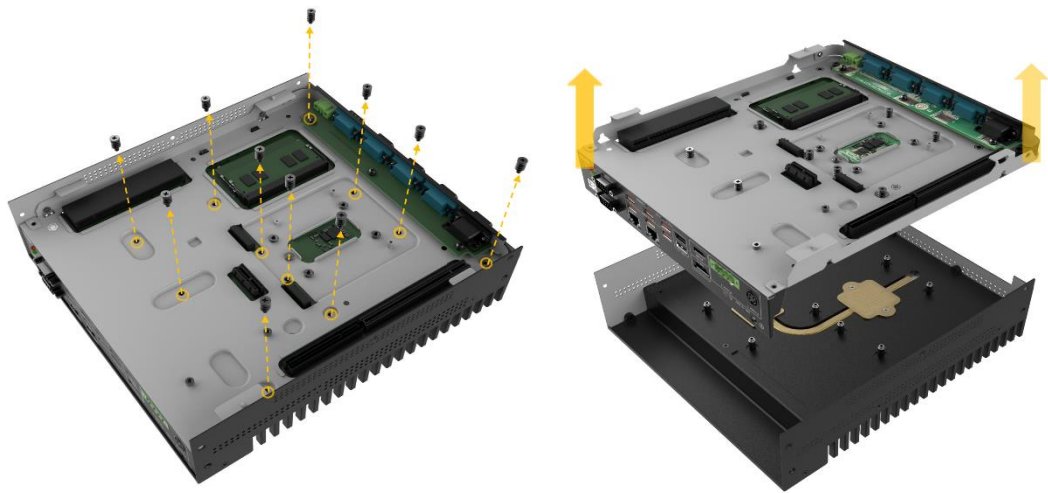


Figure 3-1: Remove the Cover

3.3 CPU Installation

To install the CPU, please follow the steps below:

Step 1: Remove the 11 spring screws on the motherboard, and then take out the motherboard (including the motherboard holder) (**See Figure 3-2**).



SS

Figure 3-2: Take out the motherboard



TANK-XM813

Step 2: Pull the lever of the CPU buckle, remove the CPU protection cover, install the CPU at the notch, and fasten the lever down in the buckle (See Figure 3-3).

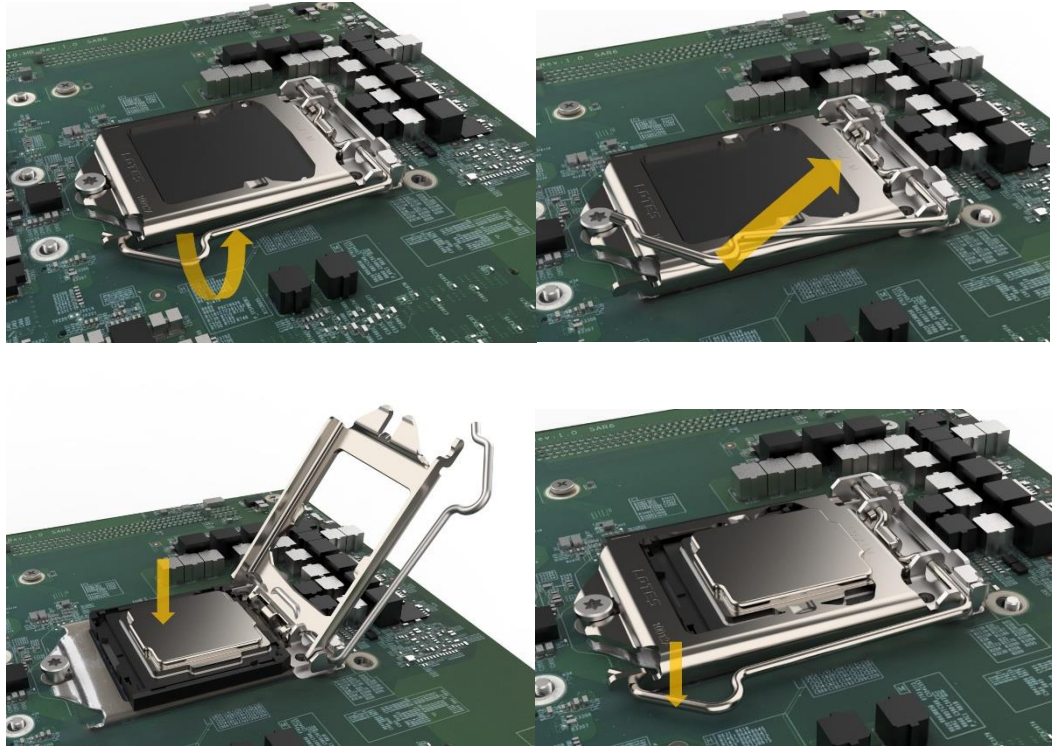


Figure 3-3: CPU Installation

Step 3: Place a thermal pad on the heat conductive block of CPU (See Figure 3-4).

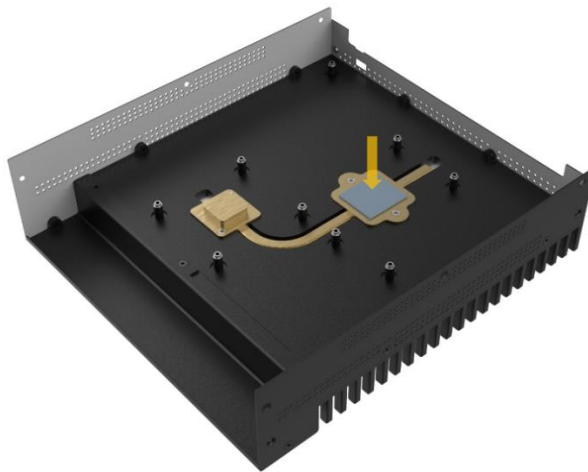


Figure 3-4: CPU Thermal Pad Installation



- Step 1:** Align the motherboard (together with the motherboard holder) with the 4 positioning rods on the 2 sides, place it on the heat sink, and lock the motherboard with 11 spring screws. (See Figure 3-5)

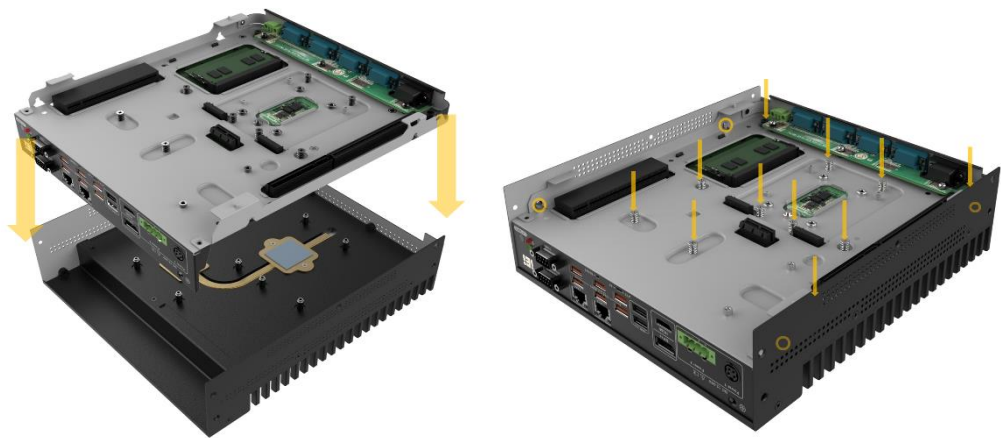


Figure 3-5: Motherboard Installation

3.4 Memory Installation

The TANK-XM813 Series is pre-installed with an 16GB memory module. Users can add or replace memory with different capacity by themselves. The installation procedures are described below.

- Step 1:** Remove the installed memory. Push outwards the retaining clips located at each end of the SO-DIMM slot, which causes the memory module to pop up. Then gently pull the module out of the slot along the angle it has adopted. See **Figure 3-6**.

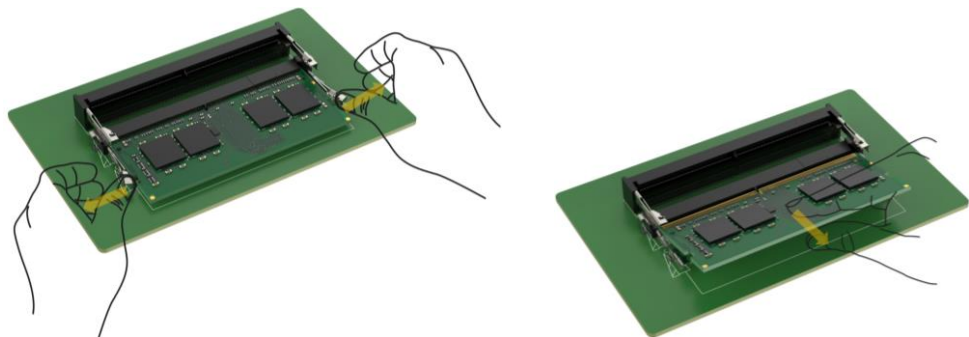


Figure 3-6: Remove the Memory

- Step 2:** Insert a new memory module. Carefully align the memory module, ensuring the notches on the memory lines up with the notches on the memory socket (**Figure 3-7**).



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Figure 3-7: Insert a Memory

Step 3: Once aligned, firmly press the module into position until the module is completely seated in the socket and the retaining clips lock the module into the socket (**Figure 3-8**).

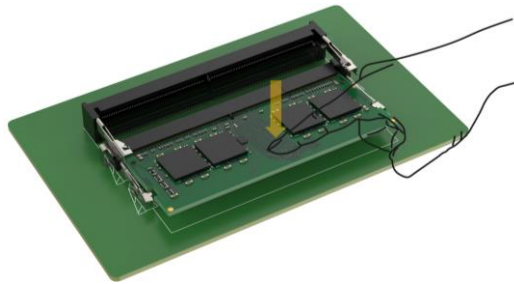


Figure 3-8: Lock the Memory

3.5 Storage Installation

The TANK-XM813 Series supports two types of storage, one M.2 M Key & one 2.5" SSD.

3.5.1 M.2 SSD Installation

To install an M.2 SSD module, please follow the steps below.

Step 1: Locate the M.2 M-key slot. See **Section 4.2.14**.

Step 2: Remove the retention screw secured on the motherboard (**Figure 3-9**).



Figure 3-9: Remove the Retention Screw



TANK-XM813

Step 3: Line up the notch on the module with the notch on the slot. Slide the M.2 module into the slot at an angle of about 20° (**Figure 3-10**).

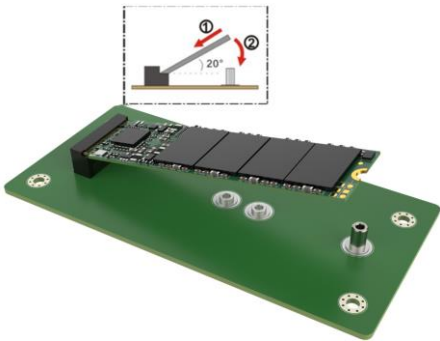


Figure 3-10: Insert the M.2 SSD Module

Step 4: Secure the M.2 module with the previously removed retention screw (**Figure 3-11**).

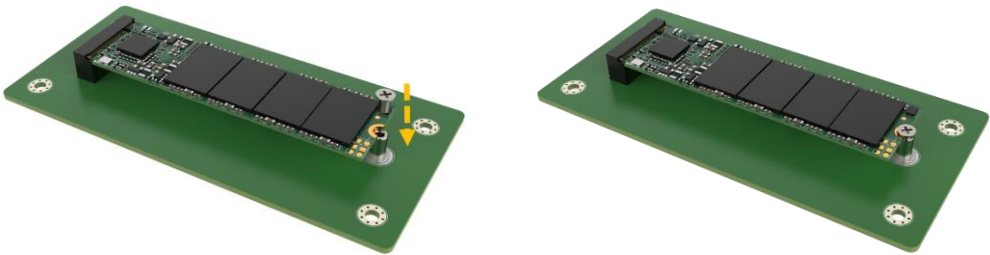


Figure 3-11: Secure the Screw

3.5.2 2.5-Inch SSD Installation

The TANK-XM813 provides two 2.5-inch hard drive mounting slots. Installation instructions are as follows:

3.5.2.1 First Hard Drive Installation Steps

Step 1: Place a hard drive into the drive bay and connect it to the SATA connector (**Figure 3-13**).

Step 2: Secure the bracket with the hard drive using four screws (**Figure 3-13**).





Figure 3-12: HDD Installation

Step 3: Lock the back cover back to the machine. See **Section 3.7**

3.5.2.2 Second Hard Drive Installation Steps

Step 1: Place the hard drive in the hard drive position on the back cover and tighten the 4 fixing screws (**Figure 3-13**).



Figure 3-13: HDD Installation

Step 2: Plug the SATA cable into the hard drive

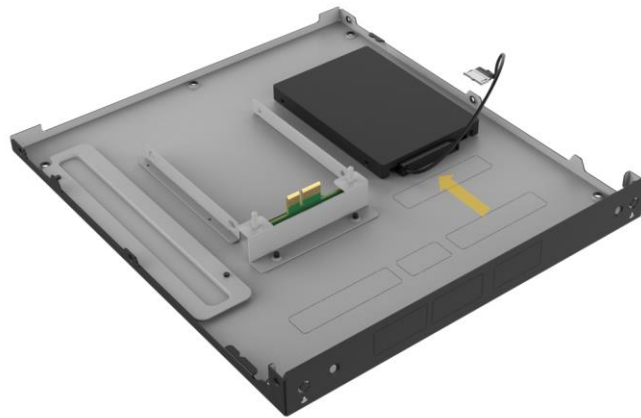


Figure 3-14: Plug in the hard drive cable

Step 3: Move the back cover close to the machine and plug the SATA cable into the motherboard (**Figure 3-13**).

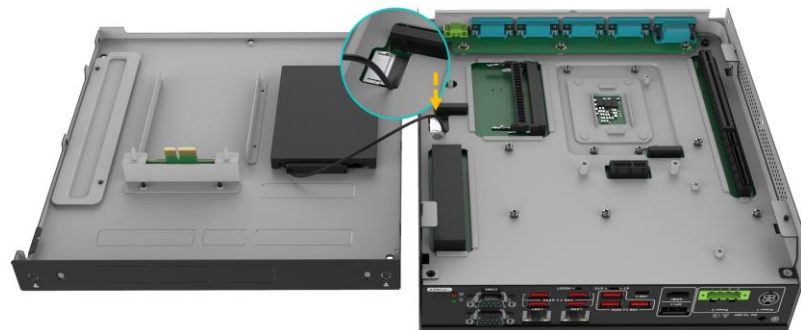


Figure 3-15: Plug in the motherboard cable

Step 4: Lock the back cover back to the machine. See **Section 3.7**

3.6 Wi-Fi Module Installation

The Wi-Fi module is an optional accessory. You can purchase it from IEI or other vendors. Note that you have to purchase Wi-Fi module, internal antenna and external antenna. It is suggested to purchase an internal antenna longer than 200 mm.

To install the Wi-Fi module, follow the steps below.

Step 1: Locate the M.2 A-key slot. See **Section 4.2.15**.

Step 2: Remove the retention screw. Remove the retention screw for M.2 card installation as shown in **Figure 3-16**.

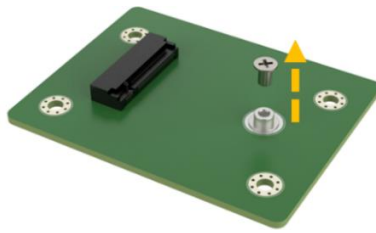


Figure 3-16: Remove the Retention Screw

Step 3: Insert the module into the socket at an angle. Line up the notch on the WLAN module with the notch on the slot. Slide the WLAN module into the slot at an angle of about 20° (Figure 3-17).

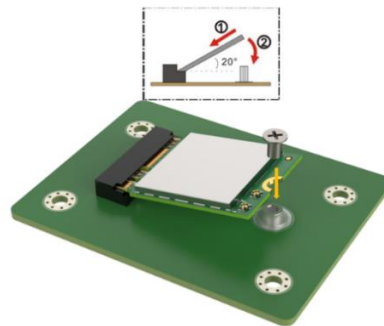


Figure 3-17: Insert the WLAN Module

Step 4: Secure the WLAN module. Secure the WLAN module with the retention screw previously removed (Figure 3-18).

Step 5: Connect the two RF cables to the antenna connectors on the WLAN module (Figure 3-18).

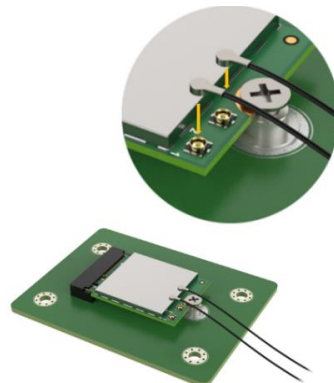


Figure 3-18: Secure WLAN Module and Connect RF Cables

Step 6: Remove the nut and washer from the SMA connector at the other end of the RF cable.

Step 7: Knock out the reserved antenna holes on the chassis. Insert the SMA connector to the antenna connector holes on the rear panel.

Step 8: Secure the SMA connector by inserting the washer and tightening it with nut.

Step 9: Install the external antenna.

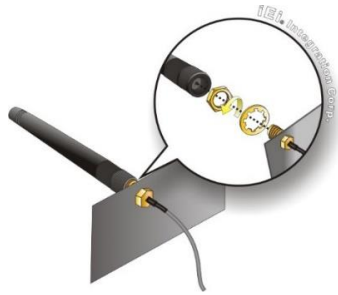


Figure 3-19: Secure SMA Connector and External Antenna Installation

3.7 Cover Installation

Install the cover by fastening the six screws (Figure 3-20).



Figure 3-20: Cover Installation

3.8 System Fan Installation (Optional)

When encountering high performance and high heat, additional cooling is needed. The optional external fan can help the TANK-XM813 Series solve the thermal problem. To install the optional external fan, follow the steps below.

Step 1: Remove the four screws on each side of the TANK-XM813 Series (Figure 3-21).

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Figure 3-21: Remove Screws

Step 2: Install the expansion fan module (SF-TANK-XM81-R10) to the TANK-XM813 Series, and secure it using the four screws removed previously (**Figure 3-22**).



Figure 3-22: Install the External Fan Module

Step 3: Connect the fan cable to the fan connector on the side panel (**Figure 3-23**).



Figure 3-23: Connect the Fan Cable



3.9 Mounting the System with Mounting Brackets

The TANK-XM813 Series supports wall mounting. To mount the embedded system onto a wall or other surfaces using the mounting brackets, please follow the steps below.

- Step 1:** Align the screw holes in each bracket with the corresponding retention screw holes on the bottom (**Figure 3-24**).
- Step 2:** Secure the brackets to the system by inserting the four retention screws into each bracket and the system (**Figure 3-24**).



Figure 3-24: Install Wall Mounting Brackets

- Step 3:** Drill holes on the intended installation surface.
- Step 4:** Align the mounting holes of the mounting brackets with the pre-drilled holes in the mounting surface.
- Step 5:** Secure the system to the wall using the screws.

3.10 Power On/Off the System



WARNING:

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



TANK-XM813

The power of the system needs more than 12V8A.

Step 1: Connect the power source to the power input connector.

Step 2: Push the power button, and then the power LED lights up in green.

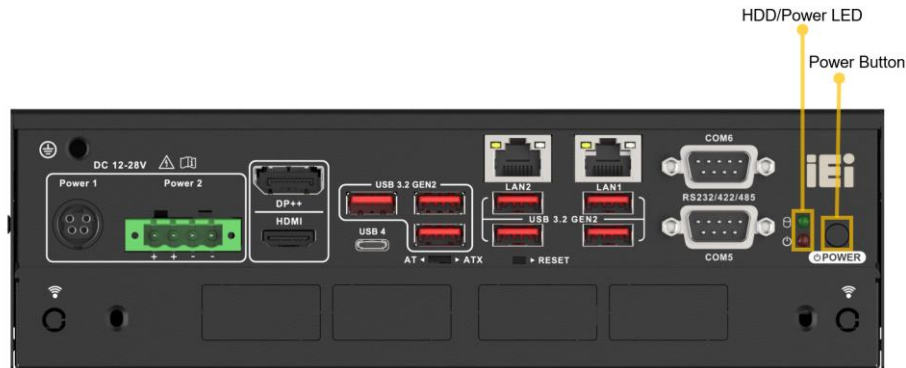


Figure 3-25: Power Button

- **Power on** the system: press the power button for 1 seconds
- **Power off** the system: press the power button or 6 seconds

3.11 AT/ATX Power Mode Selection

The TANK-XM813 Series supports AT and ATX power modes. The setting can be made through the AT/ATX power mode switch on the system's front panel as shown below (Figure 3-26).

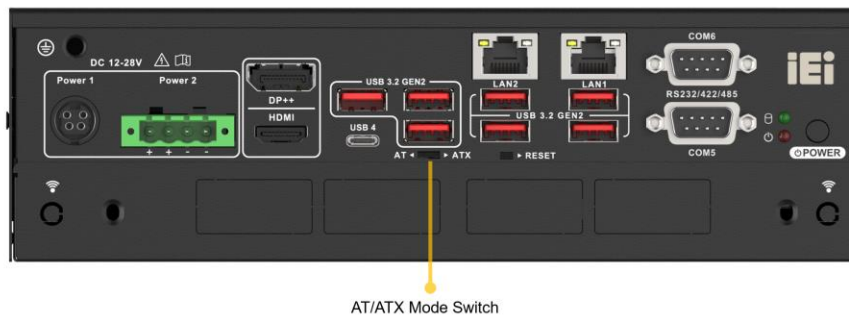


Figure 3-26: AT/ATX Power Mode Switch



3.12 Available Drivers

All the drivers for the TANK-XM813 Series are available on IEI Resource Download Center (<https://download.ieiworld.com>). Type TANK-XM813 Series and press Enter to find all the relevant software, utilities, and documentation.

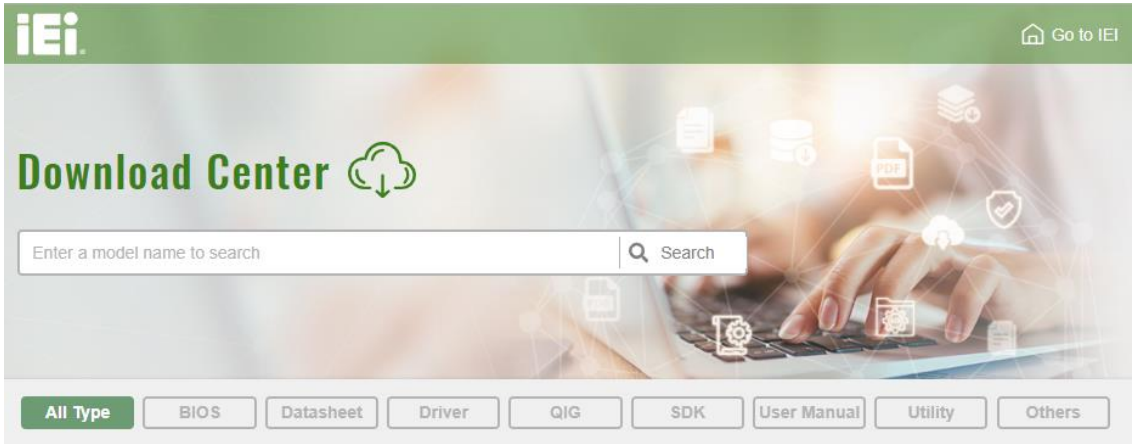
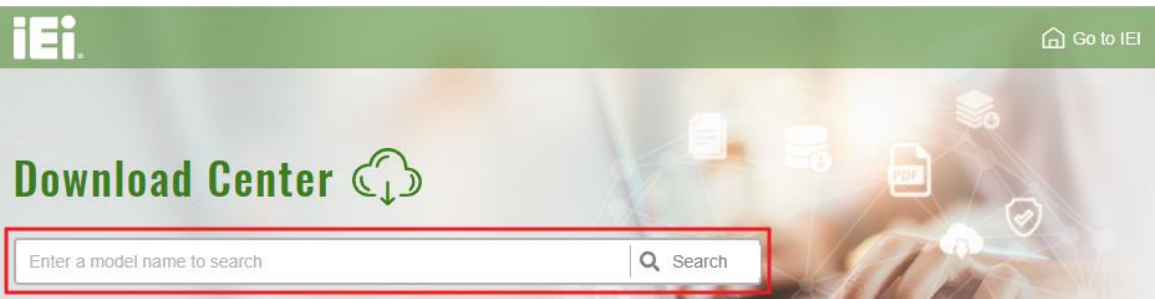


Figure 3-27: IEI Resource Download Center

3.12.1 Driver Download

To download drivers from IEI Resource Download Center, follow the steps below.

Step 1: Go to <https://download.ieiworld.com>. Type TANK-XM813 Series and press Enter.



Step 2: All product-related software, utilities, and documentation will be listed. You can choose **Driver** to filter the result.



TANK-XM813

[All Type](#)
[BIOS](#)
[Datasheet](#)
[Driver](#)
[QIG](#)
[SDK](#)
[User Manual](#)
[Utility](#)
[Others](#)

WAFFER-BT-i1 [Product Info](#)

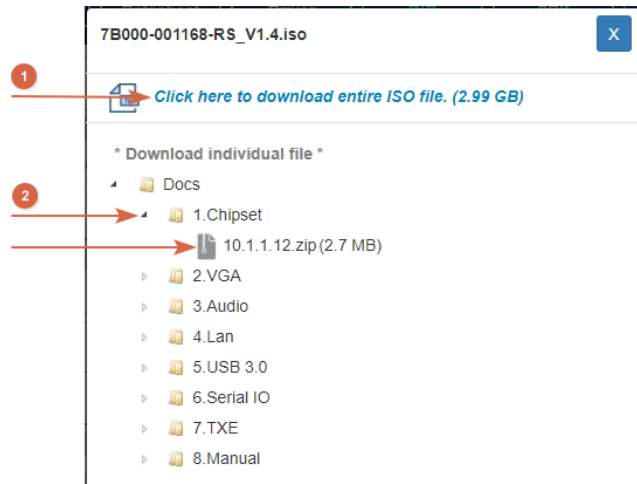
[Embedded Computer](#) ▶ [Single Board Computer](#) ▶ [Embedded Board](#)
 3.5" SBC with Intel® 22nm Atom™/Celeron® on-board SoC

Driver

File Name	Published	Version	File Checksum
7B000-001033-RS V2.3.iso (2.23 GB)	2017/10/03	2.30	3B2DB1F792779A93A8F50DDBC3943E30

Step 3: Click the driver file name on the page and you will be prompted with the following window.

You can download the entire ISO file (❶), or click the small arrow to find an individual driver and click the file name to download (❷).

**NOTE:**

To install software from the downloaded ISO image file in Windows 8 or later, double-click the ISO file to mount it as a virtual drive to view its content. On Windows 7 system, an additional tool (such as Virtual CD-ROM Control Panel from Microsoft) is needed to mount the file.

Chapter

4

System Motherboard

TANK-XM813

4.1 Overview

This chapter details all the jumpers and connectors of the system motherboard. The figures below show all the connectors' locations. The connector pinouts are listed in the following sections.

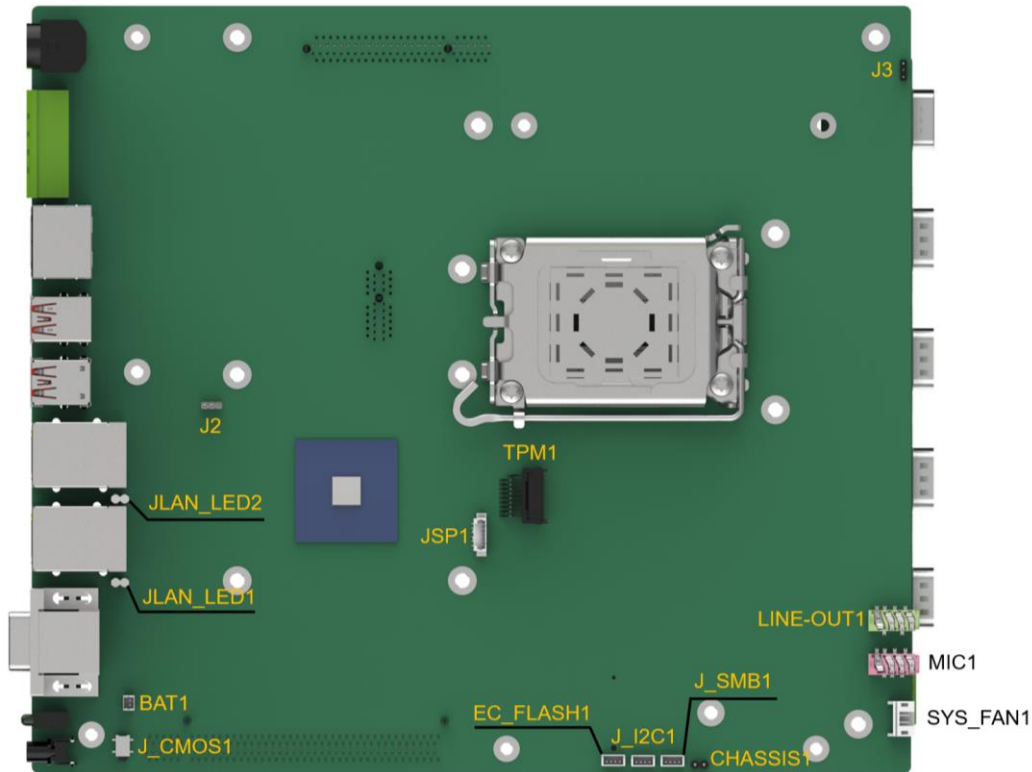


Figure 4-1: System Motherboard (Front side)

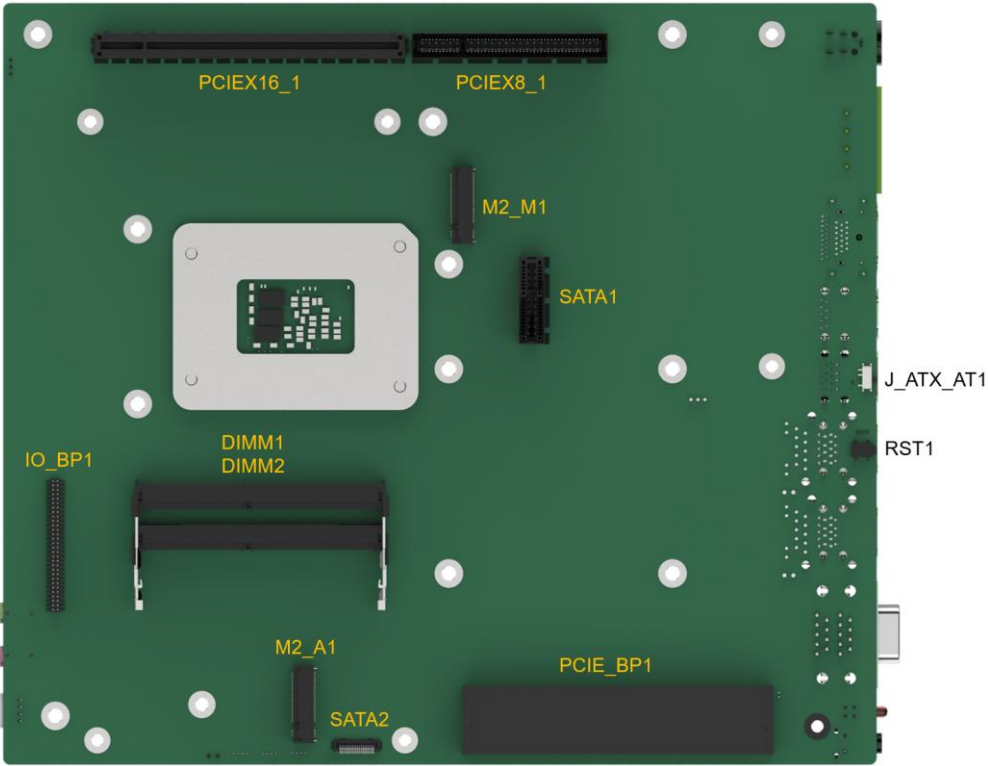


Figure 4-2: System Motherboard (Solder Side)

4.2 Internal Peripheral Connectors

The table below shows a list of the internal peripheral interface connectors on the system motherboard. Pinouts of these connectors can be found in the following sections.

Connector	Type	Label
VR firmware flash connector	3-pin header	J3
System fan connector	4-pin wafer	SYS_FAN1
Chassis intrusion connector	2-pin wafer	CHASSIS1
SMBus connector	4-pin wafer	J_SMB1
I ² C connector	4-pin wafer	J_I2C1
Flash EC ROM connector	4-pin wafer	EC_FLASH1
TPM connector	20-pin header	TPM1
SPI flash connector	6-pin wafer	JSPI1

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Connector	Type	Label
Clear CMOS switch	Tact switch	J_CMOS1
RTC battery connector	2-pin wafer	BAT1
LAN LED connectors	2-pin header	JLAN_LED1, JLAN_LED2
PCIe x16 connector	PCIe connector	PCIEX16_1
PCIe x8 connector	PCIe connector	PCIEX8_1
M.2 M-key slot	M.2 M-key slot	M2_M1
SATA 6Gb/s connector	PCIe x1 connector	SATA1
AT/ATX power mode setting	Slide switch	J_ATX_AT1
Reset button	Tact switch	RST1
PCIe backplane connector	PCIe connector	PCIE_BP1
SATA 6Gb/s connector	20-pin connector	SATA2
M.2 A-key slot	M.2 A-key slot	M2_A1
DDR5 memory sockets	262-pin SO-DIMM socket	DIMM1, DIMM2
I/O board connector	60-pin header	IO_BP1

Table 4-1: Internal Peripheral Interface Connectors**4.2.1 VR Firmware Flash Connector**

CN Label:	J3
CN Type:	3-pin header, p=2.00 mm
CN Location:	See Figure 4-3
CN Pinouts:	See Table 4-2

The J3 connector is used to flash the firmware of the voltage regulator module.

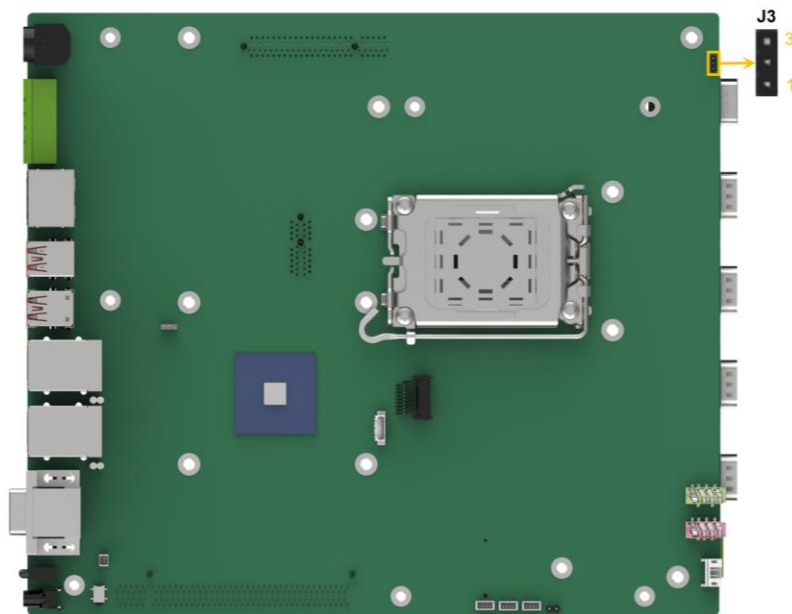


Figure 4-3: VR Firmware Flash Connector Location

Pin	Description	Pin	Description
1	PM_SCL	2	PM_SDA
3	GND		

Table 4-2: VR Firmware Flash Connector Pinouts

4.2.2 System Fan Connector

- CN Label:** **SYS_FAN1**
- CN Type:** 4-pin wafer, p=2.54 mm
- CN Location:** See **Figure 4-4**
- CN Pinouts:** See **Table 4-3**

The system fan connector attaches to a cooling fan for the system.

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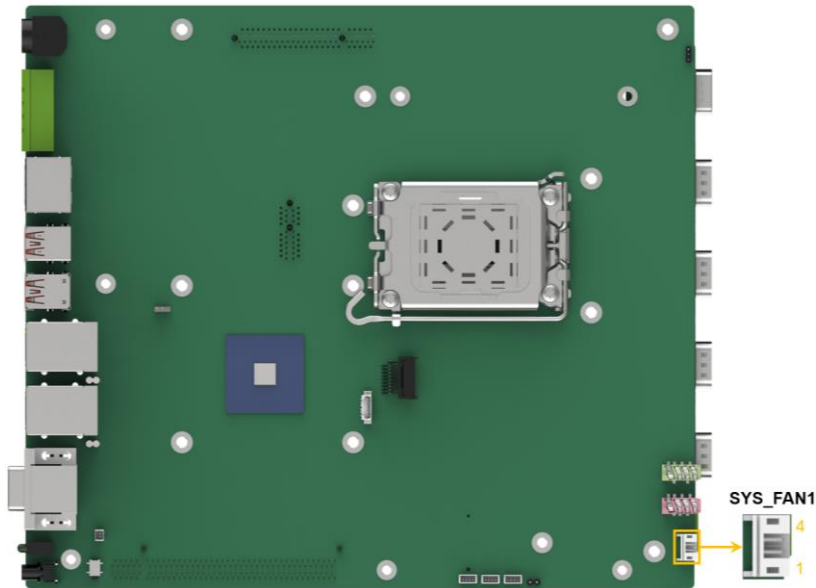


Figure 4-4: System Fan Connector Location

Pin	Description
1	GND
2	+12V
3	FANFB
4	PWB

Table 4-3: System Fan Connector Pinouts

4.2.3 Chassis Intrusion Connector

CN Label:	CHASSIS1
CN Type:	2-pin header, p=2.54 mm
CN Location:	See Figure 4-5
CN Pinouts:	See Table 4-4

The chassis intrusion connector is for a chassis intrusion detection sensor or switch that detects if the chassis has been opened.

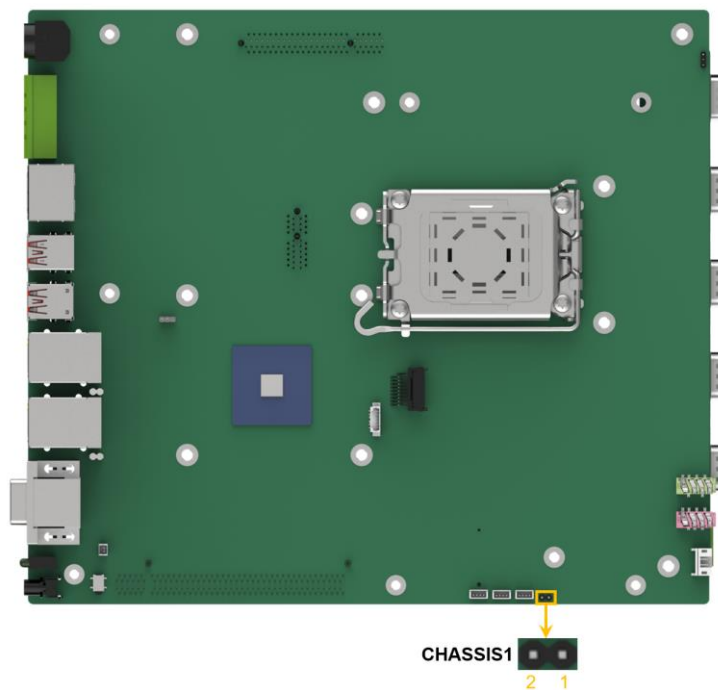


Figure 4-5: Chassis Intrusion Connector Location

Pin	Description
1	CASEOPEN_N
2	GND

Table 4-4: Chassis Intrusion Connector Pinouts

4.2.4 SMBus Connector

- CN Label:** J_SMB1
- CN Type:** 4-pin wafer, p=1.25 mm
- CN Location:** See Figure 4-6
- CN Pinouts:** See Table 4-5

The SMBus is a two-wire bus used for the communication with low bandwidth devices on a motherboard such as power chips and temperature sensors.

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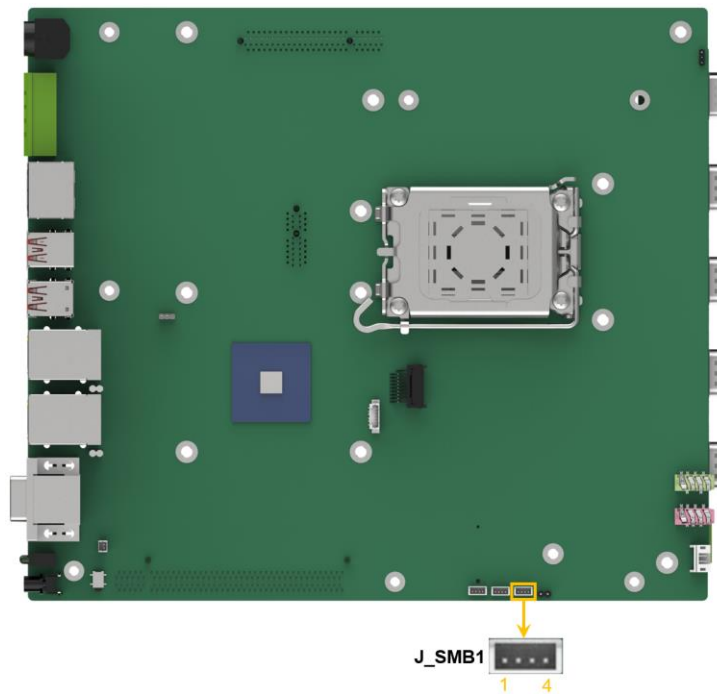


Figure 4-6: SMBus Connector Location

Pin	Description
1	GND
2	SMDAT0_EC
3	SMCLK0_EC
4	+5V

Table 4-5: SMBus Connector Pinouts



4.2.5 I²C Connector

- CN Label: J_I2C1
- CN Type: 4-pin wafer, p=1.25 mm
- CN Location: See Figure 4-7
- CN Pinouts: See Table 4-6

The I²C connector is used to connect I²C-bus devices to the mainboard.

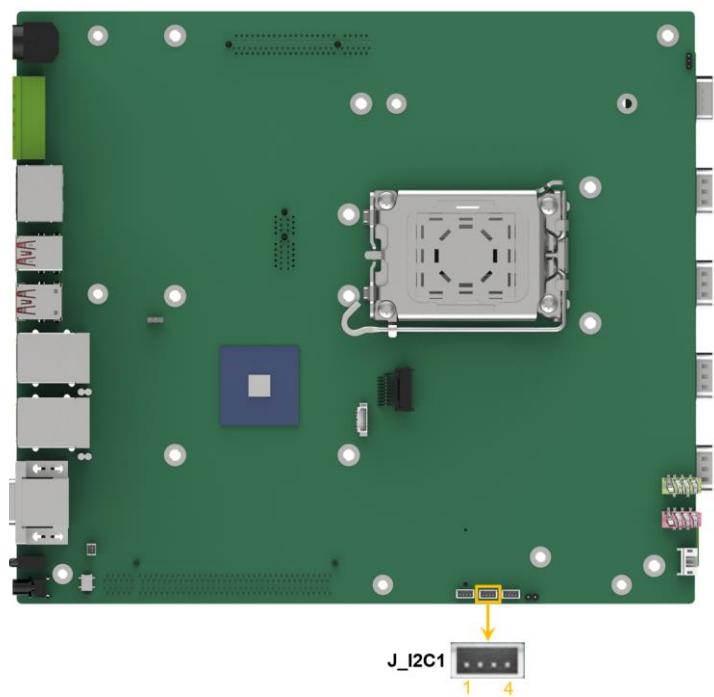


Figure 4-7: I²C Connector Location

Pin	Description
1	GND
2	SMB_DATA_MAIN
3	SMB_CLK_MAIN
4	+5V

Table 4-6: I²C Connector Pinouts

TANK-XM813**4.2.6 Flash EC ROM Connector**

CN Label:	EC_FLASH1
CN Type:	4-pin wafer, p=1.25 mm
CN Location:	See Figure 4-8
CN Pinouts:	See Table 4-7

The flash EC ROM connector is used to flash the EC internal ROM.

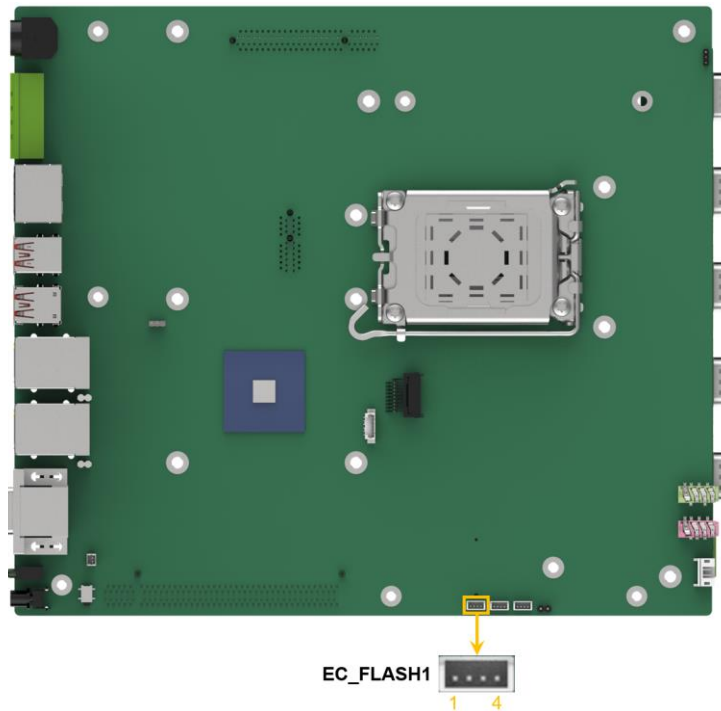


Figure 4-8: Flash EC ROM Connector Location

Pin	Description
1	GND
2	SMB_DAT
3	SMB_CLK
4	NC

Table 4-7: Flash EC ROM Connector Pinouts

4.2.7 TPM Connector

- CN Label: **TPM1**
- CN Type: 20-pin header
- CN Location: See **Figure 4-9**
- CN Pinouts: See **Table 4-8**

The TPM connector connects an external TPM module to the motherboard.

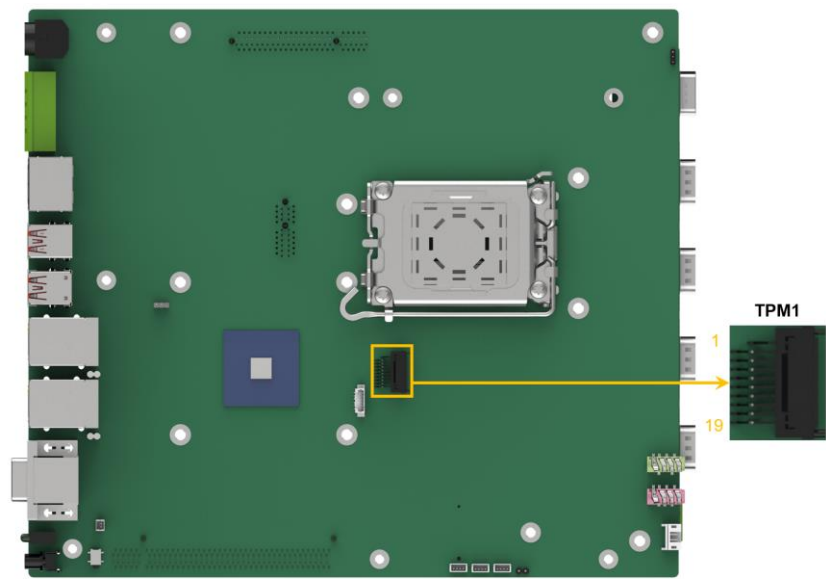


Figure 4-9: TPM Connector Location

Pin	Description	Pin	Description
1	NC	2	NC
3	GPIO	4	NC
5	GND	6	+1.8V
7	SPI_TPM_CLK_SW	8	NC
9	NC	10	SPI_TPM_SO_SW
11	NC	12	SPI_TPM_SI_SW
13	SPI_TPM_CS#_SW	14	GND
15	NC	16	NC
17	TPM_PIRQ_L	18	+1.8V
19	TPM_RST_L_R	20	NC

Table 4-8: TPM Connector Pinouts

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4.2.8 Flash SPI ROM Connector

- CN Label:** JSPI1
- CN Type:** 6-pin wafer, p=1.25 mm
- CN Location:** See Figure 4-10
- CN Pinouts:** See Table 4-9

The flash SPI ROM connector is used to flash the BIOS.

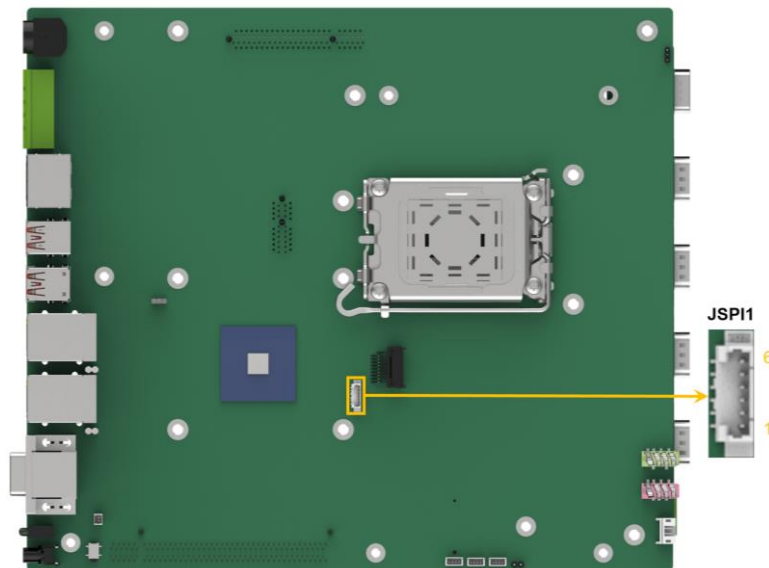


Figure 4-10: Flash SPI ROM Connector Location

Pin	Description	Pin	Description
1	+1.8V	2	SPI_FLASH_CS1#
3	SPI_FLASH_SO	4	SPI_FLASH_CLK
5	SPI_FLASH_SI	6	GND

Table 4-9: Flash SPI ROM Connector Pinouts

4.2.9 Clear CMOS Switch

- CN Label:

J_CMOS1
- CN Type:

Tact switch
- CN Location:

See Figure 4-11
- CN Pinouts:

See Table 4-10

To clear the CMOS Setup (for example if you have forgotten the password, you should clear the CMOS and then reset the password), you should disconnect the RTC battery and press the button for about 3 seconds. This will set back to normal operation mode.

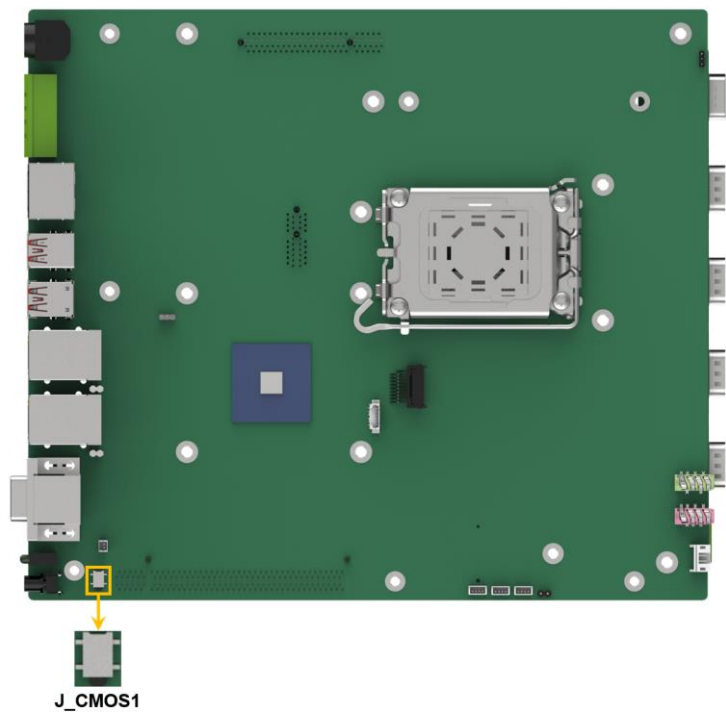


Figure 4-11: Clear CMOS Location

Status	Description
NC	Keep CMOS Setup (Normal Operation)
Press	Clear CMOS Setup

Table 4-10: Clear CMOS Pinouts

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4.2.10 Battery Connector

**CAUTION:**

Explosion risks may occur if the battery is replaced with an incorrect type. Only certified engineers should replace the on-board battery.

Dispose of used batteries according to instructions and local regulations.

- CN Label:** BAT1
- CN Type:** 2-pin wafer, p=1.25 mm
- CN Location:** See **Figure 4-12**
- CN Pinouts:** See **Table 4-11**

The battery connector is connected to the system battery. The battery provides power to the system clock to retain the time when power is turned off.

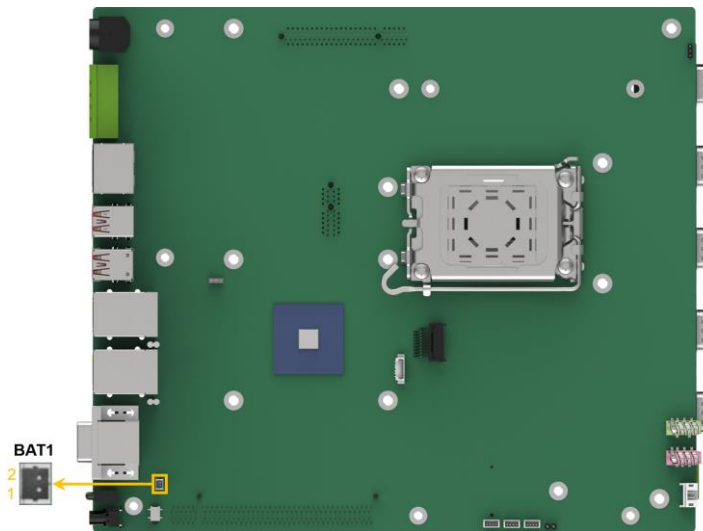


Figure 4-12: RTC Battery Connector Location

Pin	Description
1	VBATT
2	GND

Table 4-11: RTC Battery Connector Pinouts

4.2.11 LAN LED Connectors

- CN Label:

JLAN_LED1, JLAN_LED2
- CN Type:

2-pin header, p=2.00 mm
- CN Location:

See Figure 4-13
- CN Pinouts:

See Table 4-12

The LAN LED connectors are used to connect to the LAN LED indicators on the chassis to indicate the link activities of the three LAN ports.

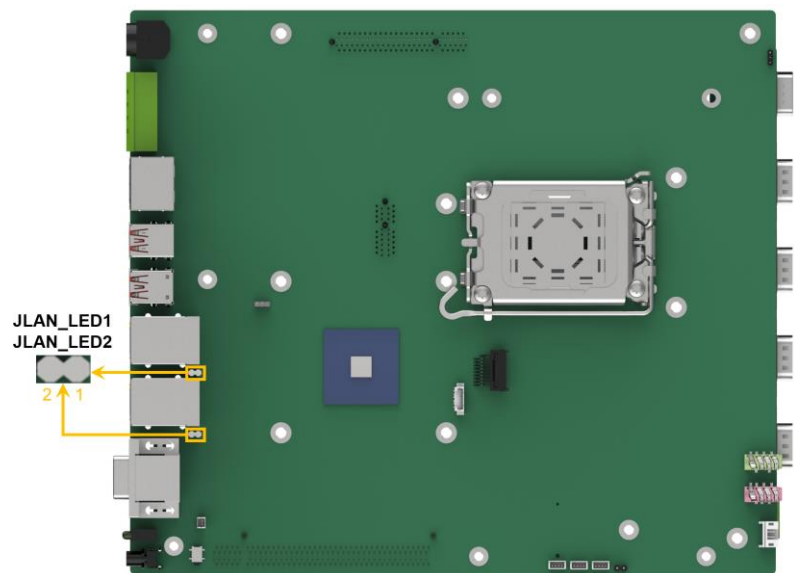


Figure 4-13: LAN LED Connectors Locations

Pin	Description
1	+3.3V
2	I226_LINK_ACT_N

Table 4-12: LAN LED Connectors Pinouts

TANK-XM813**4.2.12 PCIe x16 Connector**

CN Label: PCIEX16_1
CN Type: PCIe connector
CN Location: See **Figure 4-14**

The connector supporting PCIe Gen5 x16 signals can accept a PCIe x16 expansion card or two PCIe x8 cards.

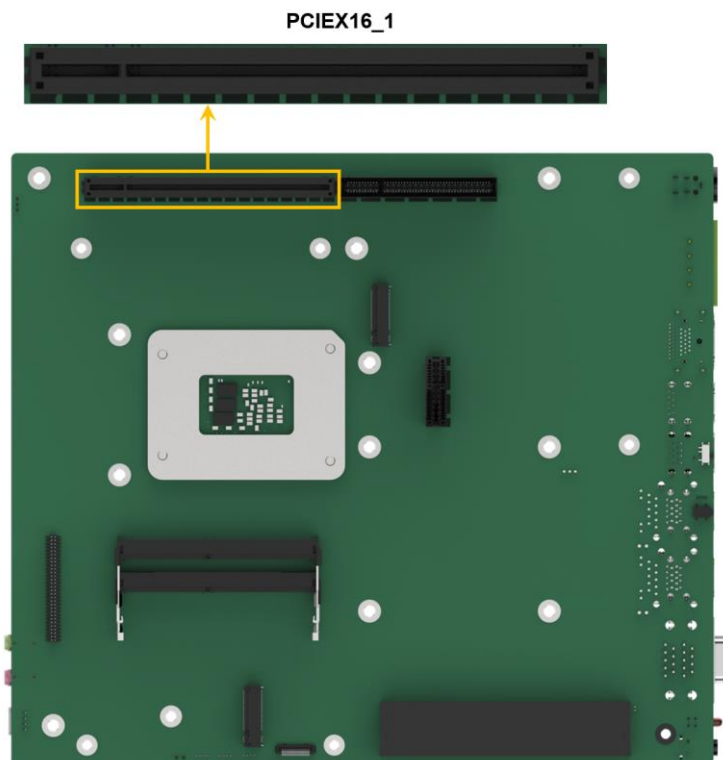


Figure 4-14: PCIe x16 Connector Location

4.2.13 PCIe x8 Connector (or Two PCIe x4 Connectors)

CN Label: PCIEX8_1

CN Type: PCIe connector

CN Location: See Figure 4-15

The connector supporting PCIe x8 signals can accept a PCIe x8 expansion card or two PCIe x4 cards.

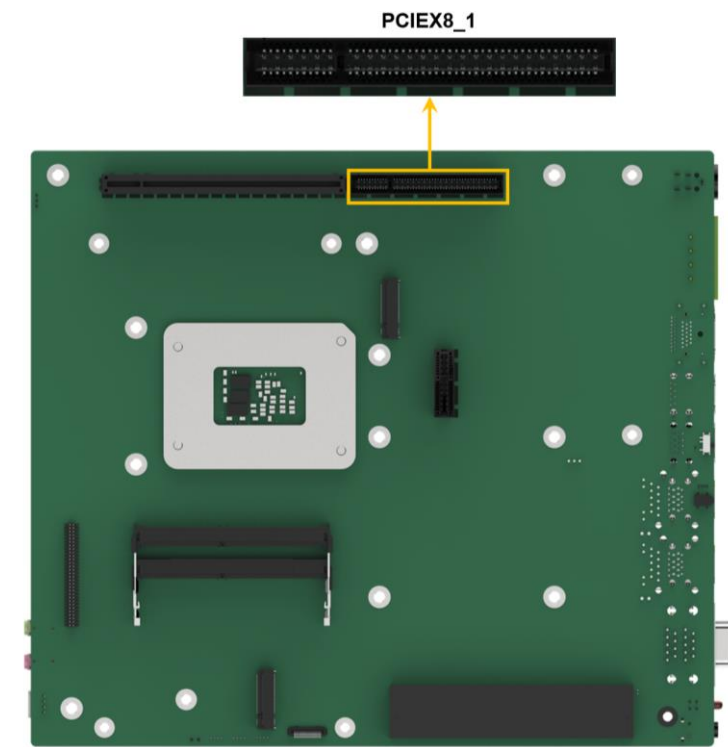
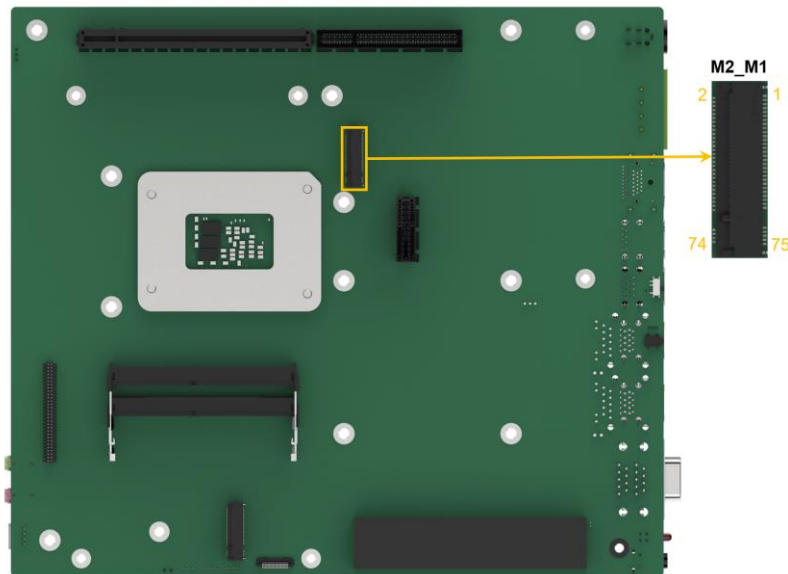


Figure 4-15: PCIe x8 Connector Location

TANK-XM813**4.2.14 M.2 M-Key Slot****CN Label:** M2_M1**CN Type:** M.2 M-key slot**CN Location:** See **Figure 4-16****CN Pinouts:** See **Table 4-13**

The M.2 2280 M-key slot with PCIe Gen4 x4 signals can accept a NVMe storage device.

**Figure 4-16: M.2 M-Key Slot Location**

Pin	Description	Pin	Description
1	GND	2	+3.3V
3	GND	4	+3.3V
5	PERN3	6	NC
7	PERP3	8	NC
9	GND	10	NC
11	PETN3	12	+3.3V
13	PETP3	14	+3.3V
15	GND	16	+3.3V
17	PERN2	18	+3.3V
19	PERP2	20	NC



Pin	Description	Pin	Description
21	GND	22	NC
23	PETN2	24	NC
25	PETP2	26	NC
27	GND	28	NC
29	PERN1	30	NC
31	PERP1	32	NC
33	GND	34	NC
35	PETN1	36	NC
37	PETP1	38	NC
39	GND	40	NC
41	PERN0	42	NC
43	PERP0	44	NC
45	GND	46	NC
47	PETN0	48	NC
49	PETP0	50	PERST#
51	GND	52	NC
53	REFCLKN	54	NC
55	REFCLKP	56	NC
57	GND	58	NC
KEY M			
67	N/C	68	NC
69	N/C	70	+3.3V
71	GND	72	+3.3V
73	GND	74	+3.3V
75	GND		

Table 4-13: M.2 M-Key Slot Pinouts



TANK-XM813**4.2.15 SATA 6Gb/s Connector**

CN Label:	SATA1
CN Type:	PCIe x1 connector
CN Location:	See Figure 4-17

The SATA 6Gb/s drive connector is connected to a SATA 6Gb/s drive. The SATA drive transfers data at speeds as high as 6Gb/s.

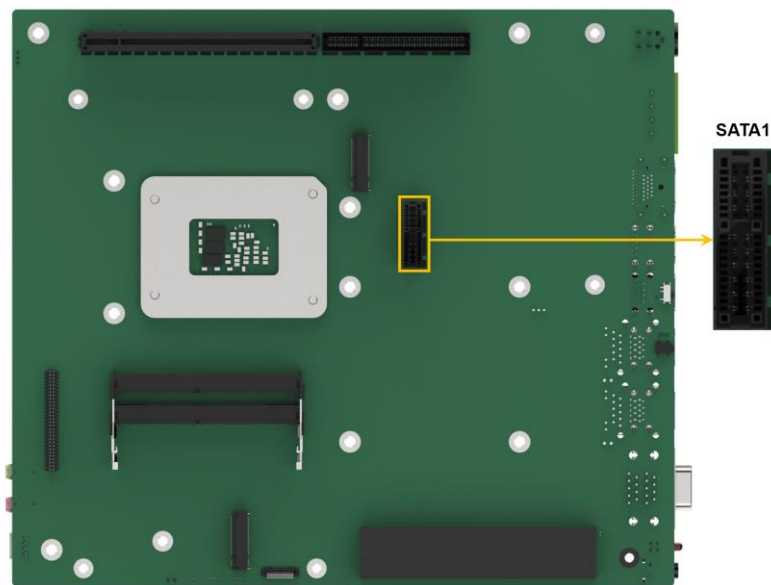


Figure 4-17: SATA 6Gb/s Connector Location

4.2.16 AT/ATX Power Mode Switch

- CN Label:

J_ATX_AT1
- CN Type:

Slide switch
- CN Location:

See Figure 4-18
- CN Pinouts:

See Table 4-14

The AT/ATX power mode selection is made through the AT/ATX power mode switch.

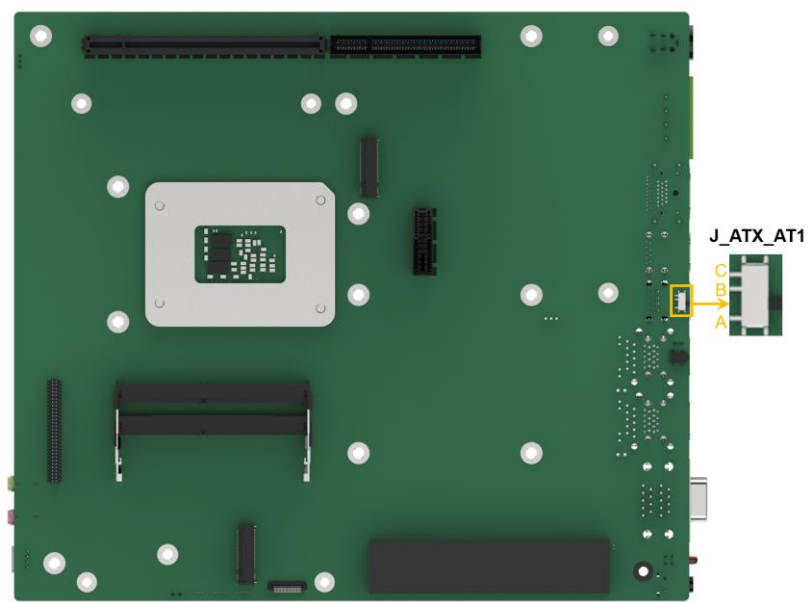


Figure 4-18: AT/ATX Power Mode Switch Locations

Pin	Description
Short A - B	ATX power mode (default)
Short B - C	AT power mode

Table 4-14: AT/ATX Power Mode Switch Pinouts

TANK-XM813**4.2.17 Reset Button**

CN Label:	RST1
CN Type:	Tact switch
CN Location:	See Figure 4-19
CN Pinouts:	See Table 4-15

The reset button users to reboot the system when the system is turned on.

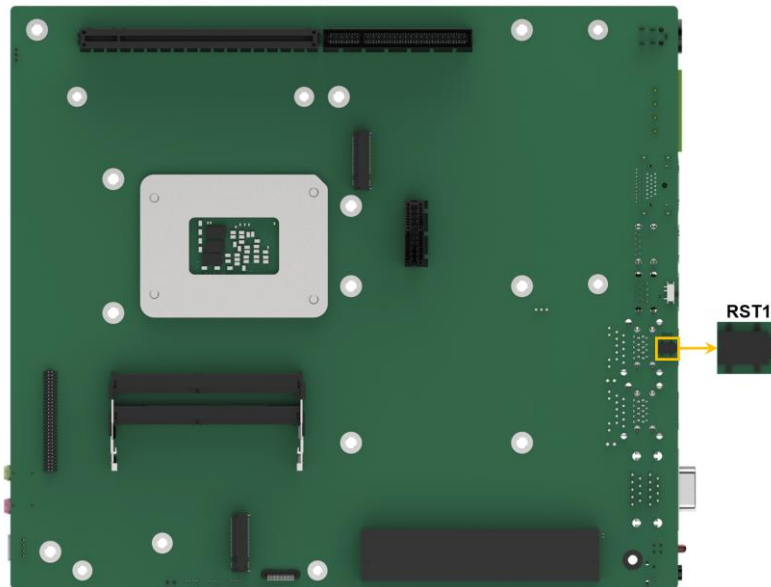


Figure 4-19: Reset Button Location

Pin	Description
NC	Normal operation
Press	System reset

Table 4-15: Reset Button Pinouts

4.2.18 PCIe Backplane Connector

CN Label: PCIE_BP1

CN Type: PCIe connector

CN Location: See **Figure 4-20**

The connector is used with TANK series POE boards.

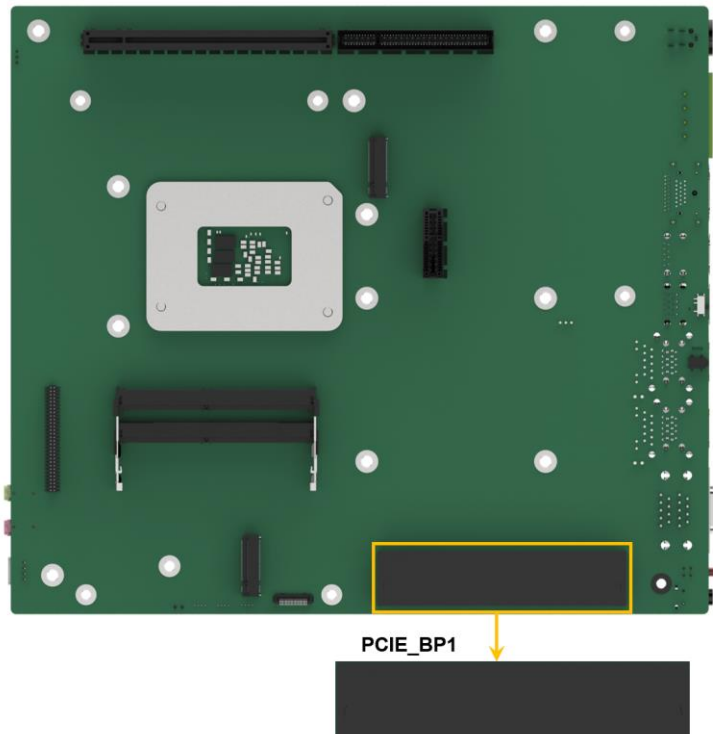


Figure 4-20: PCIe x16 Connector (or Two PCIe x8 Connectors) Location

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4.2.19 SATA 6Gb/s Connector

- CN Label:** SATA2
- CN Type:** 20-pin SATA connector, p=1.27 mm
- CN Location:** See **Figure 4-21**
- CN Pinouts:** See **Table 4-16**

The SATA 6Gb/s drive connector is connected to a SATA 6Gb/s drive. The SATA drive transfers data at speeds as high as 6Gb/s.

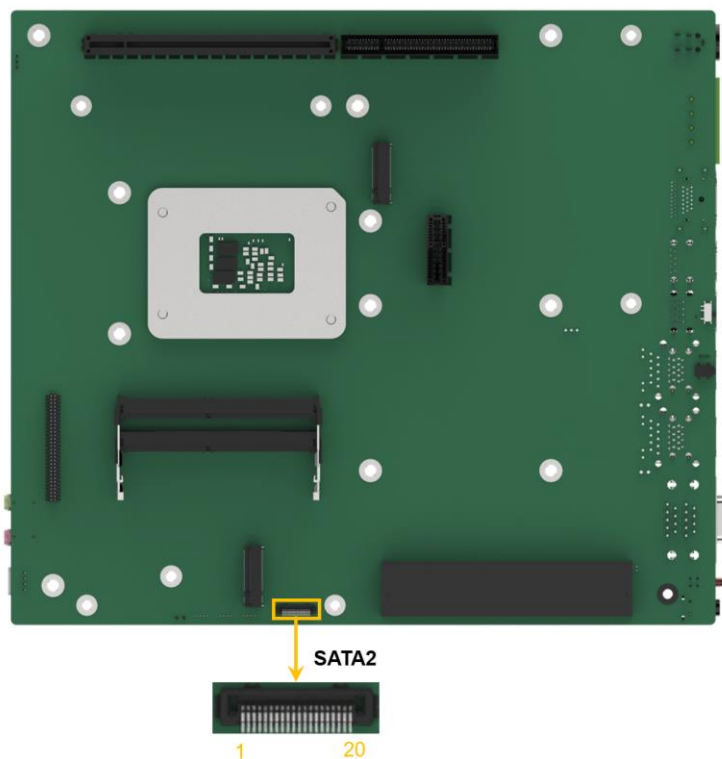


Figure 4-21: SATA 6Gb/s Connectors Location

Pin	Description	Pin	Description
1	GND	11	+5VS
2	GND	12	N/C
3	GND	13	N/C
4	GND	14	GND
5	GND	15	SATA RX+

Pin	Description	Pin	Description
6	GND	16	SATA_RX-
7	+5VS	17	GND
8	+5VS	18	SATA_TX-
9	+5VS	19	SATA_TX+
10	+5VS	20	GND

Table 4-16: SATA 6Gb/s Connector Pinouts

4.2.20 M.2 A-Key Slot

- CN Label: M2_A1
- CN Type: M.2 A-key slot
- CN Location: See Figure 4-22
- CN Pinouts: See Table 4-17

The M.2 2230 A-key slot supporting PCIe Gen3 x1 & USB 2.0 signals and vPRO can accept a Wi-Fi and Bluetooth module.

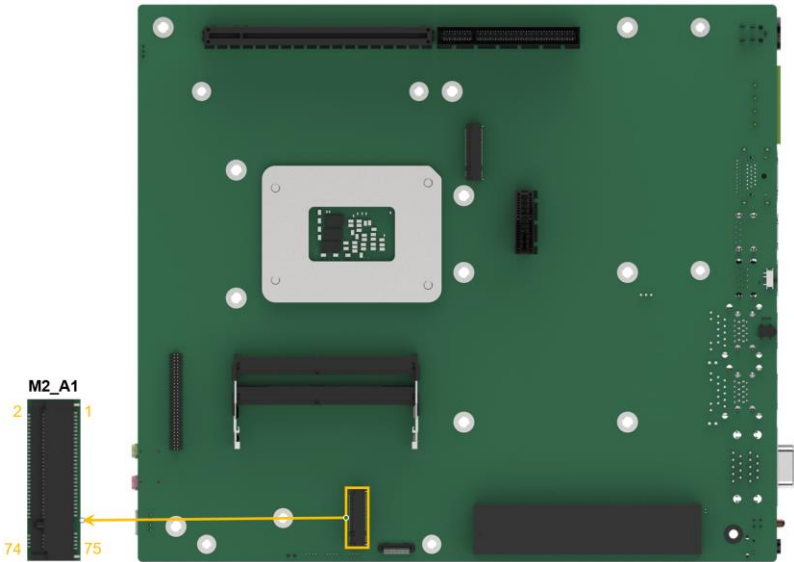


Figure 4-22: M.2 A-key Slot Location

Pin	Description	Pin	Description
1	GND	2	+V3.3A
3	USB+	4	+V3.3A

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Pin	Description	Pin	Description
5	USB-	6	NC
7	GND	8	Module Key
9	Module Key	10	Module Key
11	Module Key	12	Module Key
13	Module Key	14	Module Key
15	Module Key	16	NC
17	NC	18	GND
19	NC	20	NC
21	NC	22	NC
23	GND	24	GND
25	NC	26	NC
27	NC	28	NC
29	GND	30	GND
31	NC	32	NC
33	GND	34	NC
35	PCIE_TX2+	36	GND
37	PCIE_TX2-	38	NC
39	GND	40	NC
41	PCIE_RX2+	42	NC
43	PCIE_RX2-	44	NC
45	GND	46	NC
47	CLK_PCIE2+	48	NC
49	CLK_PCIE2-	50	PMC_SUS_CLK
51	GND	52	WLAN_PERST#
53	NC	54	+V3.3A_WLAN
55	+V3.3A_WLAN	56	+V3.3A_WLAN
57	GND	58	NC
59	NC	60	NC
61	NC	62	NC
63	GND	64	NC
65	NC	66	NC
67	NC	68	NC
69	GND	70	NC

Pin	Description	Pin	Description
71	NC	72	+V3.3A
73	NC	74	+V3.3A
75	GND		

Table 4-17: M.2 A-Key Slot Pinouts

4.2.21 DDR5 SO-DIMM Sockets

- CN Label:

DIMM1, DIMM2
- CN Type:

262-pin SO-DIMM socket
- CN Location:

See Figure 4-23

The SO-DIMM sockets are used for two DDR5 SO-DIMM memory modules.

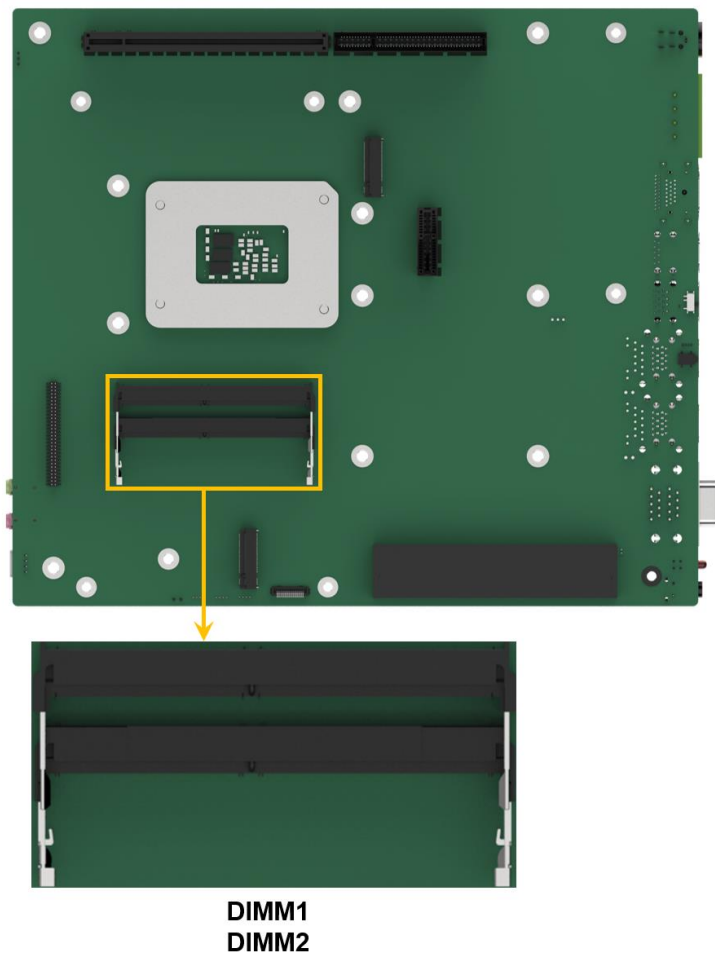


Figure 4-23: DDR5 SO-DIMM Sockets Location

TANK-XM813**4.2.22 I/O Board Connector**

CN Label: IO_BP1

CN Type: 60-pin header, p=1.27 mm

CN Location: See **Figure 4-24**

The connector is used with TANK series I/O boards.

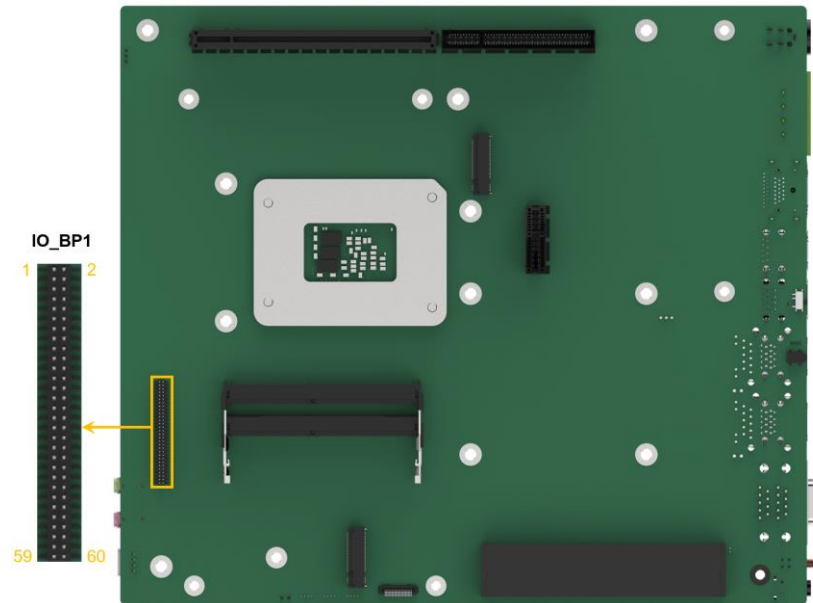


Figure 4-24: I/O Board Connector Location

4.3 External Interface Panel Connectors

Figure 4-25 shows the system motherboard’s external peripheral interface connector (EPIC) panels. The table below shows a list of the external connectors on the motherboard. Pinouts of these connectors can be found in the following sections.

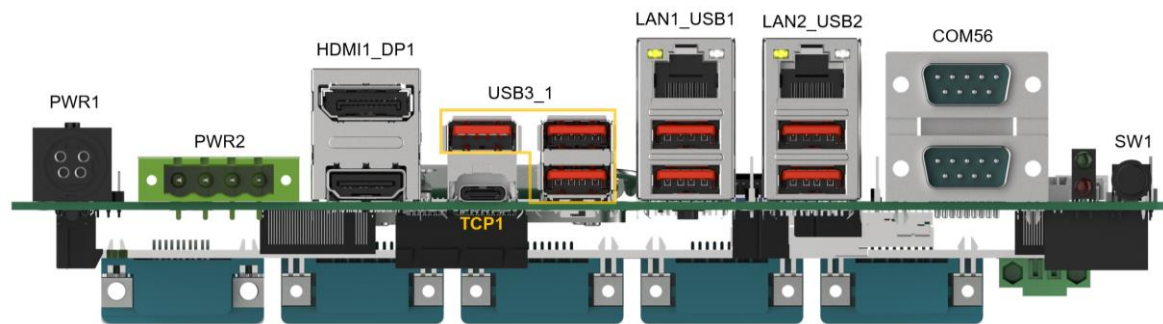


Figure 4-25: External Peripheral Interface Connectors (Front Panel)

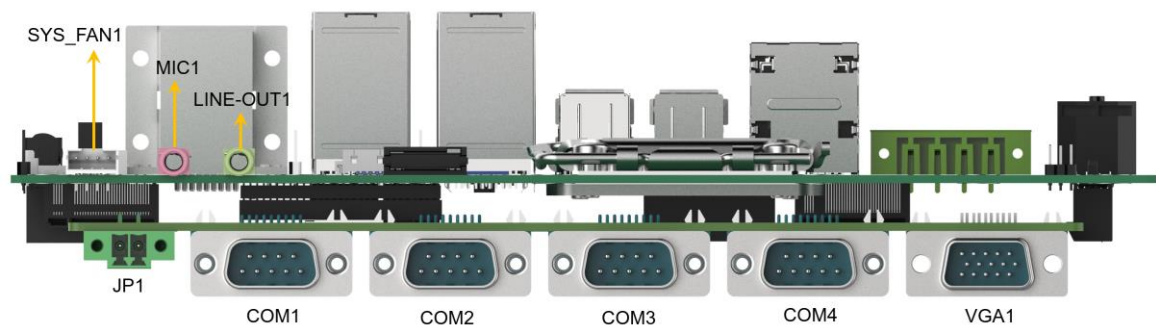


Figure 4-26: External Peripheral Interface Connectors (Rear Panel)

Connector	Type	Label
Power input jack	DC jack	PWR1
Power input terminal block	4-pin terminal block	PWR2
DisplayPort and HDMI combo connector	DisplayPort, HDMI	HDMI1_DP1
USB 3.2 Gen 2 connectors	USB 3.2 Gen 2 Type A	USB3_1
USB4 connector	USB4 Type-C	TCP1

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Connector	Type	Label
LAN and USB 3.2 Gen 2 combo connectors	RJ-45, USB 3.2 Gen 2 Type A	LAN1_USB1, LAN2_USB2
RS-232/422/485 connectors	DB-9	COM56
Power Button	Button	SW1
Microphone connector	Audio jack	MIC1
Line out connector	Audio jack	LINE-OUT1
Remote power terminal block	2-pin terminal block	JP1
RS-232 connectors	DB-9	COM1, COM2, COM3, COM4
Digital I/O connector	DB-15	VGA1

Table 4-18: EPIC Connectors

4.3.1 Power Input Jack

CN Label: PWR1

CN Type: DC jack

CN Location: See **Figure 4-27**

CN Pinouts: See **Table 4-19**

The power input jack supports 12 V ~ 28 V DC input.

Pin	Description	Pin	Description
1	DC_IN 9~28V	2	GND
3	DC_IN 9~28V	4	GND
5	GND		

Table 4-19: Power Input Jack Pinouts



Figure 4-27: Power Input Jack



4.3.2 Power Input Terminal Block

- CN Label: PWR2
- CN Type: 4-pin terminal block
- CN Location: See Figure 4-28
- CN Pinouts: See Table 4-20

PWR2 connector is a 4-pin terminal block with 12 V ~ 28 V DC input allowed. Make sure that the power and ground wires are attached to the correct sockets of the connector.

Pin	Description	Pin	Description
1	12-28V	2	12-28V
3	GND	4	GND

Table 4-20: Power Input Terminal Block Pinouts



Figure 4-28: Power Input Terminal Block

4.3.3 DisplayPort and HDMI Combo Connector

- CN Label: HDMI1_DP1
- CN Type: DisplayPort, HDMI
- CN Location: See Figure 4-29 and Figure 4-30
- CN Pinouts: See Table 4-21 and Table 4-22

The DP connector supporting up to DP++ can connect to a display device with DisplayPort interface.

Pin	Description	Pin	Description
1	LANE0P	11	GND
2	GND	12	LANE3N
3	LANE0N	13	AUX_CTRL_DET_C
4	LANE1P	14	GND



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5	GND	15	AUXP
6	LANE1N	16	GND
7	LANE2P	17	AUXN
8	GND	18	HPD
9	LANE2N	19	GND
10	LANE3P	20	+3.3V

Table 4-21: DP Connector Pinouts

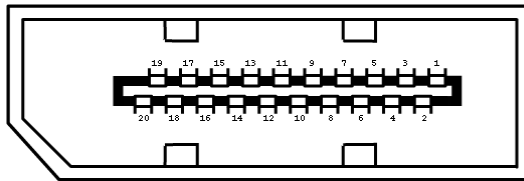


Figure 4-29: DP Connector

The HDMI connector supporting up to HDMI1.4 can connect to an HDMI device.

Pin	Description	Pin	Description
1	HDMI_DATA2	2	GND
3	HDMI_DATA2#	4	HDMI_DATA1
5	GND	6	HDMI_DATA1#
7	HDMI_DATA0	8	GND
9	HDMI_DATA0#	10	HDMI_CLK
11	GND	12	HDMI_CLK#
13	N/C	14	N/C
15	HDMI_SCL	16	HDMI_SDA
17	GND	18	+5V
19	HDMI_HPD		

Table 4-22: HDMI Connector Pinouts

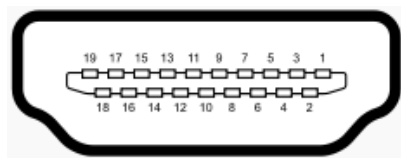


Figure 4-30: HDMI Connector

4.3.4 USB 3.2 Gen 2 Connector

- CN Label:USB3_1
- CN Type:USB 3.2 Gen 2 Type-A
- CN Location:See Figure 4-31
- CN Pinouts:See Table 4-23

There are seven external USB 3.2 Gen 2 ports (10 Gb/s), including four in LAN1_USB1 and LAN2_USB2. The USB connector can be connected to a USB 2.0 or USB 3.2 device.



Figure 4-31: External USB 3.2 Gen 2 Connectors

Pin	Description	Pin	Description
1	+5V_USB	6	RX+
2	D-	7	GND
3	D+	8	TX-
4	GND	9	TX+
5	RX-		

Table 4-23: External USB 3.2 Gen 2 Connectors Pinouts

4.3.5 USB 4 Connector

- CN Label:TCP1
- CN Type:USB 4 Type-C
- CN Location:See Figure 4-32

TCP1 supports high speed data rate of 40 Gb/s and DP of 4096X2160@60HZ. Power supply support is up to 15W.



Figure 4-32: USB 4 Connector

TANK-XM813**4.3.6 LAN and USB 3.2 Combo Connectors**

CN Label:	LAN1_USB1, LAN2_USB2
CN Type:	RJ-45, USB 3.2 Gen 2 Type A
CN Location:	See Figure 4-33
CN Pinouts:	See Table 4-24

The system is equipped with two built-in 1000/2500Mbps Ethernet controllers. Users can connect them to LAN networks through the RJ45 LAN connectors.

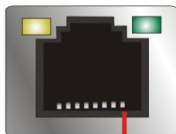
Pin	Description	Pin	Description	
1	MDIA0+	5	MDIA2-	
2	MDIA0-	6	MDIA1-	
3	MDIA1+	7	MDIA3+	
4	MDIA2+	8	MDIA3-	
LED	Description	LED	Description	
A	Off: No link Yellow: Linked Blinking: TX/RX activity	B	Off: 10 Mbps connection Green: 1000 Mbps connection Orange: 2.5 Gbps connection	Pin 1

Table 4-24: External 2.5GbE RJ-45 Connectors



Figure 4-33: LAN and USB 3.2 Combo Connector

4.3.7 RS-232/422/485 Connectors

CN Label: COM56

CN Type: 9-pin D-SUB

CN Location: See **Figure 4-34**

CN Pinouts: See **Table 4-25**

The COM connectors connect to serial devices that support RS-232/422/485 communication.

Pin	Description	Pin	Description
1	DIN0	6	DOUT2
2	DOUT0	7	DIN3
3	DIN1	8	DOUT3
4	DOUT1	9	+V5
5	DIN2		

Table 4-25: RS-232/422/485 Connector Pinouts

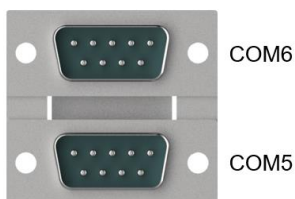


Figure 4-34: RS-232/422/485 Connectors

4.3.8 Audio Jacks

CN Label: LINE-OUT1, MIC1

CN Type: 7-pin audio jack

CN Location: See **Figure 4-35**

The audio jacks connect to external audio devices.

- **Line out (lime):** Connects to a headphone or a speaker.
- **Microphone (pink):** Connects to a microphone.

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Figure 4-35: Audio Jacks

4.3.9 Remote Power Connector

CN Label: JP1
CN Type: 2-pin terminal block
CN Location: See **Figure 4-36**

This remote power connector can be connected to an external switch for remote power control.



Figure 4-36: Remote Power Connector

4.3.10 RS-232 Connectors

CN Label: COM1, COM2, COM3, COM4
CN Type: 9-pin D-SUB
CN Location: See **Figure 4-37**
CN Pinouts: See **Table 4-26**

The COM connector connects to a serial device that supports RS-232 communication.

Pin	Description	Pin	Description
1	DCD	6	DSR
2	RXD	7	RTS
3	TXD	8	CTS
4	DTR	9	RI
5	GND		

Table 4-26: External RS-232 Connector Pinouts



Figure 4-37: RS-232 Connectors

4.3.11 Digital I/O Connector

CN Label: VGA1

CN Type: D-SUB

CN Location: See **Figure 4-38**

The digital I/O connector provides programmable input and output for external devices. The digital I/O provides 6-bit output and 6-bit input.



Figure 4-38: Digital I/O Connector

Chapter

5

BIOS

5.1 Introduction

The BIOS is programmed onto the BIOS chip. The BIOS setup program allows changes to certain system settings. This chapter outlines the options that can be changed.



NOTE:

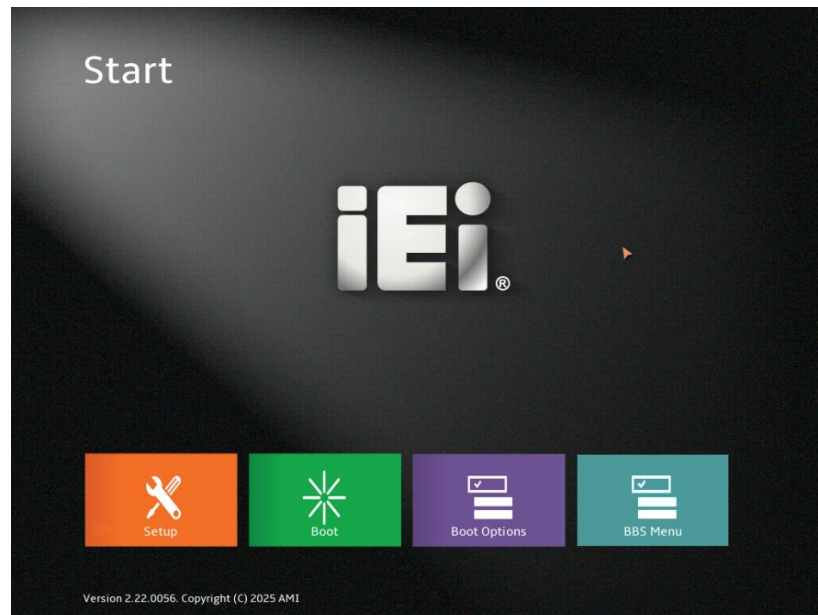
Some of the BIOS options may vary throughout the life cycle of the product and are subject to change without prior notice.

5.1.1 Starting Setup

The UEFI BIOS is activated when the computer is turned on. The setup program can be activated in one of two ways.

1. **Using keyboard:** Press the **DEL** or **F2** as soon as the system is turned on.
2. **Using touchscreen:** Press the **Setup** button on the upper right corner of the BIOS Starting Menu.

If the message disappears before the **DEL** or **F2** key is pressed, restart the computer and try again, then the BIOS Starting Menu will appear. Select "Setup" and press Enter to get into the BIOS Setup.



BIOS Menu 1: BIOS Starting Menu

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5.1.2 Using Setup

The BIOS Setup menu can be navigated by using a keyboard or a touchscreen.

5.1.2.1 Keyboard Navigation

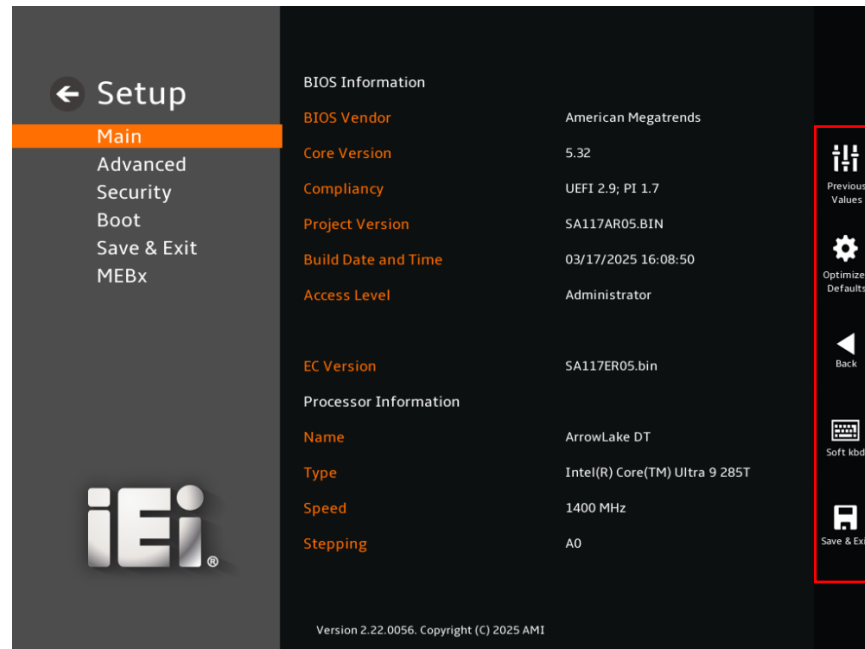
For keyboard navigation, use the navigation keys shown in **Table 5-1**.

Key	Function
Up arrow	Move to previous item
Down arrow	Move to next item
Left arrow	Move to the item on the left hand side
Right arrow	Move to the item on the right hand side
+	Increase the numeric value or make changes
-	Decrease the numeric value or make changes
Page Up	Move to the previous page
Page Dn	Move to the next page
Esc	Main Menu – Quit and not save changes into CMOS Status Page Setup Menu and Option Page Setup Menu -- Exit current page and return to Main Menu
F1	General help, only for Status Page Setup Menu and Option Page Setup Menu
F2	Load previous values
F3	Load optimized defaults
F4	Save changes and Exit BIOS
<K>	Scroll help area upwards
<M>	Scroll help area downwards

Table 5-1: BIOS Navigation Keys

5.1.2.2 Touch Navigation

For touchscreen navigation, use the on-screen navigation keys shown below.



BIOS Menu 2: Touch Navigation

On-screen Button	Function
Previous Values	Load the last value you set.
Optimized Defaults	Load the factory default values in order to achieve the best performance.
Back	Return to the previous menu.
Soft kbd	Display the on-screen keyboard.
Save & Exit	Save the changes made to the BIOS options and reset the system.

Table 5-2: BIOS On-screen Navigation Keys

5.1.3 Getting Help

When **F1** is pressed a small help window describing the appropriate keys to use and the possible selections for the highlighted item appears. To exit the Help Window, press the **Esc** key.

5.1.4 Unable to Reboot after Configuration Changes

If the computer cannot boot after changes to the system configuration is made, CMOS defaults. Use the clear CMOS button described in **Chapter 4**.

5.1.5 BIOS Menu Bar

The **menu bar** on top of the BIOS screen has the following main items:

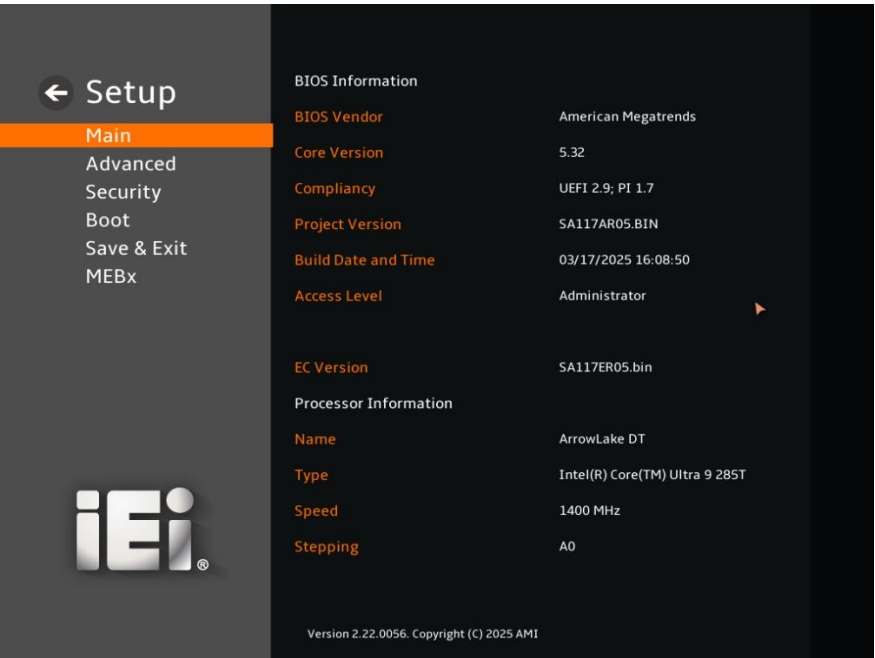
- Main – Changes the basic system configuration.
- Advanced – Changes the advanced system settings.
- Chipset – Changes the chipset settings.
- Security – Sets User and Supervisor Passwords.
- Boot – Changes the system boot configuration.
- Save & Exit – Selects exit options and loads default settings
- MEBx – Enters the MEBx password to login

The following sections completely describe the configuration options found in the menu items at the top of the BIOS screen and listed above.

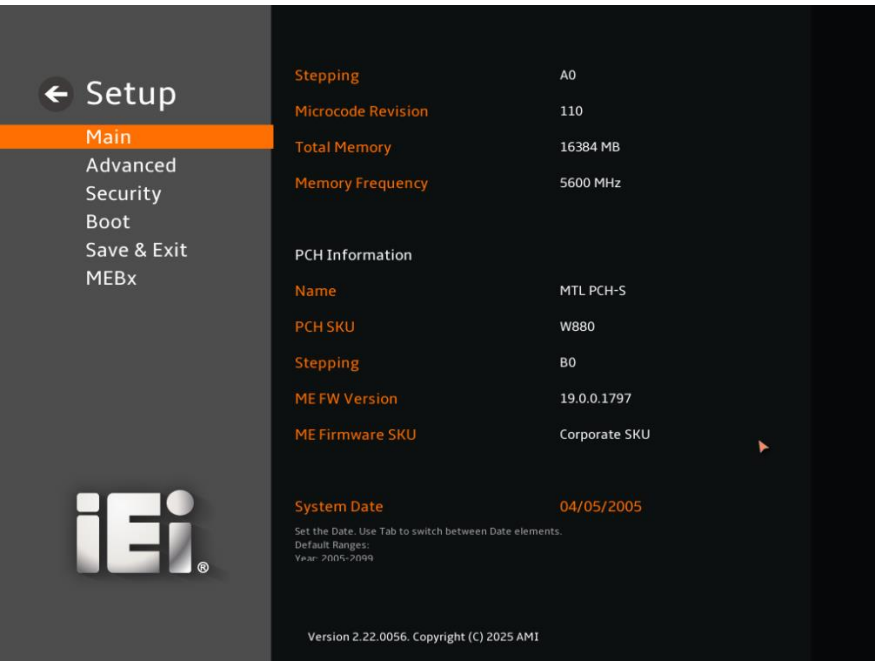


5.2 Main

The **Main** BIOS menu appears when the **BIOS Setup** program is entered. The **Main** menu gives an overview of the basic system information.

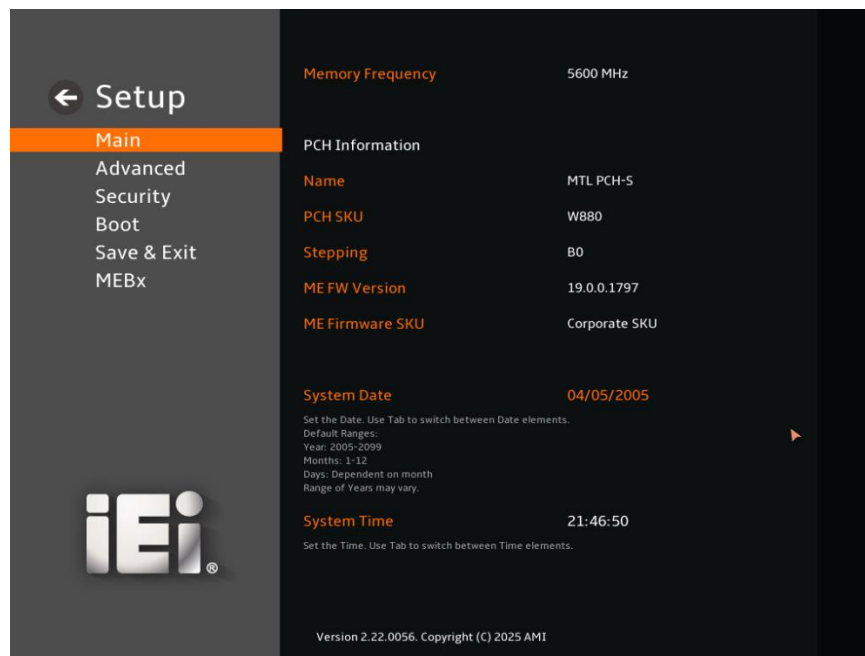


BIOS Menu 3: Main (1/3)



BIOS Menu 4: Main (2/3)





BIOS Menu 5: Main (3/3)

➔ BIOS Information

The **BIOS Information** lists a brief summary of the BIOS. The fields in **BIOS Information** cannot be changed. The items shown in the system overview include:

- **BIOS Vendor:** Installed BIOS vendor
- **Core Version:** Current BIOS version
- **Compliance:** Current UEFI & PI version
- **Project Version:** the board version
- **Build Date:** Date the current BIOS version was made
- **EC Version:** Current EC version

➔ Processor Information

The **Processor Information** lists a brief summary of the Processor. The fields in **Processor Information** cannot be changed. The items shown in the system overview include:

- **Name:** Displays the processor details
- **Type:** Displays the processor type
- **Speed:** Displays the processor speed
- **Stepping:** Displays the processor stepping

- **Microcode Revision:** CPU microcode revision
- **Total Memory:** Displays the installed memory in the system
- **Memory Frequency:** Displays the frequency of memory

➔ PCH Information

The **PCH Information** lists a brief summary of the PCH. The fields in **PCH Information** cannot be changed. The items shown in the system overview include:

- **Name:** Displays the PCH name
- **PCH SKU:** Displays the PCH SKU
- **Stepping:** Displays the PCH stepping
- **ME FW Version:** Displays the ME firmware version
- **ME Firmware SKU:** Displays the ME firmware SKU

The System Overview field also has two user configurable fields:

➔ System Date [xx/xx/xx]

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

➔ System Time [xx:xx:xx]

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

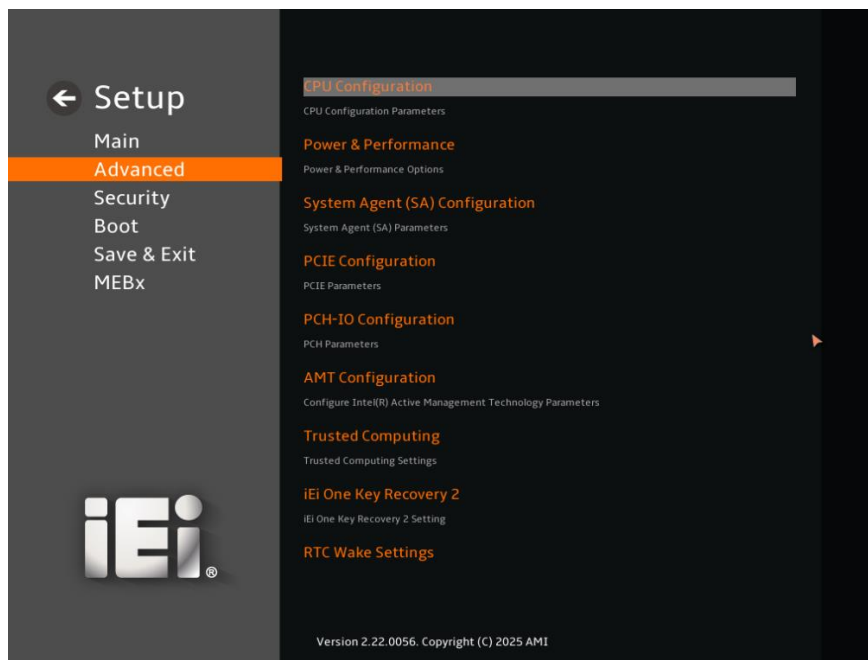
TANK-XM813

5.3 Advanced

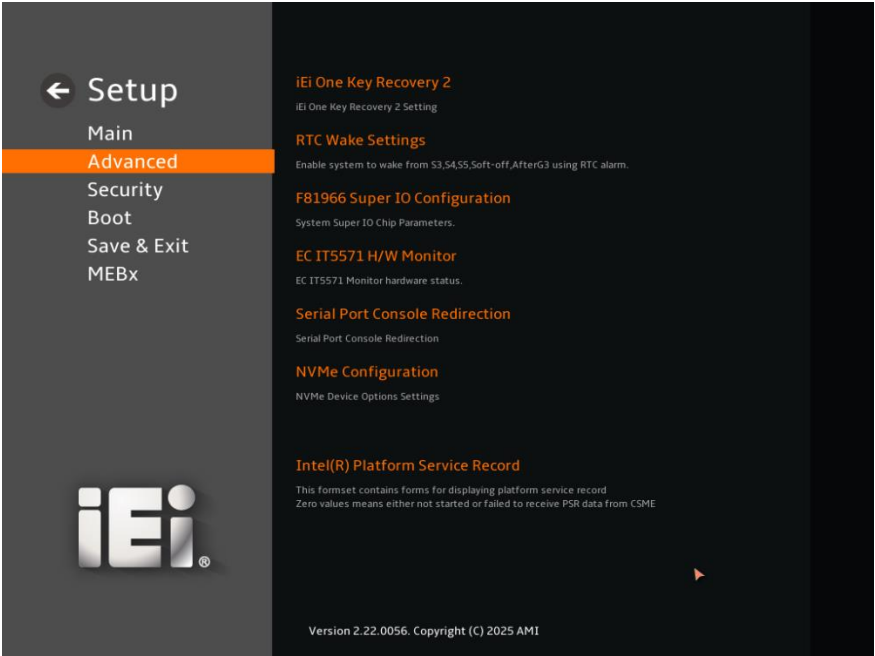
Use the **Advanced** menu (**BIOS Menu 6 & BIOS Menu 7**) to configure the CPU and peripheral devices through the following sub-menus:

**WARNING!**

Setting the wrong values in the sections below may cause the system to malfunction. Make sure that the settings made are compatible with the hardware.



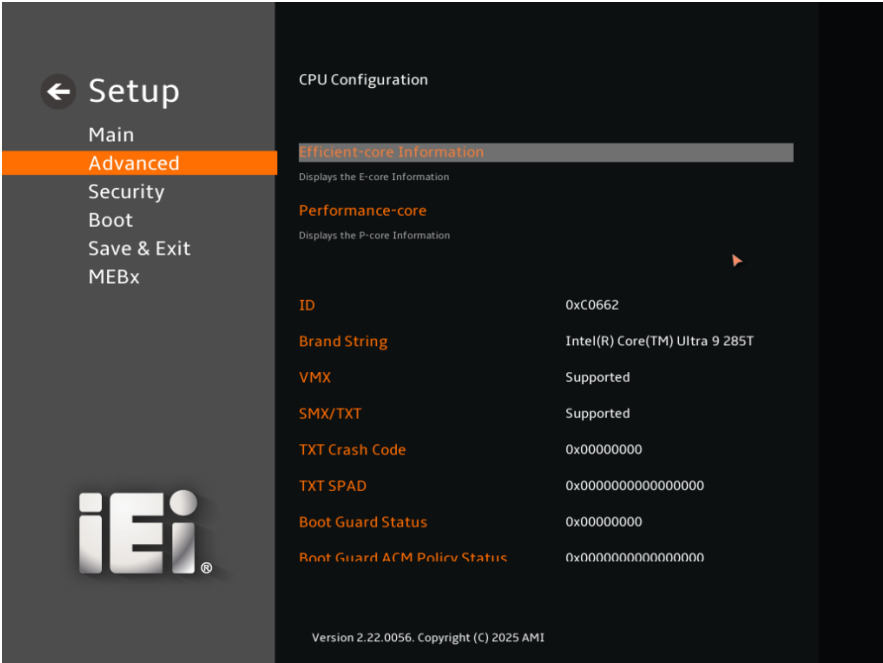
BIOS Menu 6: Advanced (1/2)



BIOS Menu 7: Advanced (2/2)

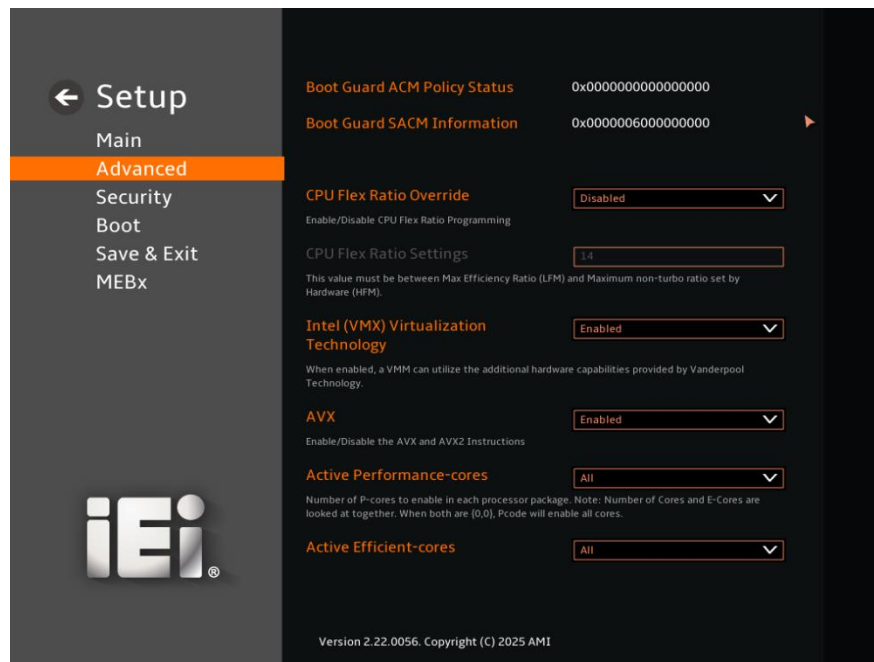
5.3.1 CPU Configuration

Use the CPU Configuration menu (**BIOS Menu 8 ~ 11**) to view detailed CPU specifications or enable the Intel Virtualization Technology.

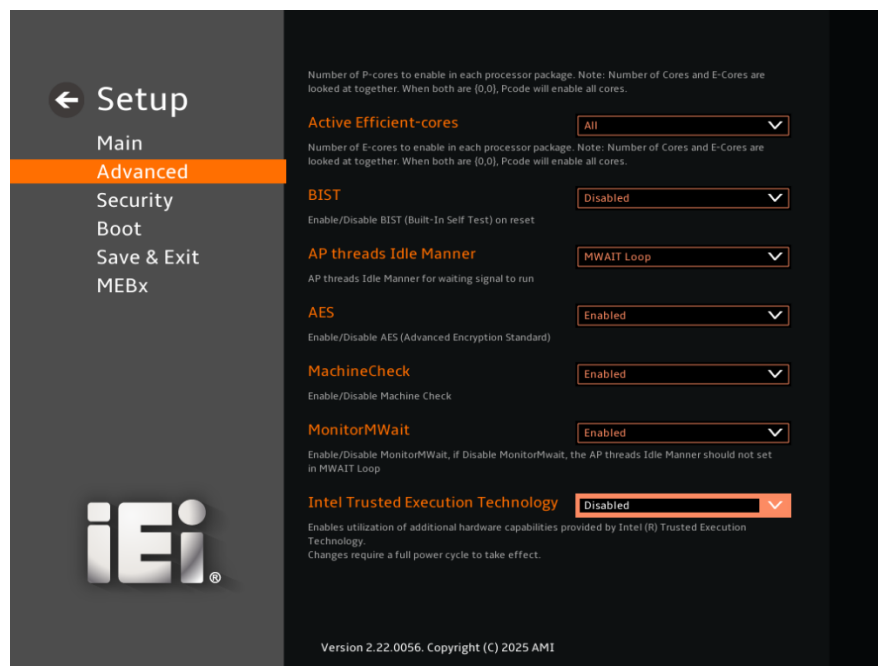


BIOS Menu 8: CPU Configuration (1/4)

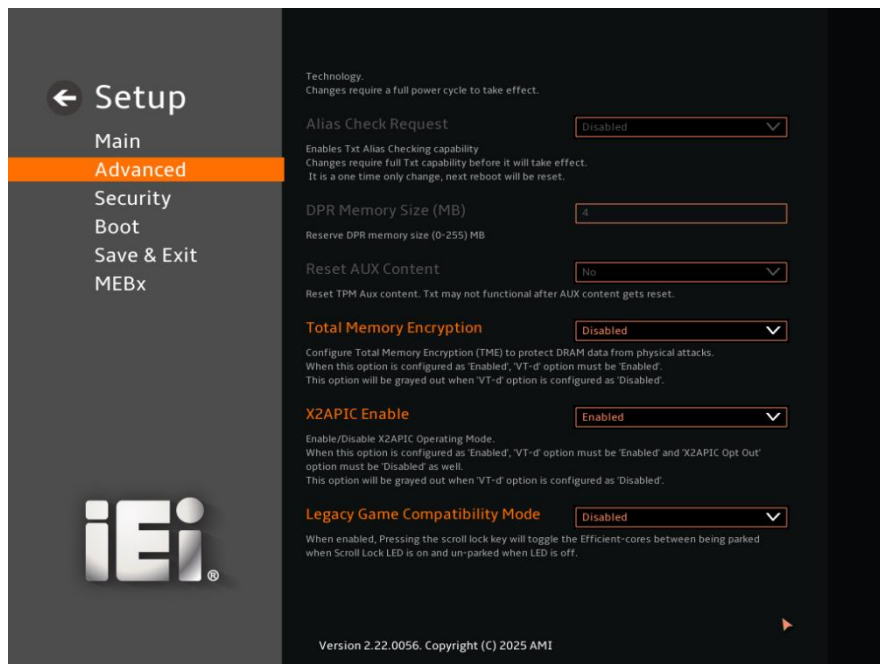




BIOS Menu 9: CPU Configuration (2/4)



BIOS Menu 10: CPU Configuration (3/4)


BIOS Menu 11: CPU Configuration (4/4)
→ CPU Flex Ratio Override [Enabled]

Use the **CPU Flex Ratio Override** option to enable or disable CPU Flex Ratio Programming.

- ➔ **Disabled** **DEFAULT** Disable CPU Flex Ratio Programming.
- ➔ **Enabled** Enable CPU Flex Ratio Programming.

→ Intel (VMX) Virtualization Technology [Enabled]

Use the **Intel (VMX) Virtualization Technology** option to enable or disable virtualization on the system. When combined with third party software, Intel® Virtualization technology allows several OSs to run on the same system at the same time.

- ➔ **Disabled** Disable Intel Virtualization Technology.
- ➔ **Enabled** **DEFAULT** Enable Intel Virtualization Technology.

→ AVX [Enabled]

Use the **AVX** option to enable or disable the AVX and AVX2 Instructions.

- ➔ **Disabled** Disable the AVX and AVX2 Instructions.

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→ **Enabled** **DEFAULT** Enable the AVX and AVX2 Instructions.

→ **Active Performance-cores [All]**

Use the **Active Performance-cores** option to enable numbers of P-cores in the processor package.

→ **All** **DEFAULT** Enable all P-cores in the processor package.

→ **1** Enable one P-core in the processor package.

.....

→ **7** Enable seven P-cores in the processor package.

→ **Active Efficient-cores [All]**

Use the **Active Efficient-cores** option to enable numbers of E-cores in the processor package.

→ **All** **DEFAULT** Enable all E-cores in the processor package.

→ **0** No E-core is enabled in the processor package.

→ **1** Enable one E-core in the processor package.

.....

→ **15** Enable fifteen E-cores in the processor package.

→ **BIST [Disabled]**

Use the **BIST** option to enable or disable BIST (Built-in Self Test) on reset.

→ **Disabled** **DEFAULT** Disable BIST.

→ **Enabled** Enable BIST.

→ **AP threads Idle Manager [MWAIT Loop]**

Use the **AP threads Idle Manager** option to specify how idle threads on an Application Processor (AP) wait for signals to resume execution.

→ **HALT Loop** CPU enters sleep until a monitor address is modified.

→ **MWAIT Loop** **DEFAULT** Halt the core until an interrupt occurs.

➔ **RUN Loop**

Keep the CPU continuously executing instructions (usually a busy-wait loop)

➔ **AES [Enabled]**

Use the **AES** option to enable or disable AES (Advanced Encryption Standard).

➔ **Disabled** Disable AES.

➔ **Enabled** **DEFAULT** Enable AES.

➔ **MachineCheck [Enabled]**

Use the **MachineCheck** option to enable or disable a hardware-level error detection mechanism.

➔ **Disabled** Disable machine check.

➔ **Enabled** **DEFAULT** Enable machine check.

➔ **MonitorMWait [Enabled]**

Use the **MonitorMWait** option to enable or disable MonitorMWait.

➔ **Disabled** The AP threads Idle Manner should not be set in MWAIT Loop.

➔ **Enabled** **DEFAULT** The AP threads can use MWAIT Loop for power savings.

➔ **Intel(R) Trusted Execution Technology [Disabled]**

Use the **Intel Trusted Execution Technology (Intel® TXT)** option to enable or disable utilization of additional hardware capabilities provided by Intel (R) Trusted Execution Technology.

➔ **Disabled** **DEFAULT** Disable Intel® TXT Technology

➔ **Enabled** Enable Intel® TXT Technology

➔ **Total Memory Encryption [Disabled]**

Use the **Total Memory Encryption** option to protect DRAM data from physical attacks.

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- | | | | |
|---|-----------------|----------------|--|
| ➔ | Disabled | DEFAULT | Disable Total Memory Encryption. |
| ➔ | Enabled | | Enable Total Memory Encryption. "VT-d" option must be enabled. |

➔ **X2APIC Enable [Disabled]**

Use the **X2APIC Enable** option to enable or disable X2APIC Operating Mode.

- | | | | |
|---|-----------------|----------------|---|
| ➔ | Disabled | DEFAULT | Disable X2APIC Operating Mode. |
| ➔ | Enabled | | Enable X2APIC Operating Mode. "VT-d" option must be enabled and "X2APIC Opt Out" option must be disabled as well. |

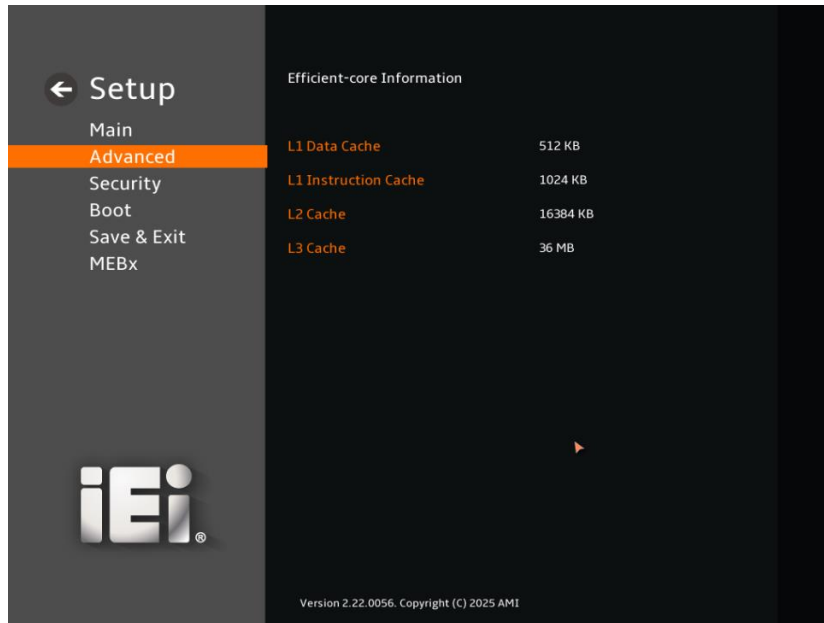
➔ **Legacy Game Compatibility Mode [Disabled]**

Use the **Legacy Game Compatibility Mode** option to provide backward compatibility for older games/software.

- | | | | |
|---|-----------------|----------------|---|
| ➔ | Disabled | DEFAULT | Disable the Legacy Game Compatibility Mode. |
| ➔ | Enabled | | Pressing the Scroll Lock key will toggle the E-cores. |

5.3.1.1 Efficient-core Information

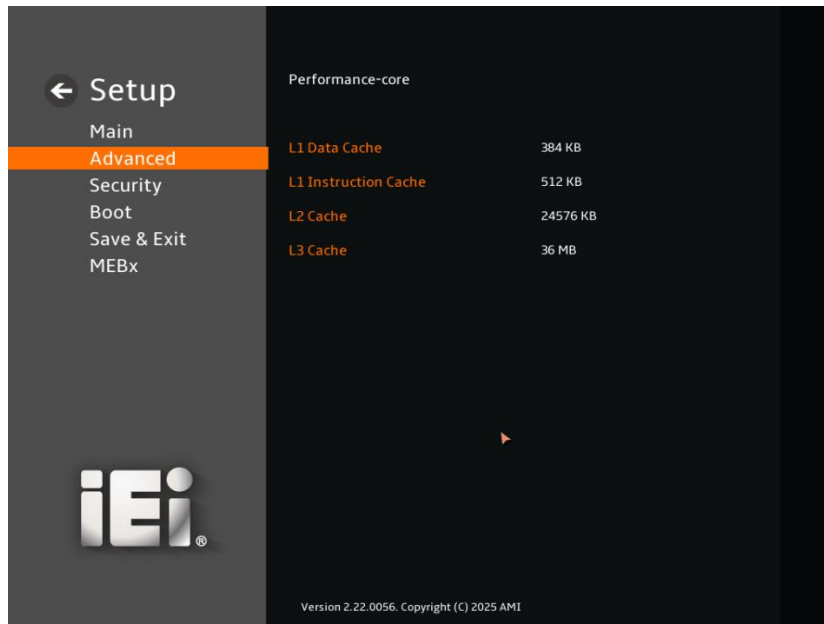
Use the **Efficient-core Information** menu (**BIOS Menu 12**) to display the E-core information.



BIOS Menu 12: Efficient-core Information

5.3.1.2 Performance-core Information

Use the **Performance-core Information** menu (**BIOS Menu 13**) to display the P-core information.

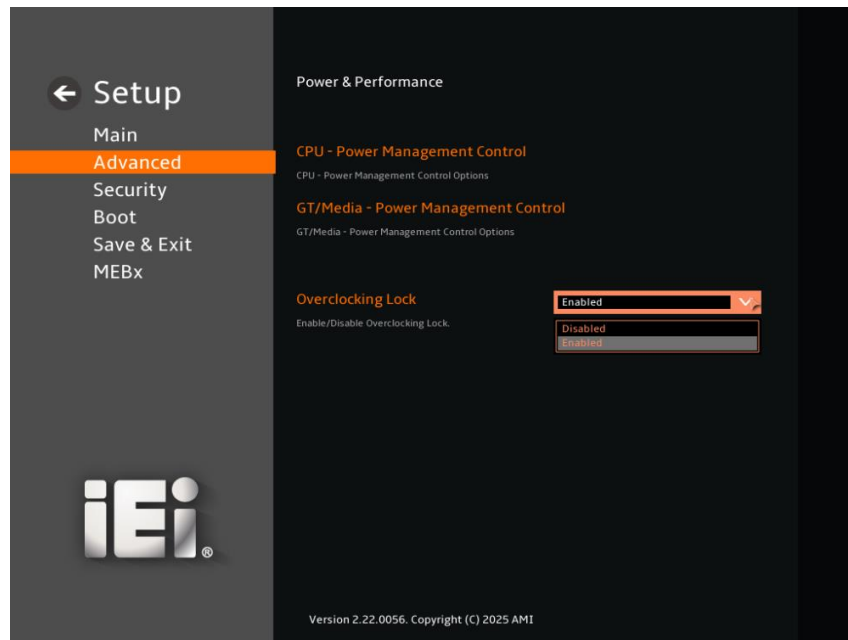


BIOS Menu 13: Performance-core Information

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5.3.2 Power & Performance

Use the **Power & Performance** menu (**BIOS Menu 14**) to control CPU and GT/media power management.



BIOS Menu 14: Power & Performance

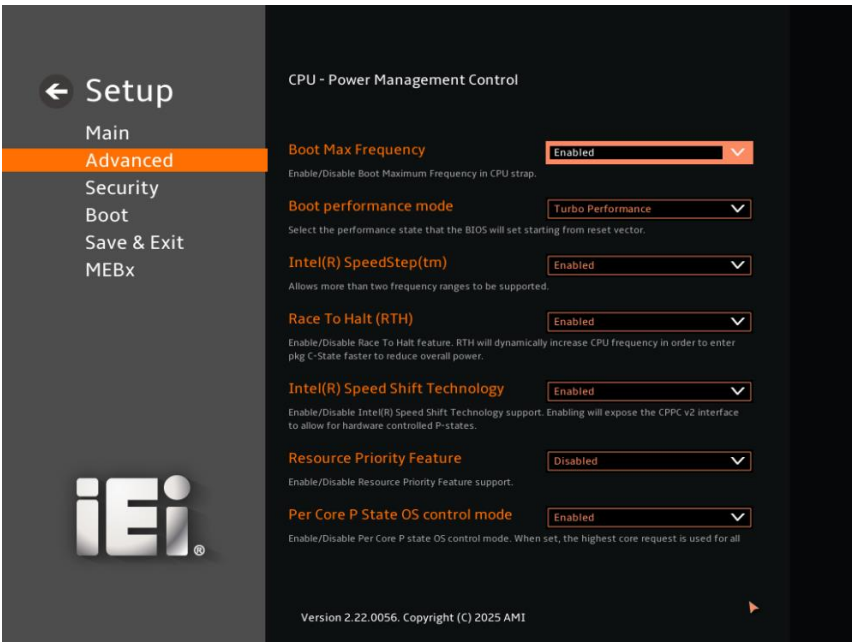
➔ **Overclocking Lock [Enabled]**

Use the **Overclocking Lock** option to enable or disable Overclocking Lock.

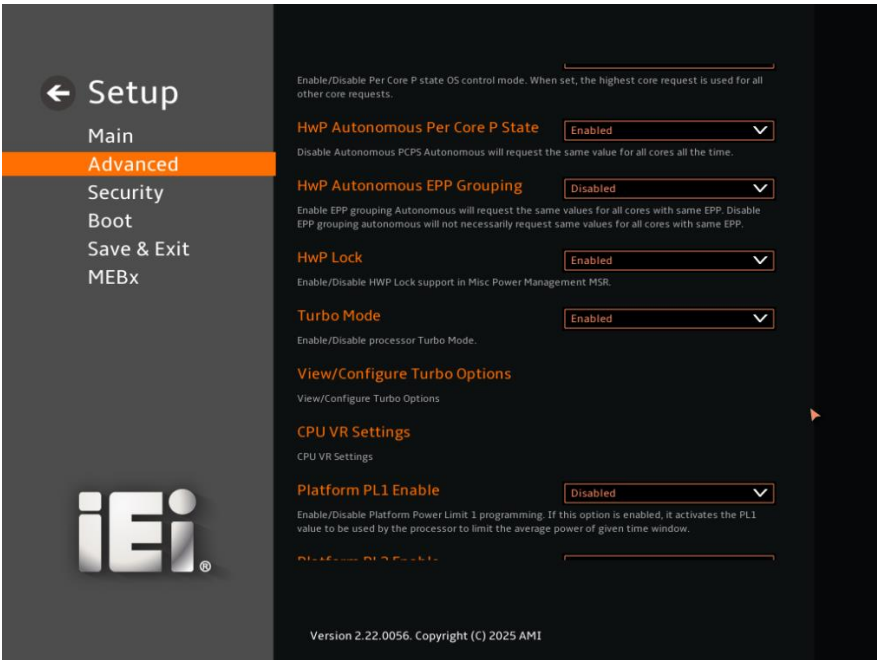
- | | | | |
|---|-----------------|----------------|--|
| ➔ | Disabled | DEFAULT | It is allowed to manually change CPU settings to increase performance. |
| ➔ | Enabled | | Prevent all manual overclocking. |



5.3.2.1 CPU – Power Management Control

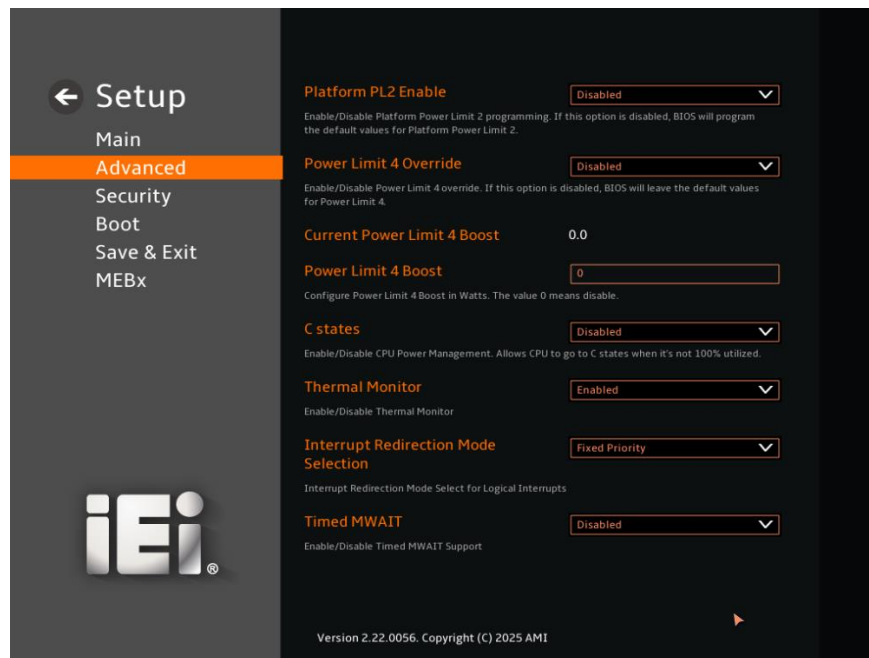


BIOS Menu 15: CPU – Power Management Control (1/5)

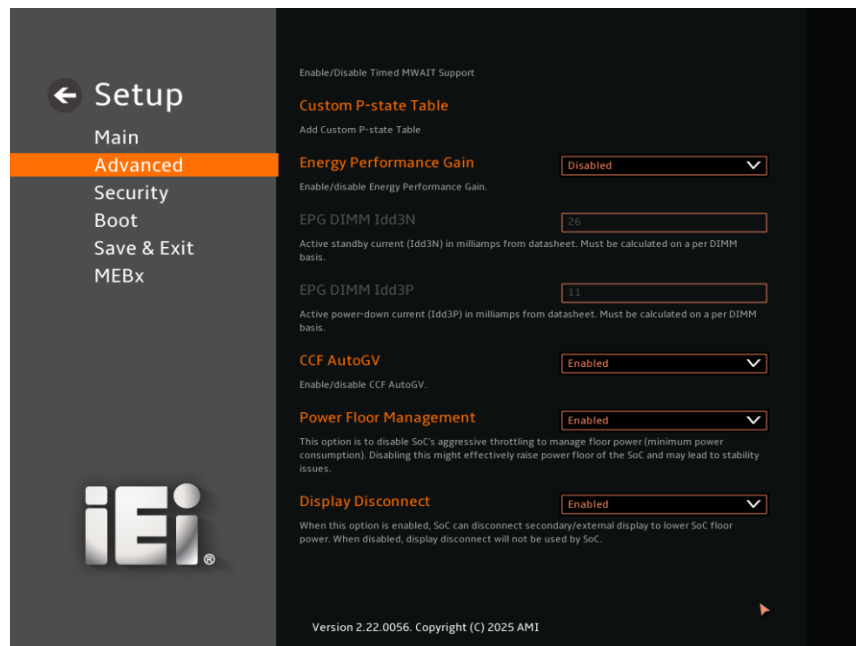


BIOS Menu 16: CPU – Power Management Control (2/5)

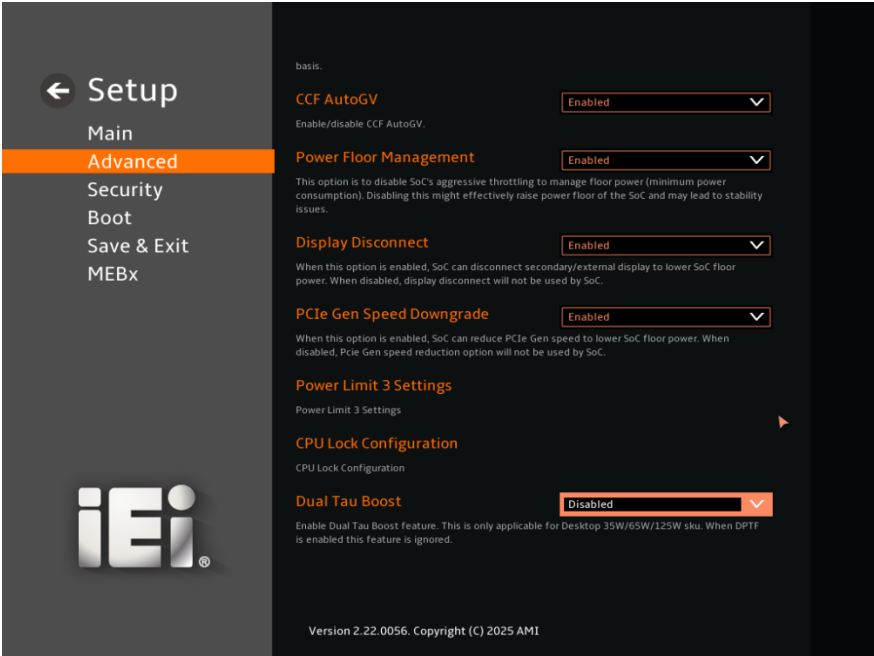




BIOS Menu 17: CPU – Power Management Control (3/5)



BIOS Menu 18: CPU – Power Management Control (4/5)



BIOS Menu 19: CPU – Power Management Control (5/5)

➔ **Boot Max Frequency [Enabled]**

Use the **Boot Max Frequency** option to enable or disable the boot maximum frequency in CPU strap.

- | | | | |
|---|-----------------|----------------|--|
| ➔ | Disabled | | Disable the boot maximum frequency in CPU strap. |
| ➔ | Enabled | DEFAULT | Enable the boot maximum frequency in CPU strap. |

➔ **Boot performance mode [Turbo Performance]**

Use the **Boot performance mode** option to select the performance state that the BIOS will set starting from reset vector.

- | | | |
|---|----------------------------------|--|
| ➔ | Max Battery | Max Battery limits the CPU to base clock speeds to achieve power efficiency, ideal for extending the system's battery life. |
| ➔ | Max Non-Turbo Performance | Max Non-Turbo Performance maintains consistent base frequency without turbo boost, balancing stability and power use for workloads like servers. |



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- | | | | |
|---|--------------------------|----------------|--|
| → | Turbo Performance | DEFAULT | Turbo Performance unlocks maximum CPU speeds via turbo boost, delivering peak performance for demanding tasks like gaming or content creation, at the cost of higher power consumption and heat. |
|---|--------------------------|----------------|--|

→ **Intel(R) SpeedStep(tm) [Enabled]**

Use the **Intel(R) SpeedStep(tm)** option to enable or disable the Intel® SpeedStep Technology which allows more than two frequency ranges to be supported.

- | | | | |
|---|-----------------|----------------|--------------------------------------|
| → | Disabled | | Disable Intel® SpeedStep Technology. |
| → | Enabled | DEFAULT | Enable Intel® SpeedStep Technology. |

→ **Race to Halt (RTH) [Enabled]**

Use the **RTH** option to enable or disable RTH feature.

- | | | | |
|---|-----------------|----------------|---|
| → | Disabled | | Disable the RTH feature. |
| → | Enabled | DEFAULT | Dynamically increase CPU frequency to enter package C-State faster. |

→ **Intel(R) Speed Shift Technology [Enabled]**

Use the **Intel(R) Speed Shift Technology** option to enable or disable the Intel(R) Speed Shift Technology support.

- | | | | |
|---|-----------------|----------------|---|
| → | Disabled | | Disable the Intel(R) Speed Shift Technology support. |
| → | Enabled | DEFAULT | Expose the CPPC v2 interface to allow hardware-controlled P-states. |

→ **Resource Priority Feature [Disabled]**

Use the **Resource Priority Feature** option to enable or disable Resource Priority Feature support.

- | | | | |
|---|-----------------|----------------|--------------------------------|
| → | Disabled | DEFAULT | Use static resource allocation |
|---|-----------------|----------------|--------------------------------|

➔ **Enabled**

Allow the system to dynamically allocate resources to cores based on workload demands.

➔ **Per Core P State OS control mode [Enabled]**

Use the **Per Core P State OS control mode** option to enable or disable the Per Core P State OS control mode.

➔ **Disabled**

Disable the Per Core P State OS control mode.

➔ **Enabled**

DEFAULT

The OS will apply the highest performance request from any core to all cores.

➔ **HwP Autonomous Per Core P State [Enabled]**

- Use the **HwP Autonomous Per Core P State** option to enable or disable HwP Autonomous Per Core P State control.

➔ **Disabled**

Request the same value for all cores all the time.

➔ **Enabled**

DEFAULT

Allow per-core P-state control.

➔ **HwP Autonomous EPP Grouping [Disabled]**

Use the **HwP Autonomous EPP Grouping** option to enable or disable HwP Autonomous EPP Grouping.

➔ **Disabled**

DEFAULT

Cores may differ in P-states even with identical EPP values.

➔ **Enabled**

Request the same values for all cores with same EPP.

➔ **HwP Lock [Enabled]**

Use the **HwP Lock** option to enable or disable HwP Lock support in Misc Power Management MSR.

➔ **Disabled**

Allow dynamic HWP adjustments by the OS.

➔ **Enabled**

DEFAULT

Lock HWP configuration registers to prevent OS modifications.

TANK-XM813**→ Turbo Mode [Enabled]**

Use the **Turbo Mode** option to enable or disable Turbo Mode which requires Intel Speed Step or Intel Speed Shift to be available and enabled.

- | | | | |
|---|-----------------|----------------|-------------------------------|
| → | Disabled | | Disable Turbo Mode Technology |
| → | Enabled | DEFAULT | Enable Turbo Mode Technology |

→ Platform PL1 Enable [Disabled]

Use the **Platform PL1 Enable** option to enable or disable Platform Power Limit 1 programming.

- | | | | |
|---|-----------------|----------------|---|
| → | Disabled | DEFAULT | Disable Platform Power Limit 1 programming. |
| → | Enabled | | Activate the PL1 value to be used by the processor to limit the average power of given time window. |

→ Platform PL2 Enable [Disabled]

Use the **Platform PL2 Enable** option to enable or disable Platform Power Limit 2 programming.

- | | | | |
|---|-----------------|----------------|--|
| → | Disabled | DEFAULT | Use the default values for Platform Power Limit 2. |
| → | Enabled | | Apply custom PL2 values. |

→ Power Limit 4 Override [Disabled]

Use the **Power Limit 4 Override** option to enable or disable Power Limit 4 Override.

- | | | | |
|---|-----------------|----------------|---|
| → | Disabled | DEFAULT | Use the default values for Power Limit 4. |
| → | Enabled | | Apply custom Power Limit 4 values. |

→ Power Limit 4 Boost [0]

Use the **Power Limit 4 Boost** option to configure Power Limit 4 Boost in watts. The value 0 means disable.

→ C states [Disabled]

Use the **C states** option to enable or disable CPU power management which allows CPU to go to C states when it is not 100% utilized.

- ➔ **Disabled** **DEFAULT** Disable CPU power management.
- ➔ **Enabled** Enable CPU power management.

➔ Thermal Monitor [Enabled]

Use the **Thermal Monitor** option to enable or disable thermal monitoring function.

- ➔ **Disabled** Disable thermal monitoring function.
- ➔ **Enabled** **DEFAULT** Enable thermal monitoring function.

➔ Interrupt Redirection Mode Selection [Fixed Priority]

Use the **Interrupt Redirection Mode Selection** option to control logical interrupts.

- ➔ **Fixed Priority** **DEFAULT** Interrupts always route to highest-priority cores first.
- ➔ **Round Robin** Interrupts rotate evenly across all cores.
- ➔ **Hash Vector** Use a hash algorithm to distribute interrupts based on device/flow.
- ➔ **No Change** Retain current OS/BIOS-configured mode without modification.

➔ Timed MWAIT [Disabled]

Use the **Timed MWAIT** option to allow CPU cores to wake up from MWAIT.

- ➔ **Disabled** **DEFAULT** Cores only wake on memory writes or interrupts.
- ➔ **Enabled** Allow CPU cores to wake after a timeout if no write occurs.

➔ Energy Performance Gain [Disabled]

Use the **Energy Performance Gain** option to disable/enable CPU power management feature.

- ➔ **Disabled** **DEFAULT** Disable CPU power management feature.
- ➔ **Enabled** Enable CPU power management feature.

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→ CCF AutoGV [Enabled]

Use the **CCF AutoGV** option to disable/enable automatic gate voltage adjustments during idle or low-load states.

- | | | | |
|---|-----------------|----------------|--|
| → | Disabled | DEFAULT | Keep static voltage. |
| → | Enabled | | Allow to dynamically adjust the gate voltage of CPU clock distribution circuits. |

→ Power Floor Management [Enabled]

Use the **Power Floor Management** option to disable SoC's aggressive throttling to manage floor power (minimum power consumption).

- | | | | |
|---|-----------------|----------------|---|
| → | Disabled | | Disabling this might effectively raise power floor of the SoC and may lead to stability issues. |
| → | Enabled | DEFAULT | Set a minimum power threshold. |

→ Display Disconnect [Enabled]

Use the **Display Disconnect** option to disable/enable secondary/external display disconnection.

- | | | | |
|---|-----------------|----------------|---|
| → | Disabled | | SoC cannot disconnect display. |
| → | Enabled | DEFAULT | SoC can disconnect secondary/external display to lower SoC floor power. |

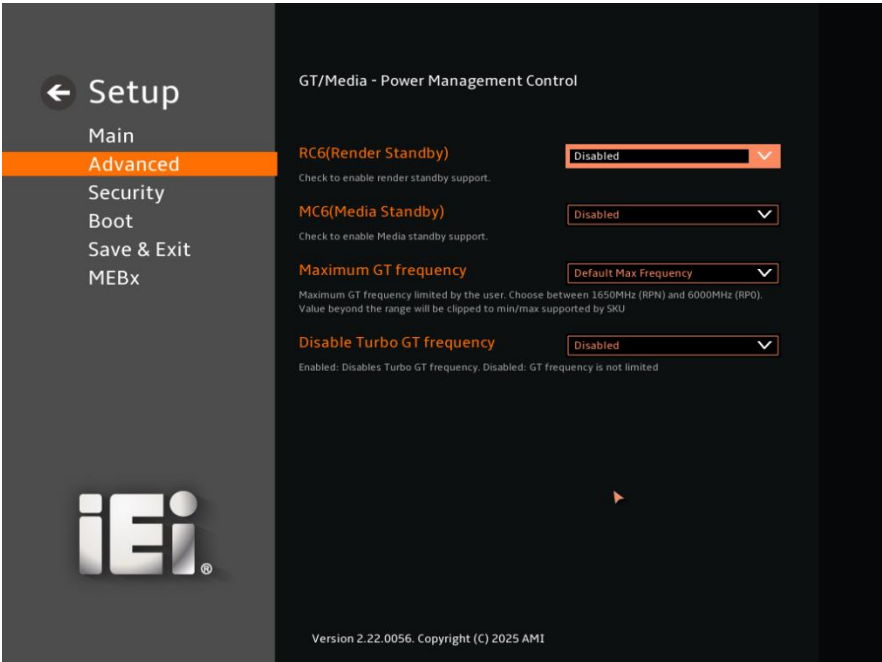
→ Dual Tau Boost [Disabled]

Use the **Dual Tau Boost** option to disable/enable Dual Tau boost feature.

- | | | | |
|---|-----------------|----------------|---|
| → | Disabled | DEFAULT | CPU follows standard single Tau boost behavior. |
| → | Enabled | | Allow two-time constants ("Tau values") to optimize short/long duration turbo behavior. |



5.3.2.2 GT/Media – Power Management Control



BIOS Menu 20: GT/Media – Power Management Control

➔ RC6 (Render Standby) [Disabled]

Use the **RC6 (Render Standby)** option to disable/enable render standby support.

- ➔ **Disabled** **DEFAULT** Disable render standby support.
- ➔ **Enabled** Enable render standby support.

➔ MC6 (Media Standby) [Disabled]

Use the **MC6 (Media Standby)** option to disable/enable media standby support.

- ➔ **Disabled** **DEFAULT** Disable media standby support.
- ➔ **Enabled** Enable media standby support.

➔ Maximum GT frequency [Default Max Frequency]

Use the **Maximum GT frequency** option to limit the maximum GT frequency between 100 MHz



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and 1200 MHz. Value beyond the range will be clipped to min/max supported by SKU.

- | ➔ | Default | Max | DEFAULT | |
|---|------------------|-----|---------|-----------------------------------|
| | Frequency | | | |
| ➔ | 100Mhz | | | Set the max frequency as 100Mhz. |
| ➔ | 150Mhz | | | Set the max frequency as 150Mhz. |
| ➔ | | | | |
| ➔ | 1200Mhz | | | Set the max frequency as 1200Mhz. |

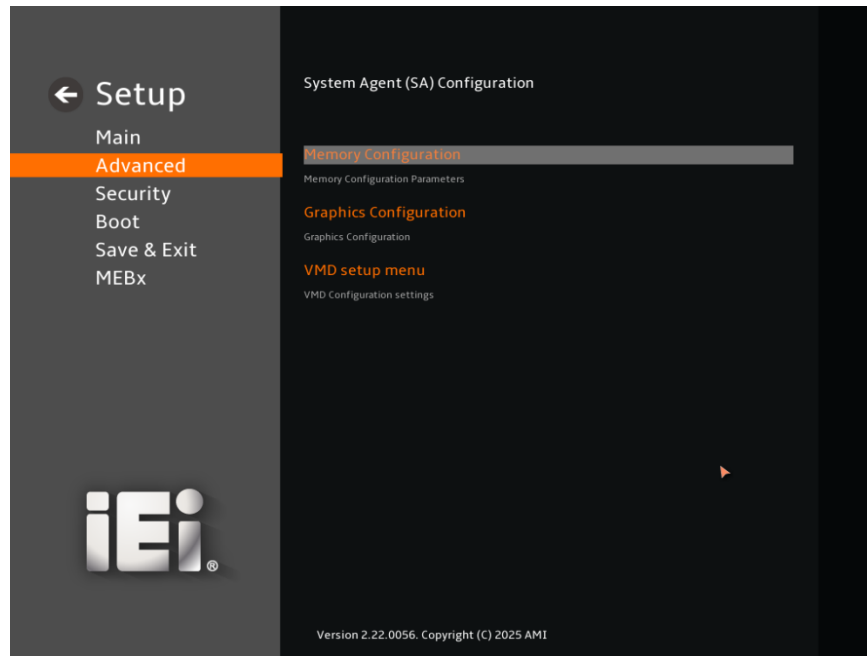
➔ **Disable Turbo GT frequency [Disabled]**

Use the **Disable Turbo GT frequency** option to limit Turbo GT frequency.

- | | | | |
|---|----------|---------|------------------------------|
| ➔ | Disabled | DEFAULT | GT frequency is not limited. |
| ➔ | Enabled | | Disable Turbo GT frequency. |

5.3.3 System Agent (SA) Configuration

Use the **System Agent (SA) Configuration** menu (**BIOS Menu 21**) to configure the System Agent (SA) parameters.

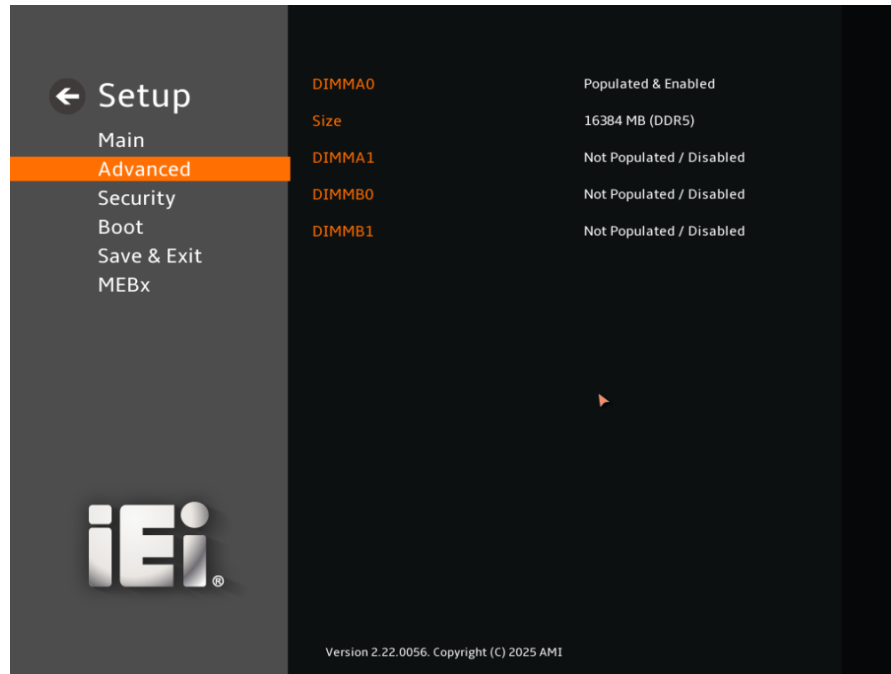


BIOS Menu 21: System Agent (SA) Configuration

5.3.3.1 Memory Configuration

Use the **Memory Configuration** submenu (**BIOS Menu 22**) to view memory information.

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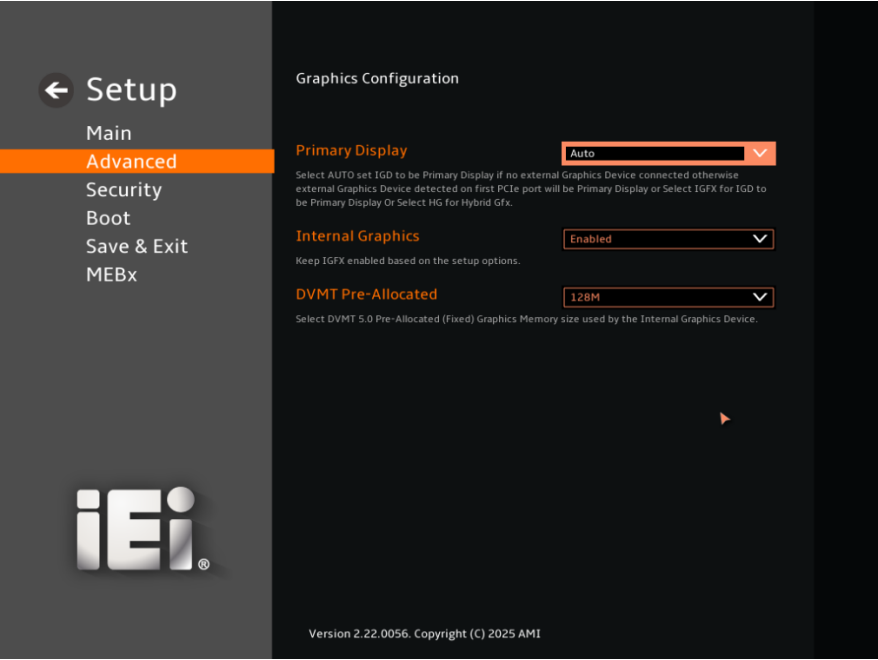


BIOS Menu 22: Memory Configuration



5.3.3.2 Graphics Configuration

Use the **Graphics Configuration (BIOS Menu 23)** menu to configure the system's graphics.



BIOS Menu 23: Graphics Configuration

➔ Primary Display [Auto]

Use the **Primary Display** option to select the primary graphics controller the system uses. The following options are available:

- Auto **Default**
- IGFX
- HG

➔ Internal Graphics [Enabled]

Use the **Internal Graphics** option to configure whether to keep IGFX enabled. If user wants to support dual display by internal graphics and external graphics, this Internal Graphics option should be set to Enabled and the above Primary Display option should be set to IGFX.

- ➔ Auto Auto mode
- ➔ Disabled Disable IGFX.
- ➔ Enabled **Default** Enable IGFX.



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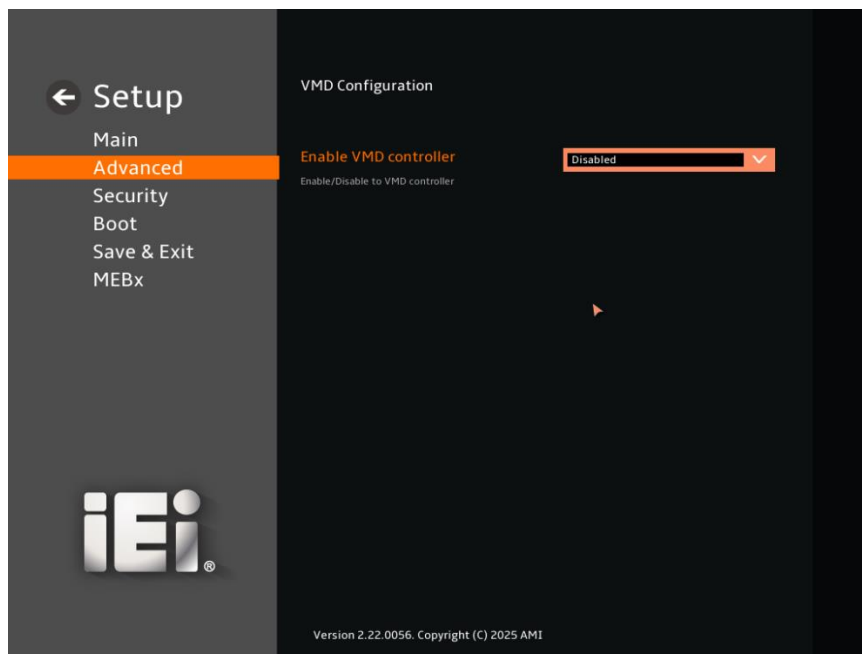
→ DVMT Pre-Allocated [128M]

Use the **DVMT Pre-Allocated** option to set the amount of system memory allocated to the integrated graphics processor when the system boots. The system memory allocated can then only be used as graphics memory, and is no longer available to applications or the operating system. Configuration options are listed below:

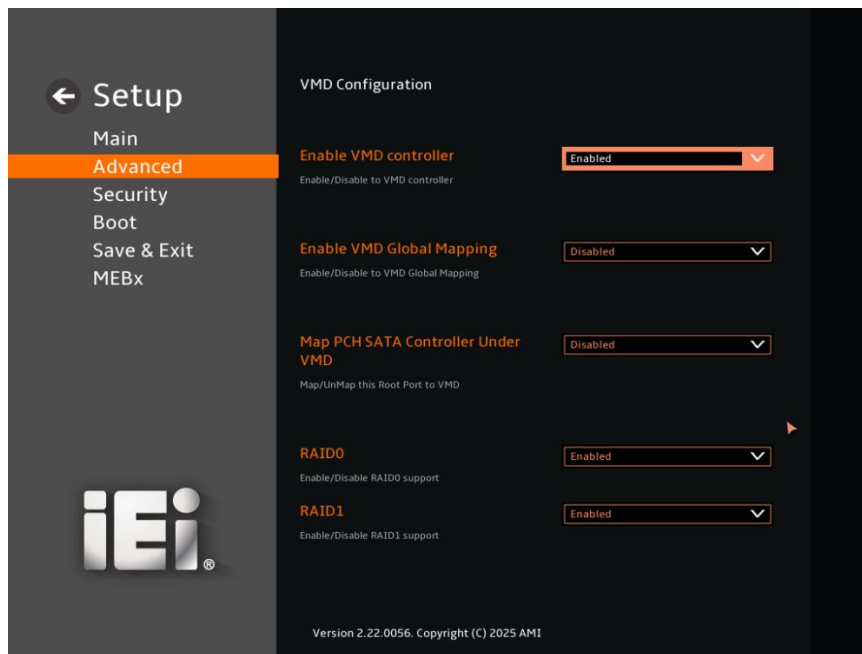
- 32M
- 64M
- 128M **Default**

5.3.3.3 VMD Configuration

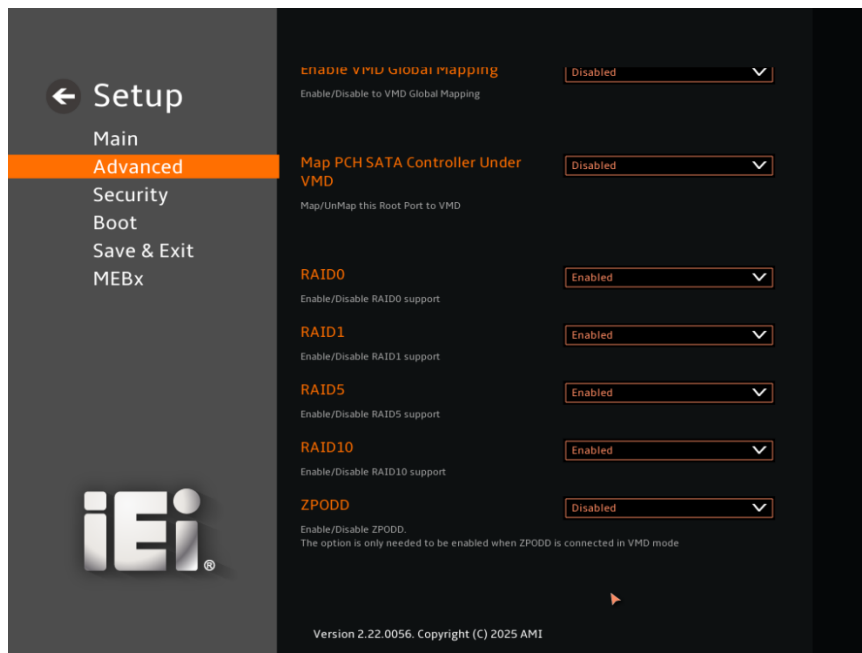
Use the **VMD Configuration (BIOS Menu 24&BIOS Menu 25&BIOS Menu 26)** menu to configure the VMD controller.



BIOS Menu 24: VMD Configuration (1/3)



BIOS Menu 25: VMD Configuration (2/3)



BIOS Menu 26: VMD Configuration (3/3)

➔ **Enable VMD Global Mapping [Disabled]**

Use the **VMD Global Mapping** option to disable/enable volume management device global

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mapping.

- | | | | |
|---|-----------------|----------------|-----------------------------|
| ➔ | Disabled | DEFAULT | Disable VMD global mapping. |
| ➔ | Enabled | | Enable VMD global mapping. |

➔ **Map PCH SATA Controller Under VMD [Disabled]**

Use the **Map PCH SATA Controller Under VMD** option to map/unmap this root port to VMD.

- | | | | |
|---|-----------------|----------------|------------------------------|
| ➔ | Disabled | DEFAULT | Unmap this root port to VMD. |
| ➔ | Enabled | | Map this root port to VMD. |

➔ **RAID0/1/5/10 [Enabled]**

Use the **RAID0/1/5/10** option to disable/enable RAID0/1/5/10 support.

- | | | | |
|---|-----------------|----------------|-------------------------------|
| ➔ | Disabled | | Disable RAID0/1/5/10 support. |
| ➔ | Enabled | DEFAULT | Enable RAID0/1/5/10 support. |

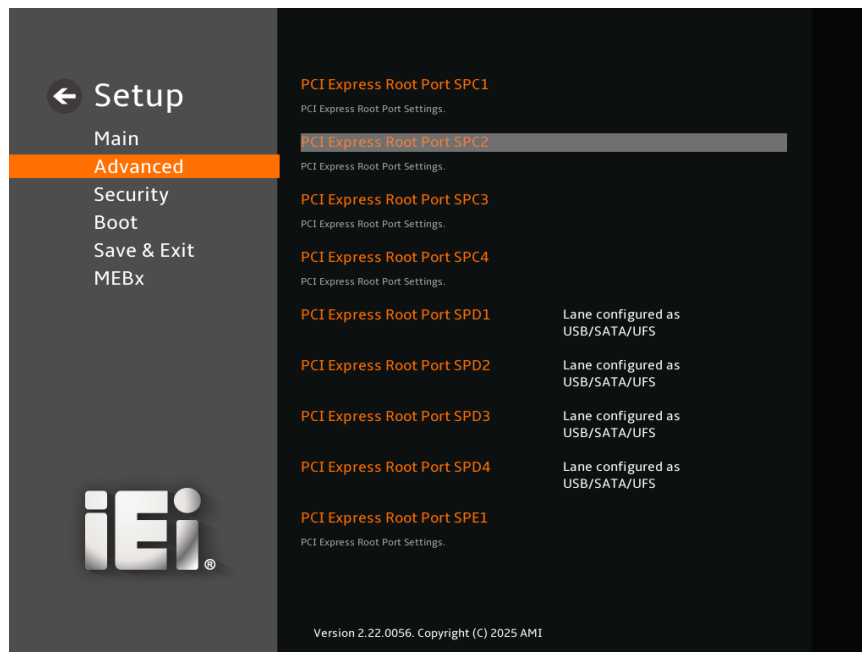
➔ **ZPODD [Disabled]**

Use the **ZPODD** option to disable/enable zero-power optical disk drive support. The option is only needed to be enabled when ZPODD is connected in VMD mode.

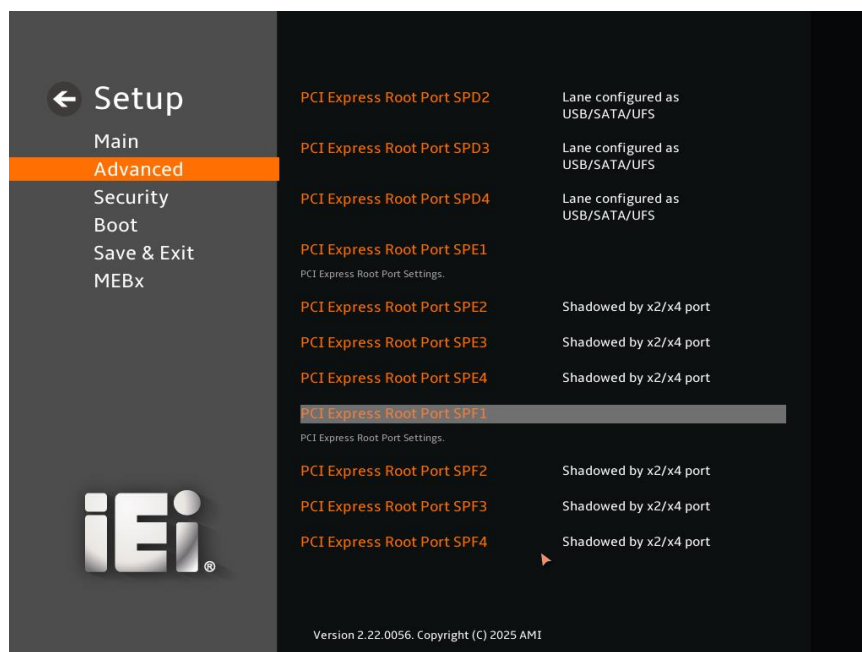
- | | | | |
|---|-----------------|----------------|--|
| ➔ | Disabled | | Disable zero-power optical disk drive support. |
| ➔ | Enabled | DEFAULT | Enable zero-power optical disk drive support. |

Use the **PCI Express Configuration** submenu (**BIOS Menu 27**&**BIOS Menu 28**&**BIOS Menu 29**&**BIOS Menu 30**) to configure the PCI Express Root Port Settings.





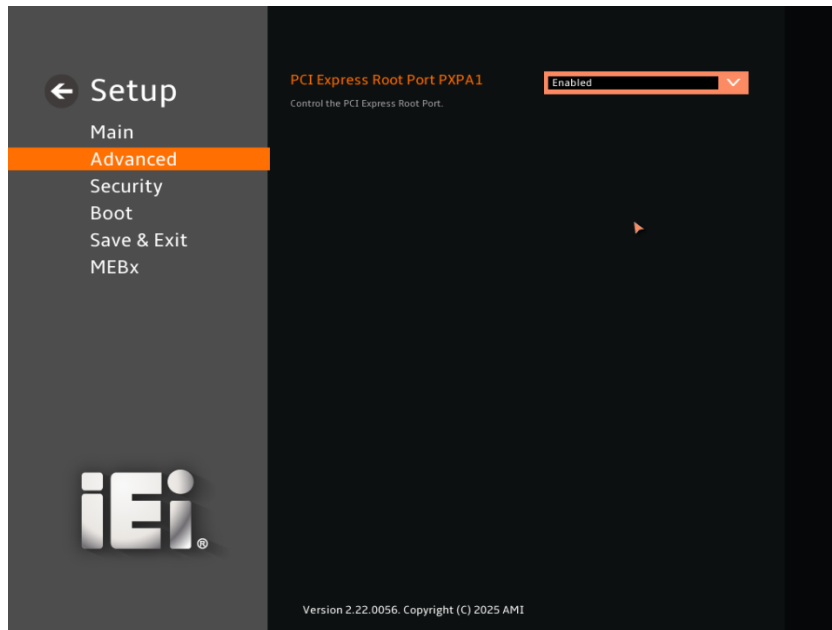
BIOS Menu 29: PCI Express Configuration (3/4)



BIOS Menu 30: PCI Express Configuration (4/4)

5.3.4.1 PCIe Root Port Setting

Use the **PCI Express Root Port Setting** submenus (**BIOS Menu 31**) to configure the PCI Root Port settings.



BIOS Menu 31: PCIe Slot Configuration Submenu

→ **PCI Express Root Port [Enabled]**

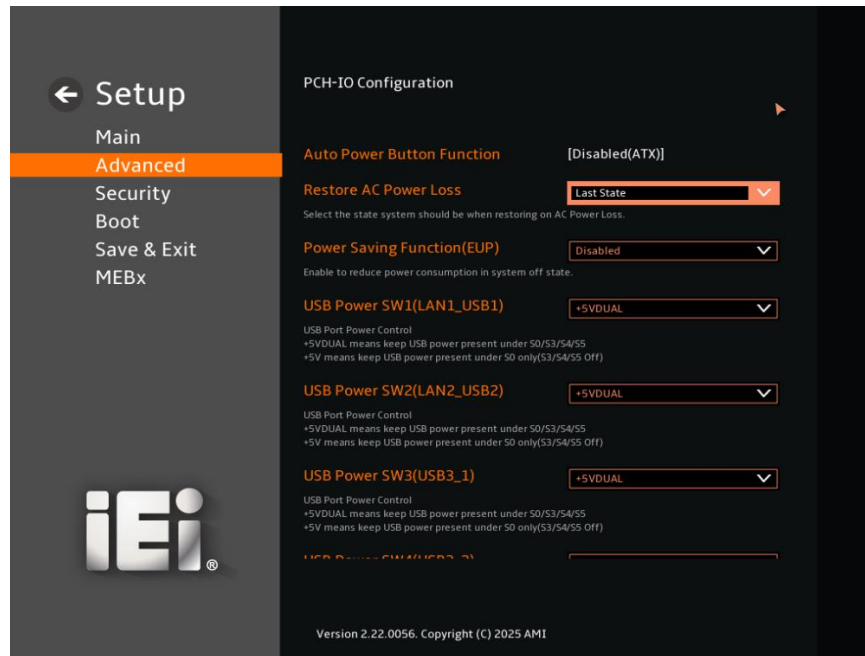
Use the **PCI Express Root Port** option to control the PCI Express root port.

- | | | | |
|---|-----------------|----------------|--|
| → | Disabled | | Disable the PCI Express root port configuration. |
| → | Enabled | DEFAULT | Enable the PCI Express root port configuration. |

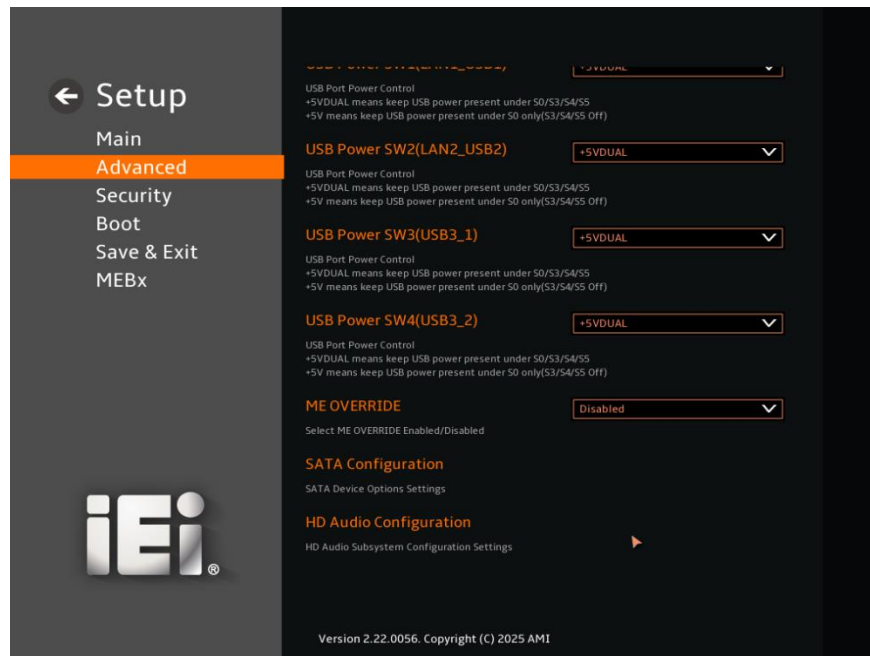
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5.3.5 PCH-IO Configuration

Use the **PCH-IO Configuration** menu (**BIOS Menu 32&BIOS Menu 33**) to configure the PCH parameters.



BIOS Menu 32: PCH-IO Configuration (1/2)



BIOS Menu 33: PCH-IO Configuration (2/2)

➔ Auto Power Button Function [Disabled (ATX)]

Use the **Auto Power Button Function** BIOS option to show the power mode state. Use the **J_ATX_AT1** to switch the AT/ATX power mode.

- ➔ **Enabled (AT)** The system power mode is AT.
- ➔ **Disabled (ATX)** The system power mode is ATX.

➔ Restore AC Power Loss [Last State]

Use the **Restore AC Power Loss** BIOS option to specify what state the system returns to if there is a sudden loss of power to the system when the power mode is ATX.

- ➔ **Power Off** The system remains turned off
- ➔ **Power On** The system turns on
- ➔ **Last State DEFAULT** The system returns to its previous state. If it was on, it turns itself on. If it was off, it remains off.

➔ Power Saving Function(EUP) [Disabled]

Use the **Power Saving Function(EUP)** BIOS option to enable or disable the power saving function.

- ➔ **Disabled DEFAULT** Power saving function is disabled.
- ➔ **Enabled** Power saving function is enabled. It will reduce power consumption when the system is off.

➔ USB Power SW1 (LAN1_USB1) [+5V DUAL]

Use the **USB Power SW1** BIOS option to configure the USB power source for the corresponding USB connectors.

- ➔ **+5V DUAL DEFAULT** Set the USB power source to +5V dual
- ➔ **+5V** Set the USB power source to +5V

➔ USB Power SW2 (LAN2_USB2) [+5V DUAL]

Use the **USB Power SW2** BIOS option to configure the USB power source for the corresponding USB connectors.

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- ➔ **+5V DUAL** **DEFAULT** Set the USB power source to +5V dual
- ➔ **+5V** Set the USB power source to +5V

➔ **USB Power SW3 (USB3_1) [+5V DUAL]**

Use the **USB Power SW3** BIOS option to configure the USB power source for the corresponding USB connectors.

- ➔ **+5V DUAL** **DEFAULT** Set the USB power source to +5V dual
- ➔ **+5V** Set the USB power source to +5V

➔ **USB Power SW4 (USB3_2) [+5V DUAL]**

Use the **USB Power SW4** BIOS option to configure the USB power source for the corresponding USB connectors.

- ➔ **+5V DUAL** **DEFAULT** Set the USB power source to +5V dual
- ➔ **+5V** Set the USB power source to +5V

➔ **ME Override [Disable]**

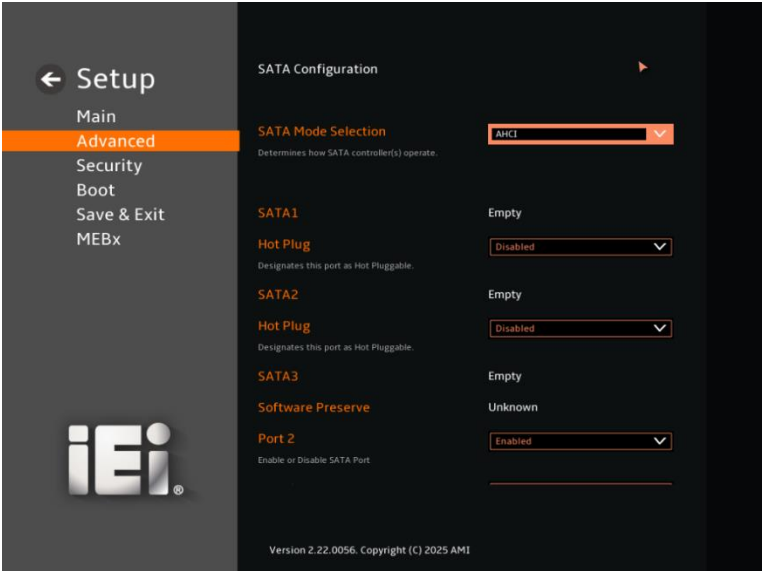
Use the **ME Override** to enable or disable the ME Override.

- ➔ **Disabled** **DEFAULT** ME Override is disabled.
- ➔ **Enabled** ME Override is enabled.

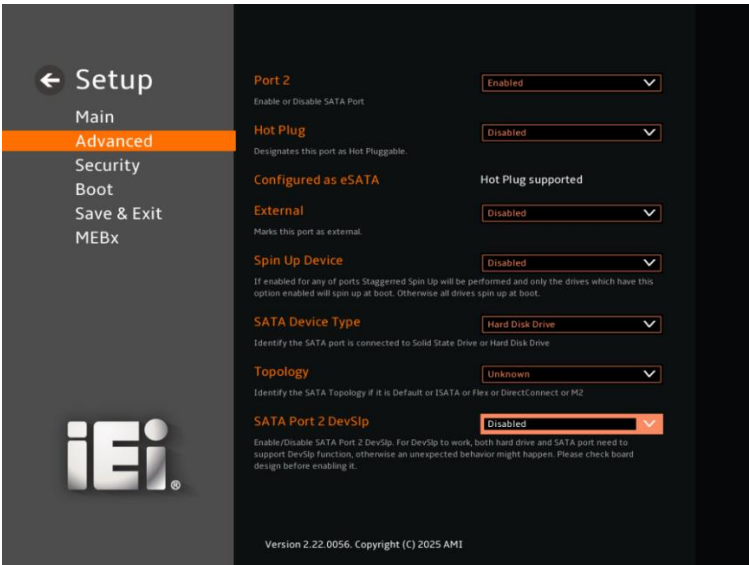
5.3.5.1 SATA Configuration

Use the SATA Configuration menu (**BIOS Menu 34-BIOS Menu 42**) to change and/or set the configuration of the

SATA devices installed in the system.

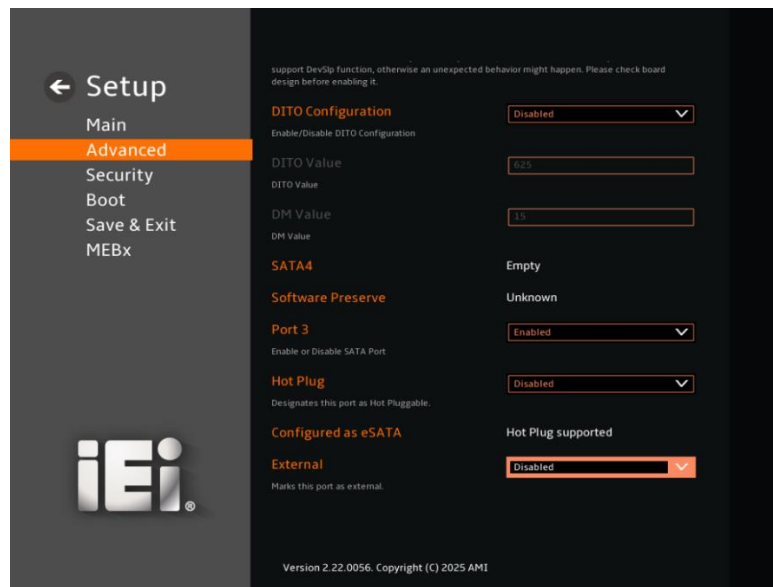


BIOS Menu 34: SATA Configuration (1/9)

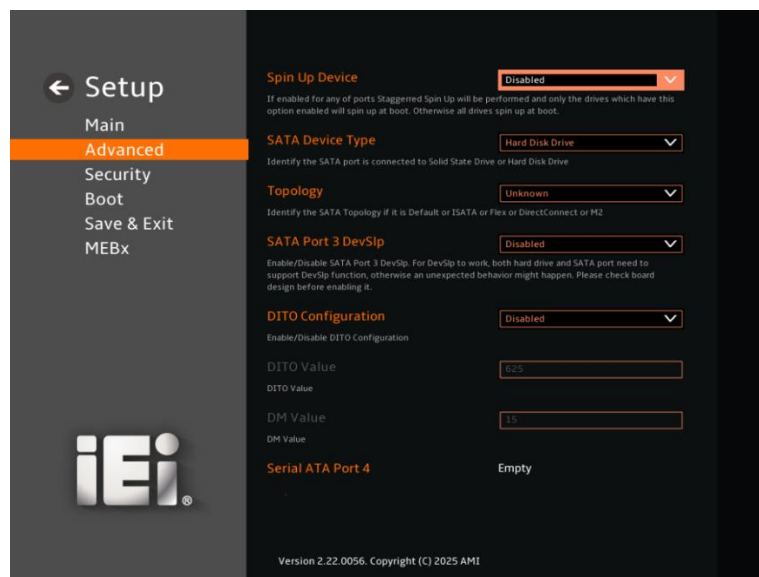


BIOS Menu 35: SATA Configuration (2/9)

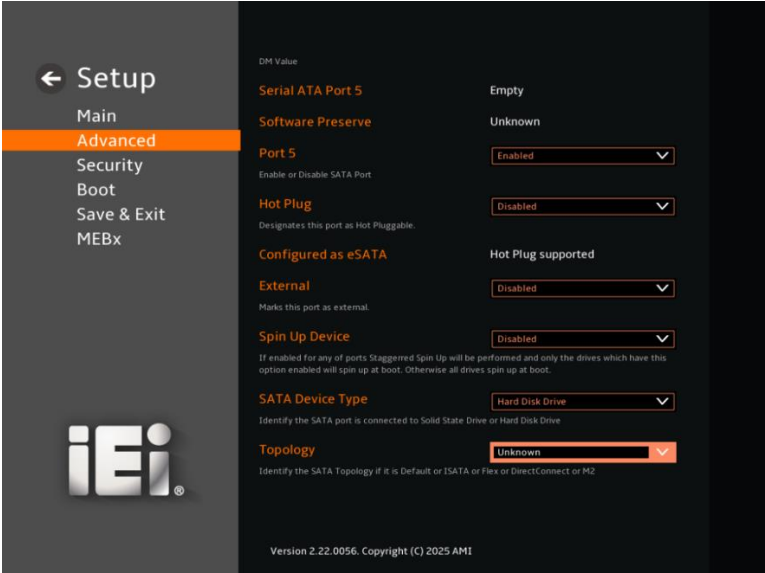




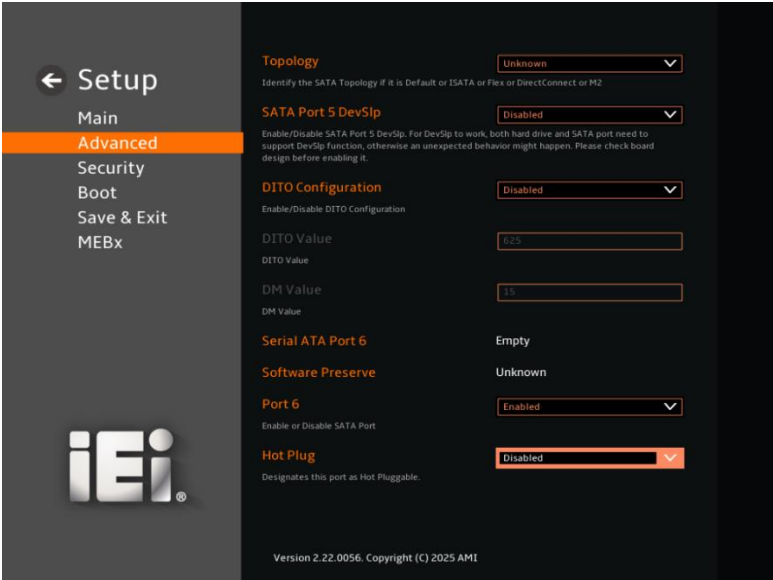
BIOS Menu 36: SATA Configuration (3/9)



BIOS Menu 37: SATA Configuration (4/9)

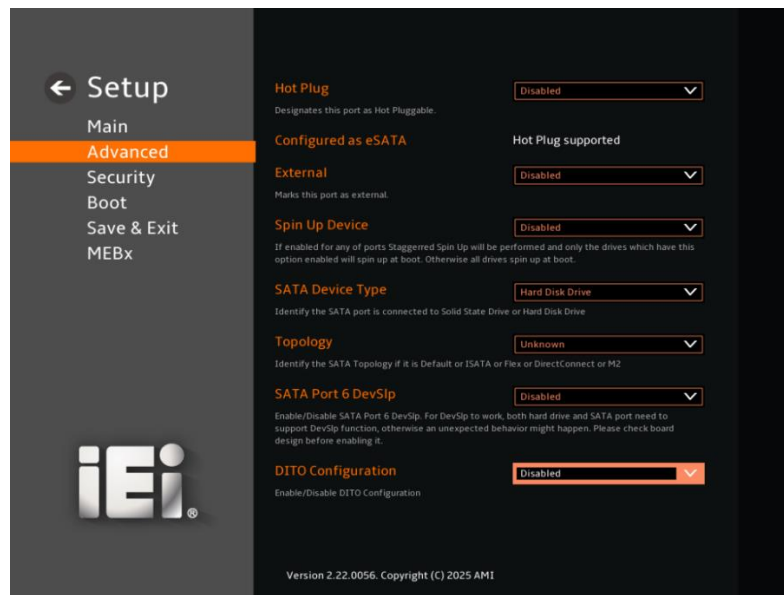


BIOS Menu 38: SATA Configuration (5/9)

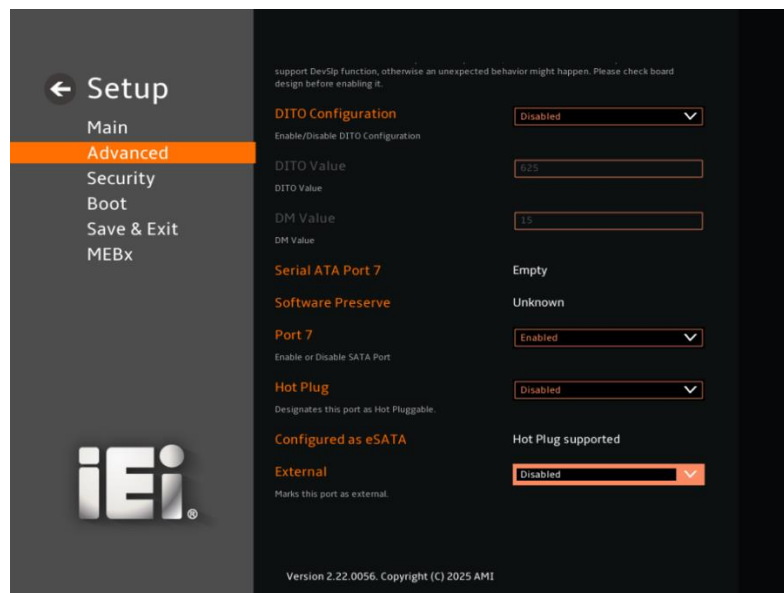


BIOS Menu 39: SATA Configuration (6/9)

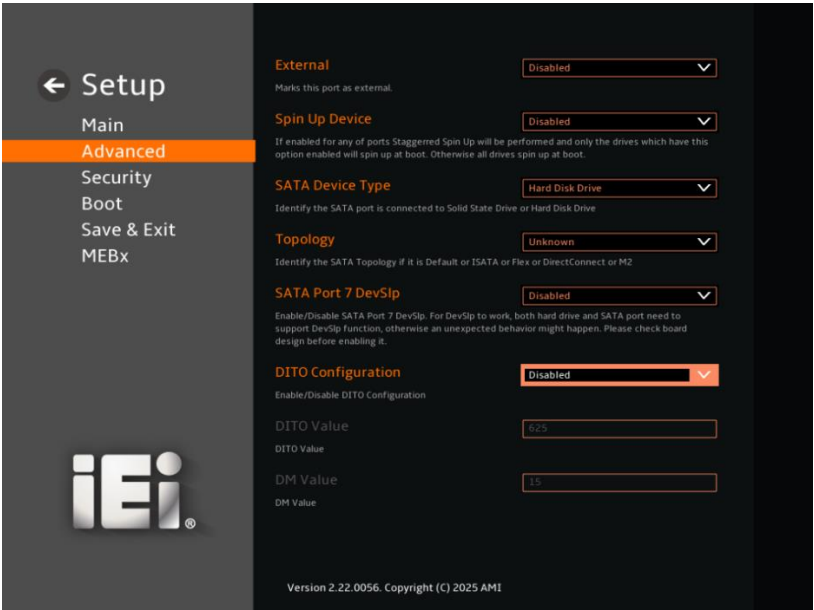




BIOS Menu 40: SATA Configuration (7/9)



BIOS Menu 41: SATA Configuration (8/9)



BIOS Menu 42: SATA Configuration (9/9)

➔ **SATA Mode Selection [AHCI]**

Use the **SATA Mode Selection** option to determine how the SATA devices operate.

- | | | | |
|---|--|----------------|---|
| ➔ | AHCI | DEFAULT | Configures SATA devices as AHCI device. |
| ➔ | Intel RST With Intel Optane System Acceleration | | When the option “Intel RST With Intel Optane System Acceleration” is selected in SATA Mode Selection, the RAID Device ID option is available. |

➔ **Hot Plug [Disabled]**

Use the **Hot Plug** option to designate the SATA port as hot pluggable.

- | | | | |
|---|-----------------|----------------|--|
| ➔ | Disabled | DEFAULT | Disable the hot-pluggable function of the SATA port. |
| ➔ | Enabled | | Designate the SATA port as hot-pluggable. |

➔ **Port n [Enabled]**

Use the **Port n** option to disable/enable the SATA n port.



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- ➔ **Disabled** Disable the SATA port.
- ➔ **Enabled** **DEFAULT** Enable the SATA port.

➔ **External [Disabled]**

Use the **External** option to mark the port as external.

- ➔ **Disabled** **DEFAULT** The SATA port cannot be marked as external.
- ➔ **Enabled** The SATA port can be marked as external.

➔ **Spin Up Device [Disabled]**

Use the **Spin Up Device** option to perform staggered spin up.

- ➔ **Disabled** **DEFAULT** All drives spin up at boot.
- ➔ **Enabled** Only the drives which have this option enabled will spin up at boot.

➔ **SATA Device Type [Hard Disk Drive]**

Use the **SATA Device Type** option to identify the SATA port is connected to a solid state drive or hard disk drive.

- ➔ **Hard Disk Drive** **DEFAULT** The SATA port is connected to a hard disk drive.
- ➔ **Solid State Drive** The SATA port is connected to a solid state drive.

➔ **Topology [Unknown]**

Use the **Topology** option to identify the SATA topology.

- ➔ **Unknown** **DEFAULT** The SATA topology is unknown.
- ➔ **iSATA** The SATA topology is iSATA.
- ➔ **Direct Connect** The SATA topology is direct connect.
- ➔ **Flex** The SATA topology is Flex.

➔ **M.2**

The SATA topology is M.2.

→ **SATA Port 2 DevSlp [Disabled]**

Use the **SATA Port 2 DevSlp** option to enable/disable SATA Port 2 device sleep mode.

➔ **Disabled**

DEFAULT

SATA Port 2 enters an ultra-low-power sleep state during idle periods.

➔ **Enabled**

SATA Port 2 uses standard SATA power modes

➔ **DITO Configuration [Disabled]**

Use the **DITO Configuration** option to disable/ enable SSDs/HDDs to control their own idle timeout behavior.

➔ **Disabled**

DEFAULT

SATA drives manage their idle timeouts.

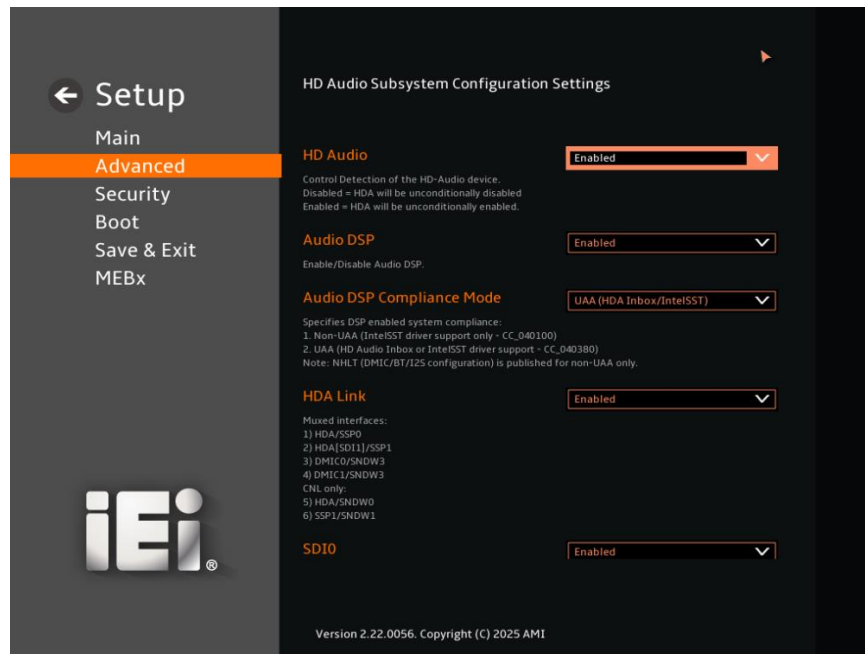
➔ **Enabled**

The motherboard SATA controller manages all power state timeouts.

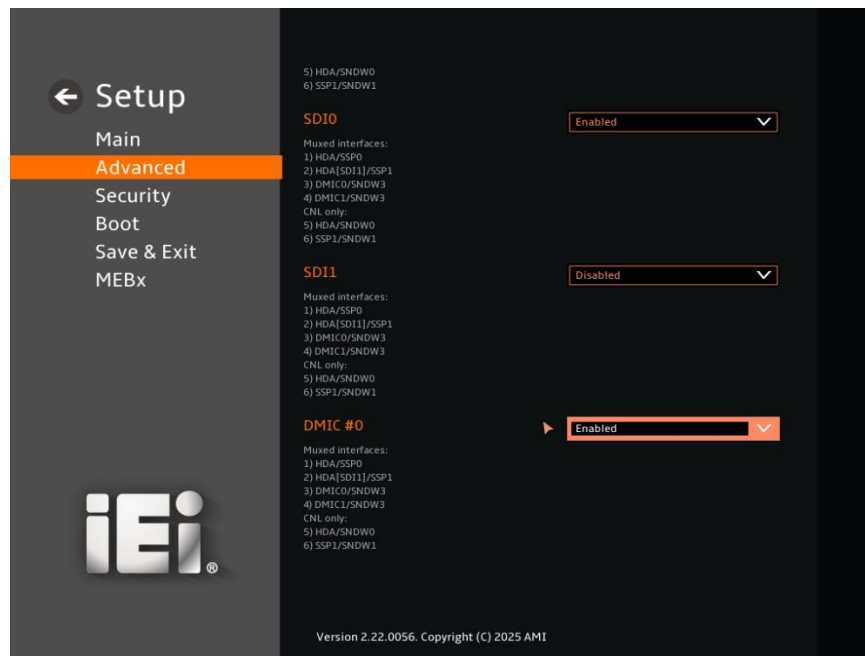
5.3.5.2 HD Audio Configuration

Use the **HD Audio Configuration** menu (**BIOS Menu 43-BIOS Menu 49**) to configure the HD Audio Subsystem settings.

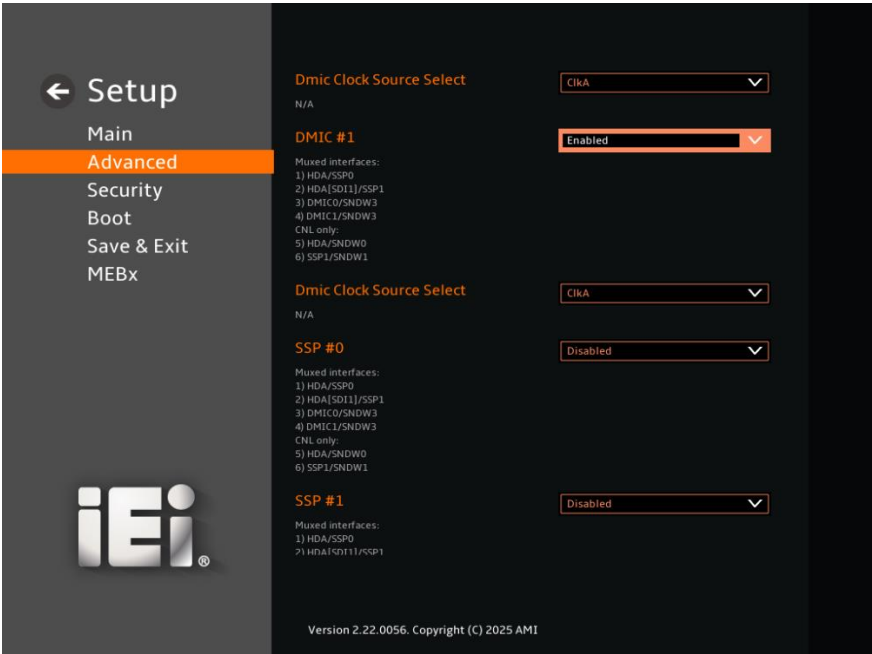
TANK-XM813



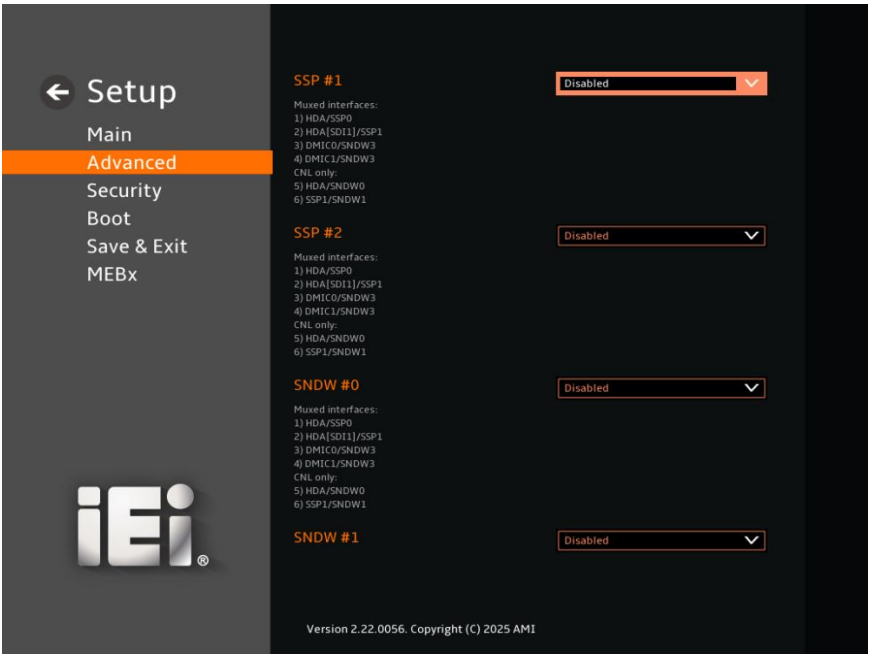
BIOS Menu 43: HD Audio Configuration (1/7)



BIOS Menu 44: HD Audio Configuration (2/7)

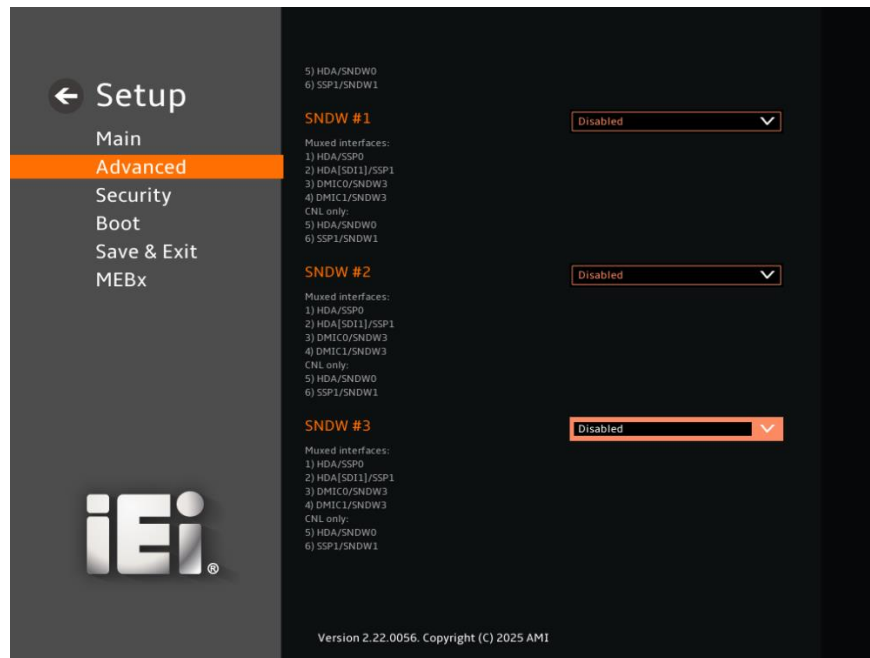


BIOS Menu 45: HD Audio Configuration (3/7)



BIOS Menu 46: HD Audio Configuration (4/7)

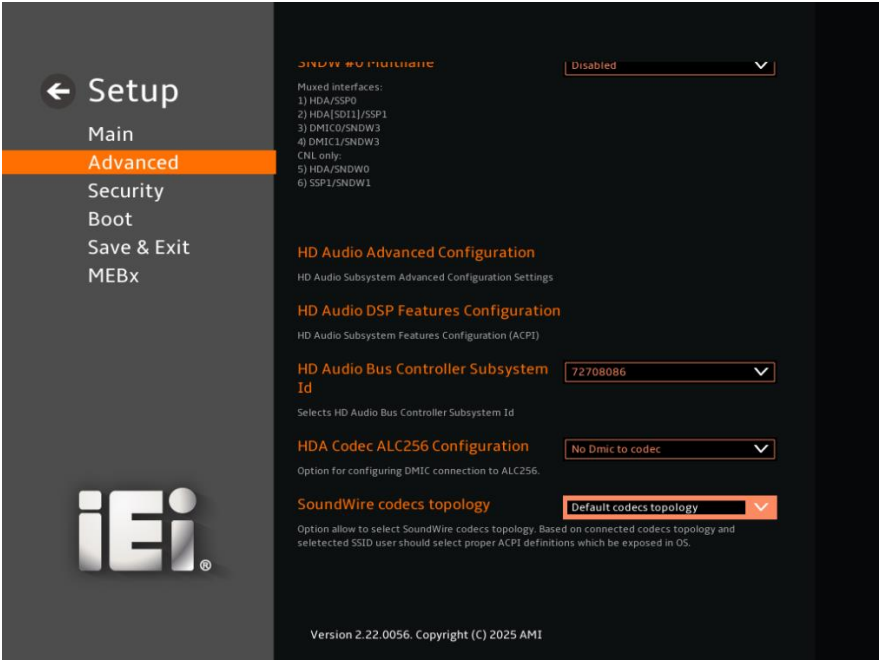




BIOS Menu 47: HD Audio Configuration (5/7)



BIOS Menu 48: HD Audio Configuration (6/7)



BIOS Menu 49: HD Audio Configuration (7/7)

➔ HD Audio [Enabled]

Use the **HD Audio** option to enable or disable the High Definition Audio controller.

- ➔ **Disabled** The onboard High Definition Audio controller is disabled.
- ➔ **Enabled DEFAULT** The onboard High Definition Audio controller is enabled.

➔ Audio DSP [Enabled]

Use the **Audio DSP** option to enable or disable the audio digital signal processor.

- ➔ **Disabled** Disable the audio digital signal processor.
- ➔ **Enabled DEFAULT** Enable the audio digital signal processor.

➔ Audio DSP Compliance Mode [UAA (HAD Inbox/IntelSST)]

Use the **Audio DSP Compliance Mode** option to control how the Audio DSP complies with driver standards.

- ➔ **Non-UAA (IntelSST)** Support Intel Smart Sound Technology (IntelSST) only.



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- ➔ **UAA** (HAD **DEFAULT** Support Microsoft HD Audio (HDA) or IntelSST. Inbox/IntelSST)

➔ **HAD Link [Enabled]**

Use the **HAD Link** option to determine the routed ways of digital audio signals.

- ➔ **Disabled** Audio routing is locked to a single default interface.
- ➔ **Enabled** **DEFAULT** Allow dynamic switching between multiple audio interfaces (HDA, SSP, DMIC, SNDW) for flexible multi-stream audio support.

➔ **Dmic Clock Source Select [ClkA]**

Use the **HAD Link** option to select Dmic Clock source.

- ➔ **Both** Select both ClkA and ClkB as the Dmic Clock sources
- ➔ **ClkA** Select ClkA as the Dmic Clock source.
- ➔ **ClkB** **DEFAULT** Select ClkB as the Dmic Clock source.

➔ **HD Audio Bus Controller Subsystem [72708086]**

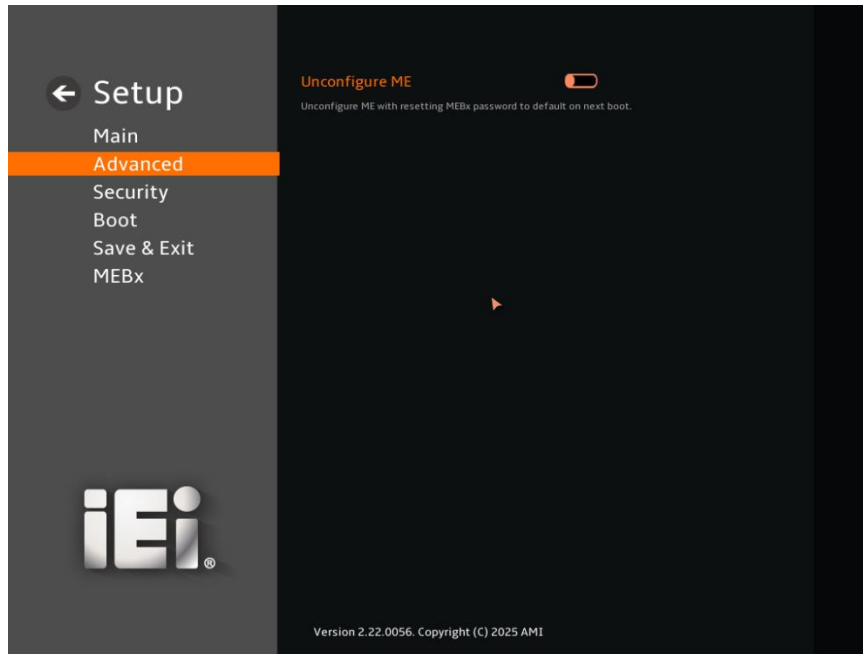
Use the **HD Audio Bus Controller Subsystem** option to select the HD Audio Bus Controller Subsystem ID.

➔ **HDA Codec ALC256 Configuration [No Dmic to codec]**

Use the **HDA Codec ALC256 Configuration** option to configure DMIC connection to ALC256.

- ➔ **No Dmic to codec** **DEFAULT** Select No Dmic to codec.
- ➔ **4 Dmic to codec** Select 4 Dmic to codec.
- ➔ **2 Dmic to codec** Select 2 Dmic to codec.

5.3.6 AMT Configuration



BIOS Menu 50: AMT Configuration

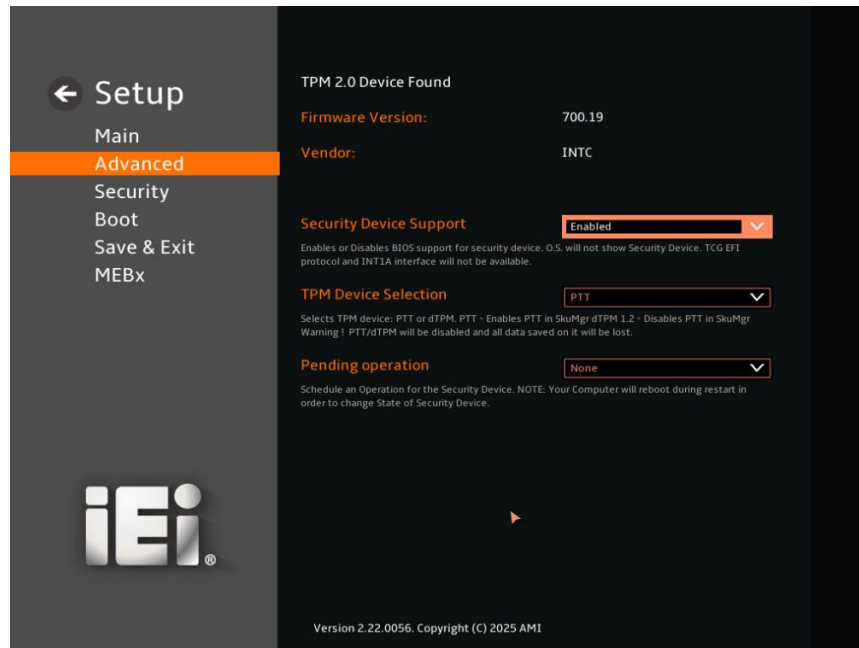
➔ Unconfigure ME

Use the **Unconfigure ME** option to unconfigure ME with resetting MEBx password to default on next boot.

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5.3.7 Trusted Computing

Use the **Trusted Computing** menu (**BIOS Menu 51**) to configure settings related to the Trusted Computing Group (TCG) Trusted Platform Module (TPM).



BIOS Menu 51: Trusted Computing Configuration

➔ Security Device Support [Enabled]

Use the **Security Device Support** option to configure support for the TPM.

- ➔ **Disable** TPM support is disabled.
- ➔ **Enable** **DEFAULT** TPM support is enabled.

➔ TPM Device Selection [PTT]

Use the **TPM Device Selection** option to enable or disable BIOS support for security devices.

- ➔ **dTPM.PTT** dTPM.PTT support is enabled.
- ➔ **PTT** **DEFAULT** PTT support is enabled.

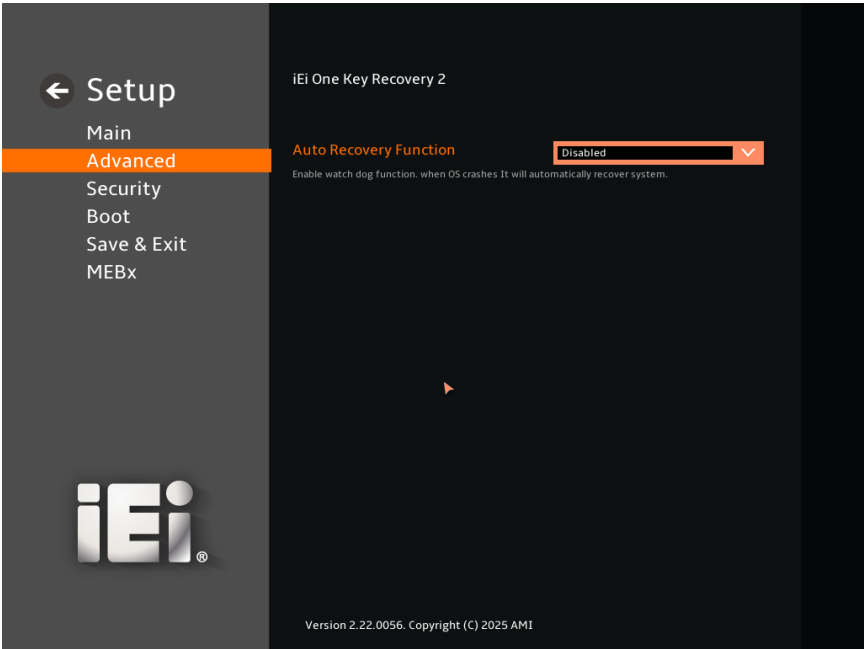
➔ Pending Operation [None]

Use the **Pending Operation** option to schedule an operation for the security device.



- ➔ None DEFAULT TPM information is previous.
- ➔ TPM Clear TPM information is cleared

5.3.8 iEi One Key Recovery 2



BIOS Menu 52: iEi One Key Recovery2 Configuration

➔ Auto Recovery Function [Disabled]

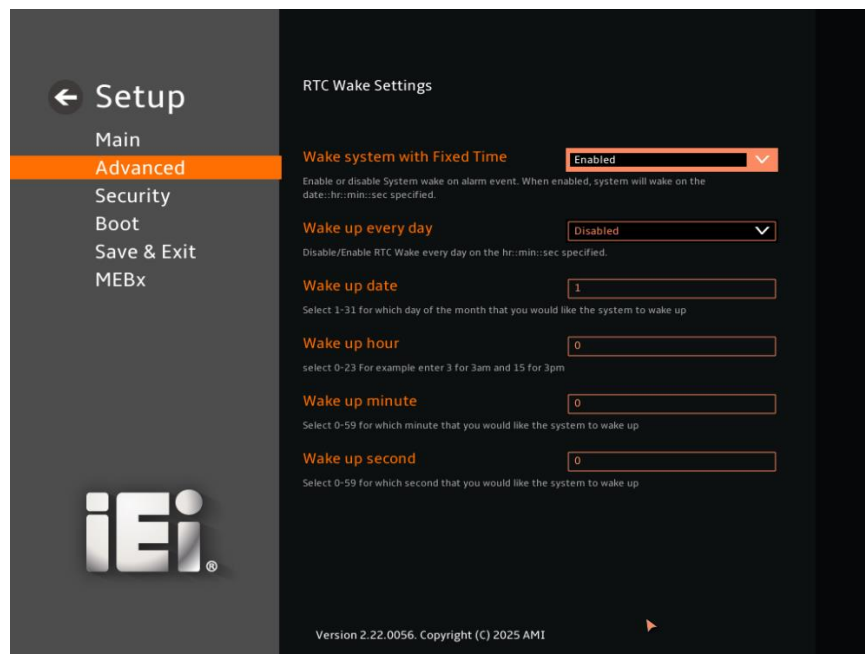
Use the **Auto Recovery Function** option to configure watch dog function.

- ➔ Disabled DEFAULT Auto recovery support is disabled.
- ➔ Enabled Auto recovery support is enabled.

5.3.9 RTC Wake Settings

The **RTC Wake Settings** menu (**BIOS Menu 53**) configures RTC wake event.





BIOS Menu 53: RTC Wake Settings

→ Wake System with Fixed Time [Disabled]

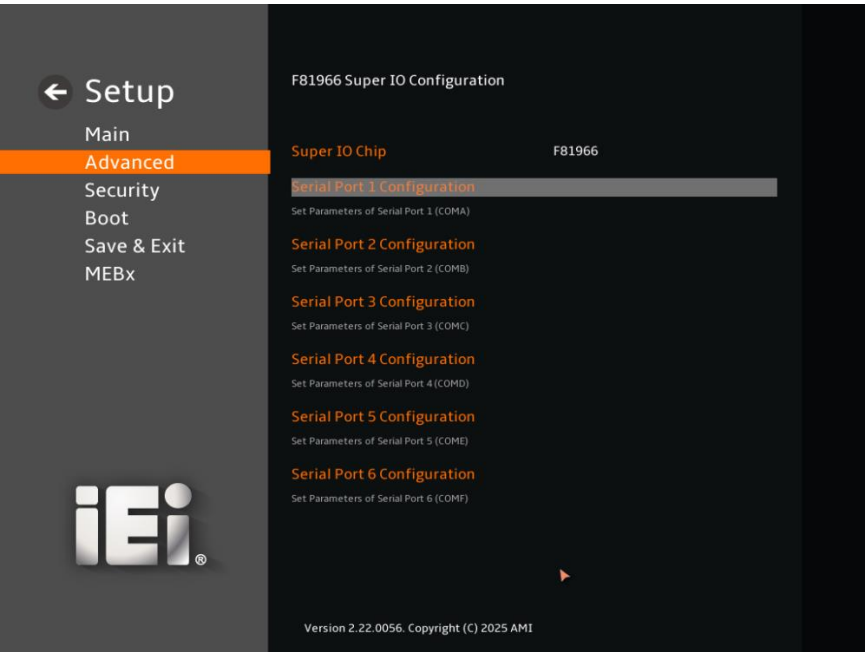
Use the **Wake System with Fixed Time** option to specify the time the system should be roused from a suspended state.

- | | | | |
|---|-----------------|----------------|---|
| → | Disabled | DEFAULT | The real time clock (RTC) cannot generate a wake event |
| → | Enabled | | <p>If selected, the following appears with values that can be selected:</p> <ul style="list-style-type: none"> *Wake up every day *Wake up date *Wake up hour *Wake up minute *Wake up second *Wake After setting the alarm, the computer turns itself on from a suspend state when the alarm goes off. |



5.3.10 F81966 Super IO Configuration

Use the **F81966 Super IO Configuration** menu (**BIOS Menu 54**) to set or change the configurations for the serial ports.

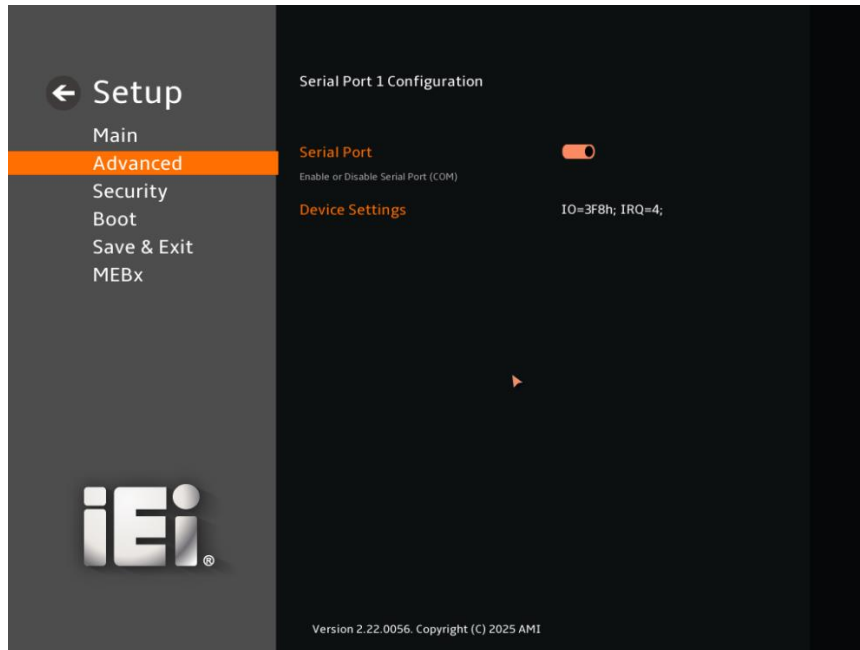


BIOS Menu 54: F81966 Super IO Configuration



5.3.10.1 Serial Port 1 Configuration

Use the **Serial Port 1 Configuration** menu (**BIOS Menu 55**) to configure the serial port 1.



BIOS Menu 55: Serial Port 1 Configuration Menu

➔ Serial Port [Enabled]

Use the **Serial Port** option to enable or disable the serial port.

- ➔ **Disabled** Disable the serial port
- ➔ **Enabled** **DEFAULT** Enable the serial port

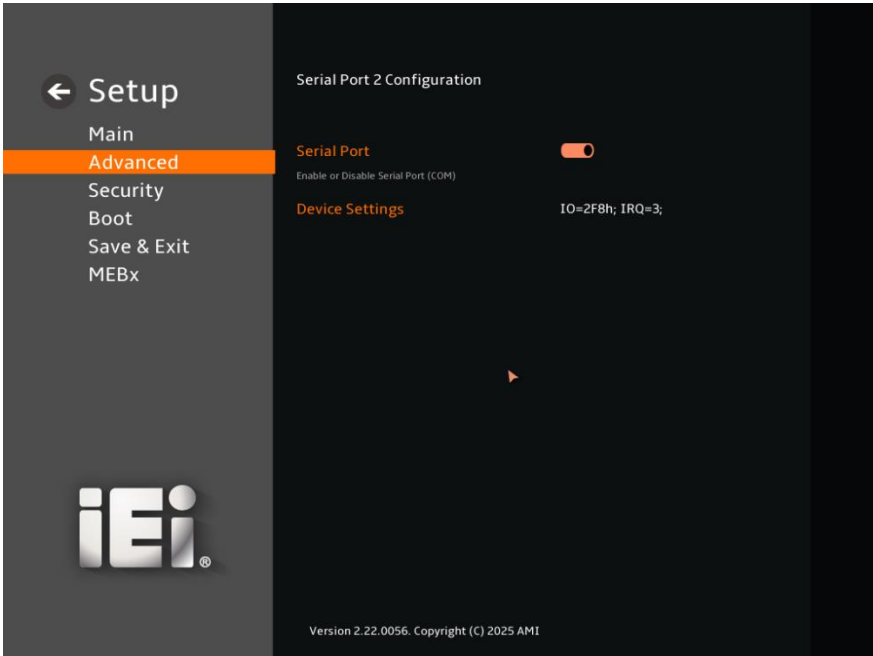
➔ Device Settings

The **Device Settings** option shows the serial port IO port address and interrupt address.

- ➔ **IO=3F8h;** Serial Port I/O port address is 3F8h and the interrupt
IRQ=4 address is IRQ4

5.3.10.2 Serial Port 2 Configuration

Use the **Serial Port 2 Configuration** menu (**BIOS Menu 56**) to configure the serial port 2.



BIOS Menu 56: Serial Port 2 Configuration Menu

➔ Serial Port [Enabled]

Use the **Serial Port** option to enable or disable the serial port.

- ➔ Disabled Disable the serial port
- ➔ Enabled DEFAULT Enable the serial port

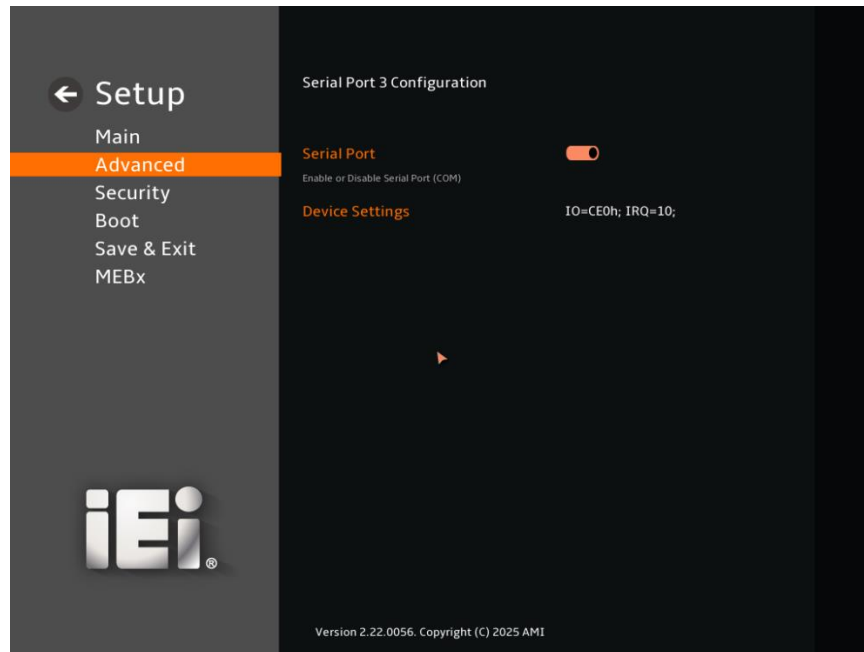
➔ Device Settings

The **Device Settings** option shows the serial port IO port address and interrupt address.

- ➔ IO=2F8h; Serial Port I/O port address is 2F8h and the interrupt
 IRQ=3 address is IRQ3

5.3.10.3 Serial Port 3 Configuration

Use the **Serial Port 3 Configuration** menu (**BIOS Menu 57**) to configure the serial port 3.



BIOS Menu 57: Serial Port 3 Configuration Menu

➔ Serial Port [Enabled]

Use the **Serial Port** option to enable or disable the serial port.

- ➔ **Disabled** Disable the serial port
- ➔ **Enabled** **DEFAULT** Enable the serial port

➔ Device Settings

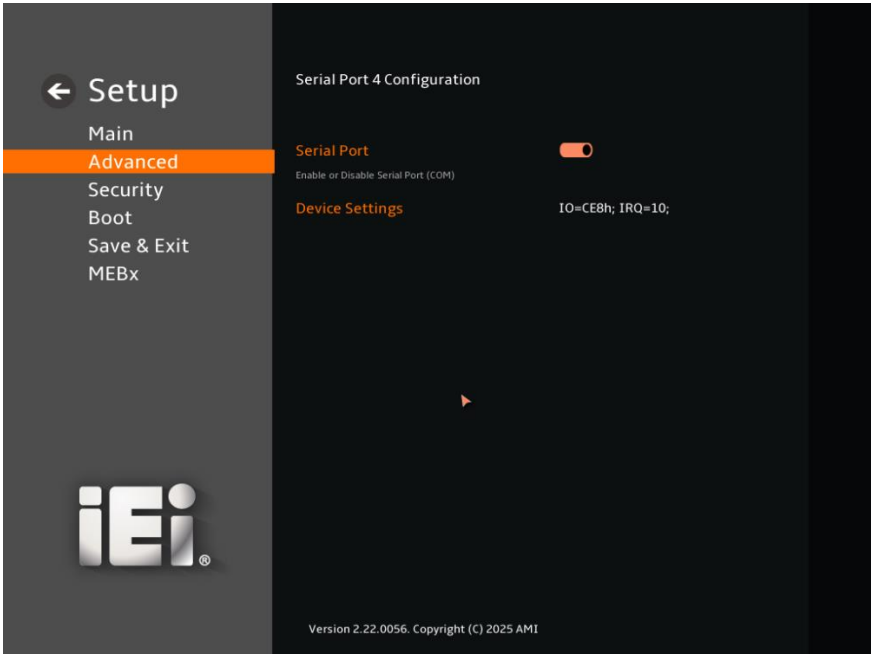
The **Device Settings** option shows the serial port IO port address and interrupt address.

- ➔ **IO=CE0h;** Serial Port I/O port address is CE0h and the interrupt
IRQ=10 address is IRQ10



5.3.10.4 Serial Port 4 Configuration

Use the **Serial Port 4 Configuration** menu (**BIOS Menu 58**) to configure the serial port 4.



BIOS Menu 58: Serial Port 4 Configuration Menu

➔ Serial Port [Enabled]

Use the **Serial Port** option to enable or disable the serial port.

- ➔ Disabled Disable the serial port
- ➔ Enabled DEFAULT Enable the serial port

➔ Device Settings

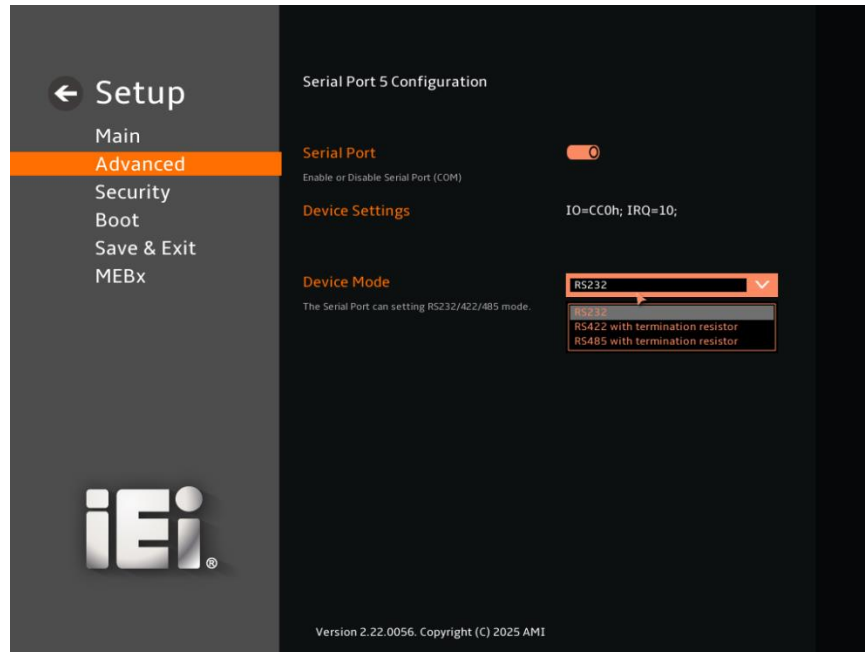
The **Device Settings** option shows the serial port IO port address and interrupt address.

- ➔ IO=CE8h; Serial Port I/O port address is CE8h and the interrupt
 IRQ=10 address is IRQ10



5.3.10.5 Serial Port 5 Configuration

Use the **Serial Port 5 Configuration** menu (**BIOS Menu 59**) to configure the serial port 5.



BIOS Menu 59: Serial Port 5 Configuration Menu

➔ Serial Port [Enabled]

Use the **Serial Port** option to enable or disable the serial port.

- ➔ **Disabled** Disable the serial port
- ➔ **Enabled** **DEFAULT** Enable the serial port

➔ Device Settings

The **Device Settings** option shows the serial port IO port address and interrupt address.

- ➔ **IO=CC0h;** Serial Port I/O port address is CC0h and the interrupt
IRQ=10 address is IRQ10.

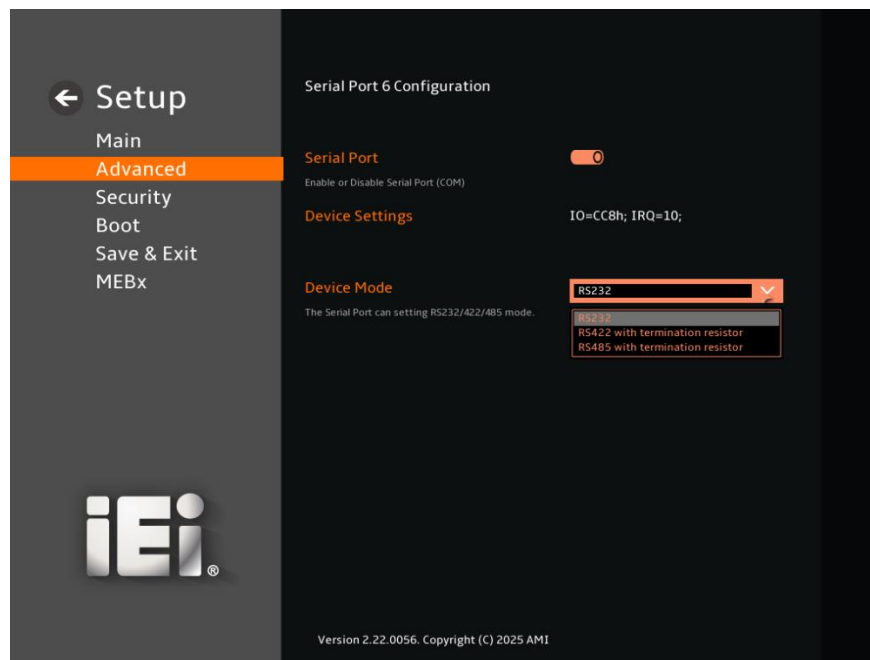
➔ Device Mode [RS232]

Use the **Device Mode** option to select the Serial Port 5 signaling mode. Configuration options are listed below.

- | | | | |
|---|-------|---------------------------|---|
| ➔ | RS232 | DEFAULT | Serial Port 5 signaling mode is RS-232. |
| ➔ | RS422 | with termination resistor | Serial Port 5 signaling mode is RS-422 with resistor. |
| ➔ | RS485 | with termination resistor | Serial Port 5 signaling mode is RS-485 with resistor. |

5.3.10.6 Serial Port 6 Configuration

Use the **Serial Port 6 Configuration** menu (**BIOS Menu 60**) to configure the serial port 6.



BIOS Menu 60: Serial Port 6 Configuration Menu

➔ **Serial Port [Enabled]**

Use the **Serial Port** option to enable or disable the serial port.

- | | | | |
|---|----------|---------|-------------------------|
| ➔ | Disabled | | Disable the serial port |
| ➔ | Enabled | DEFAULT | Enable the serial port |

➔ Device Settings

The **Device Settings** option shows the serial port IO port address and interrupt address.

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→ **IO=CC8h;**
IRQ=10

Serial Port I/O port address is CC8h and the interrupt address is IRQ10.

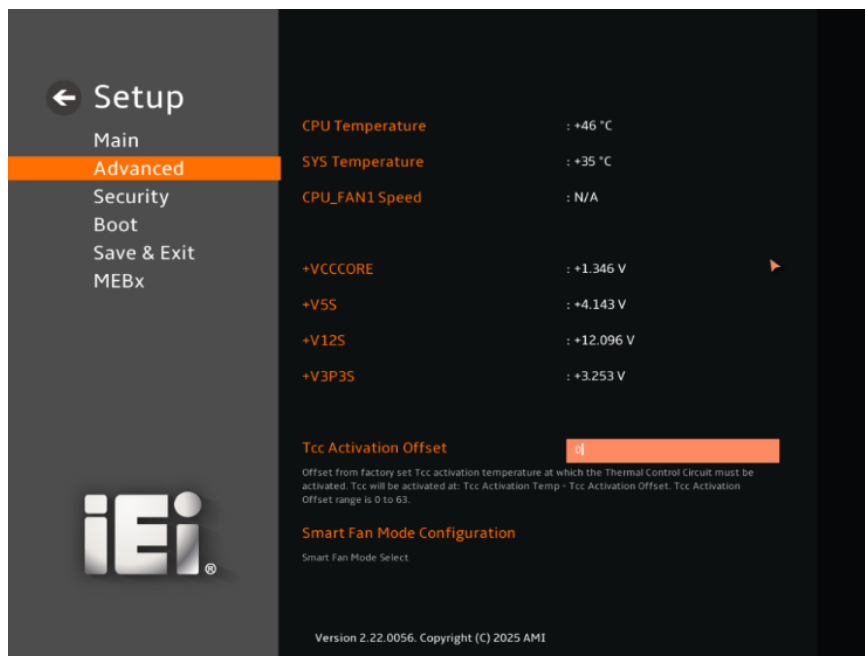
→ **Device Mode [RS232]**

Use the **Device Mode** option to select the Serial Port 6 signaling mode. Configuration options are listed below.

- | | | | |
|---|--------------|----------------------------------|---|
| → | RS232 | DEFAULT | Serial Port 6 signaling mode is RS-232. |
| → | RS422 | with termination resistor | Serial Port 6 signaling mode is RS-422 with resistor. |
| → | RS485 | with termination resistor | Serial Port 6 signaling mode is RS-485 with resistor. |

5.3.11 EC IT5571 H/W Monitor

The **EC IT5571 H/W Monitor** menu (**BIOS Menu 61**) shows the state of H/W real-time operating temperature, fan speed and system voltages, and contains the system thermal control and the smart fan mode configuration submenus.



BIOS Menu 61: EC IT5571 H/W Monitor

→ PC Health Status

The following system parameters and values are shown. The system parameters that are monitored are:

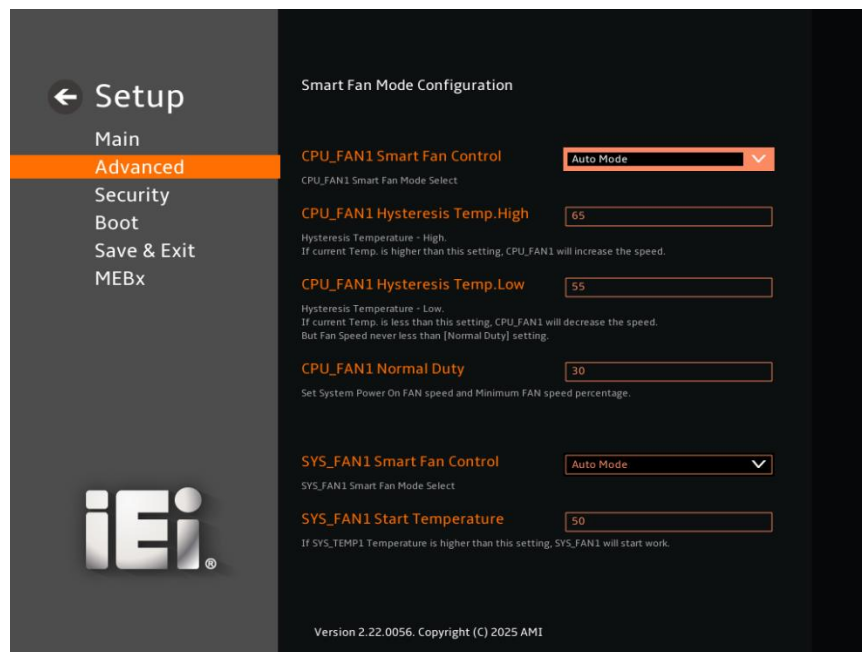
- System Temperature
- CPU Temperature
- Fan Speeds:
 - CPU_Fan1 Speed
- Voltages:
 - +VCCCORE
 - +V5S
 - +V12S
 - +V3P3S

→ Tcc Activation Offset [0]

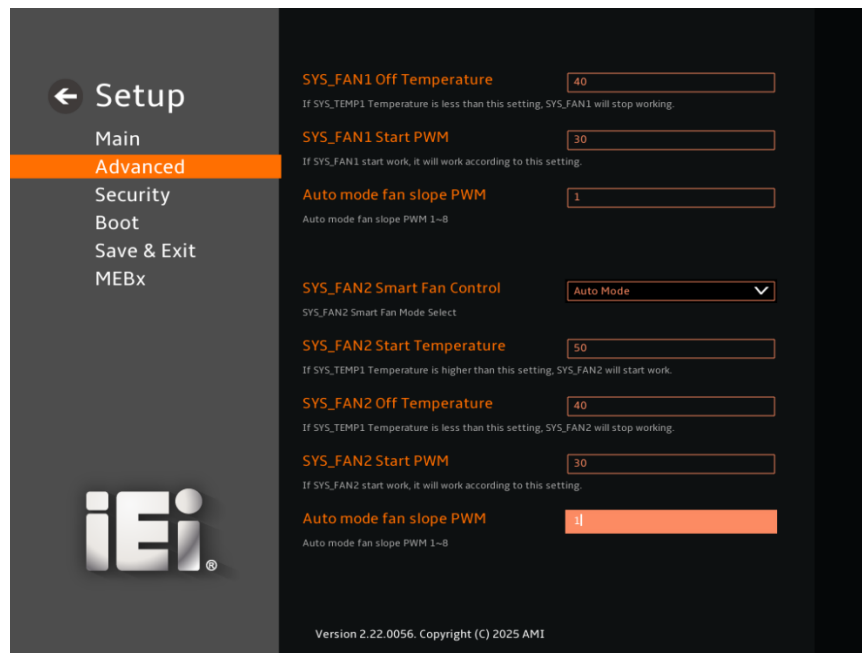
This setting adjusts the offset from the factory-defined Thermal Control Circuit (TCC) activation temperature, determining when the TCC should activate. The activation temperature is calculated as: $\text{TCC Activation Temperature} = \text{Factory Set Temperature} - \text{TCC Activation Offset}$. The offset range is between 0 and 63.

5.3.11.1 Smart Fan Mode Configuration

Use the **Smart Fan Mode Configuration** submenu (**BIOS Menu 62&BIOS Menu 63**) to configure the CPU/system fan start/off temperature and control mode.



BIOS Menu 62: Smart Fan Mode Configuration (1/2)



BIOS Menu 63: Smart Fan Mode Configuration (2/2)

➔ CPU_FAN1/SYS_FAN1/SYS_FAN2 Smart Fan Control [Auto Mode]

Use the **CPU_FAN1/SYS_FAN1 Smart Fan Control** option to configure the CPU Smart Fan.

→ **Manual Mode** The fan spins at the speed set in Manual Mode settings.

→ **Auto Mode** **DEFAULT** The fan adjusts its speed using Auto Mode settings.

→ **CPU_FAN1/SYS_FAN1/SYS_FAN2 start temperature**

If the CPU/System temperature is between **fan off** and **fan start**, the fan speed change to **fan start PWM**. To set a value, Use the + or – key to change the value or enter a decimal number between 1 and 100.

→ **CPU_FAN1/SYS_FAN1/SYS_FAN2 off temperature**

If the CPU/System temperature is **lower than the value** set this option, the fan speed change to **be lowest**. To set a value, Use the + or – key to change the value or enter a decimal number between 1 and 100.

→ **CPU_FAN1/SYS_FAN1/SYS_FAN2 start PWM**

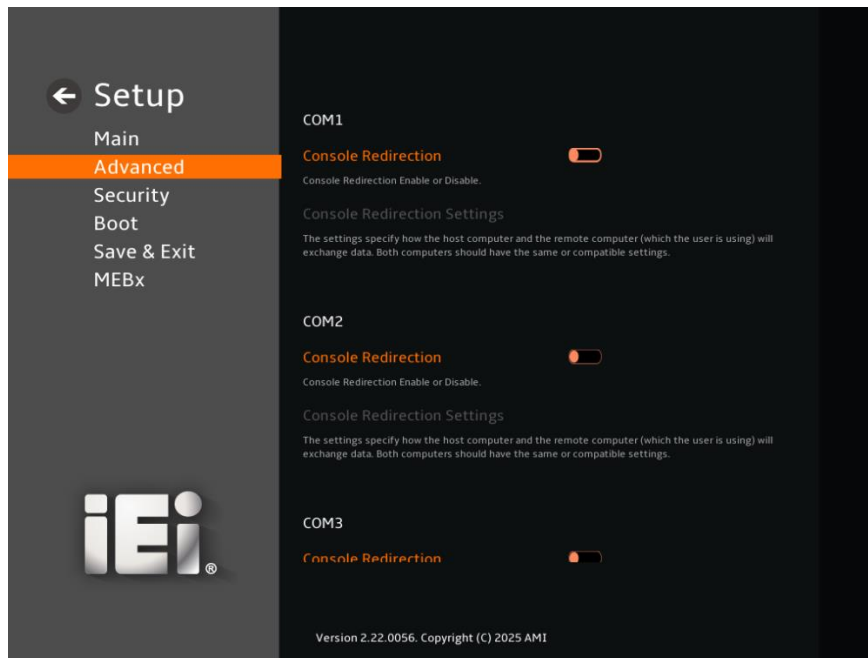
Use the CPU_FAN1/SYS_FAN1/SYS_FAN2 Start PWM option to set the **PWM start value**. Use the + or – key to change the value or enter a decimal number between 1 and 100.

→ **Auto mode fan slope PWM**

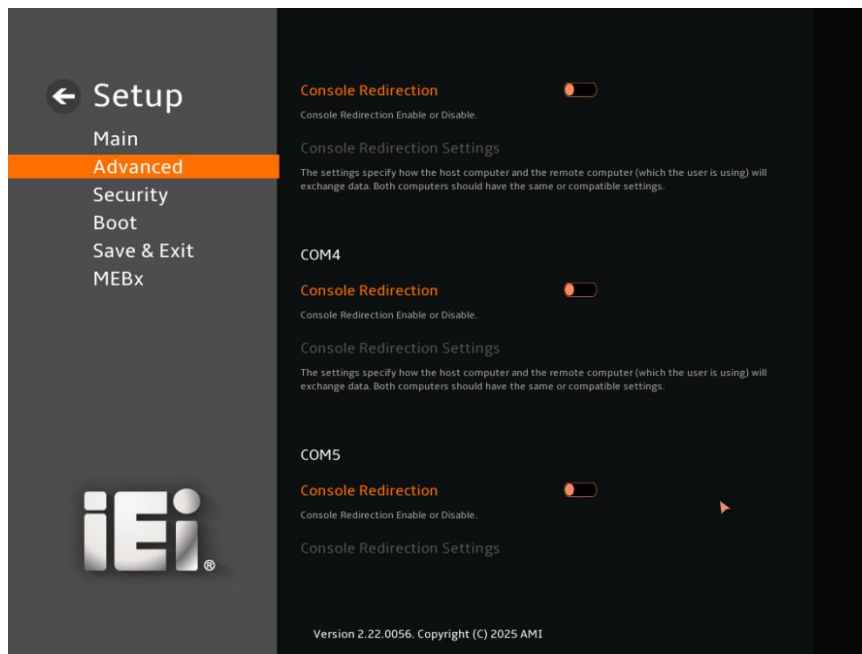
Use the **Auto mode fan slope PWM** option to select the linear rate at which the PWM mode increases with respect to an increase in temperature. Use the + or – key to change the value or enter a decimal number between 1 and 8

5.3.12 Serial Port Console Redirection

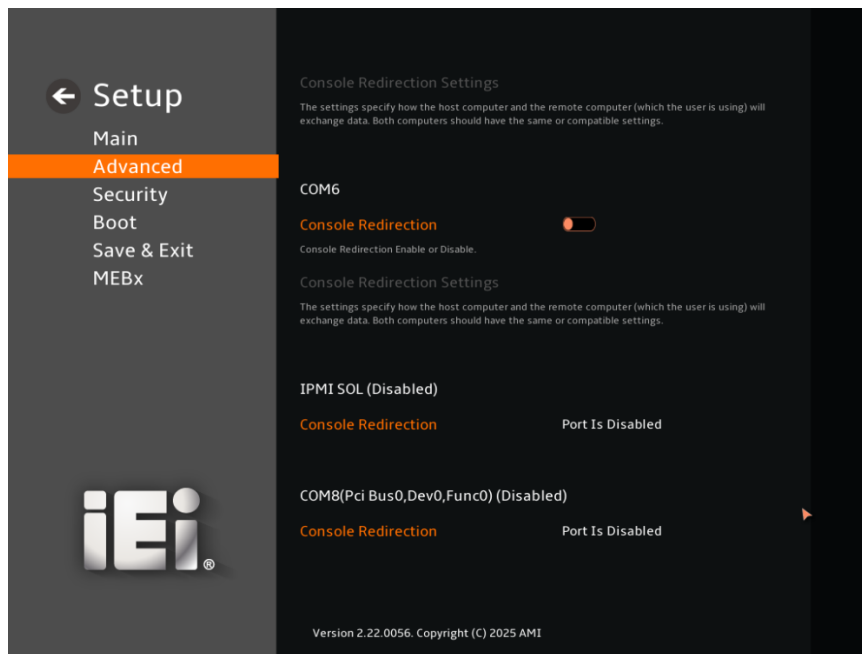
The **Serial Port Console Redirection** menu (**BIOS Menu 64&BIOS Menu 65&BIOS Menu 66**) allows the console redirection options to be configured. Console Redirection allows users to maintain a system remotely by re-directing keyboard input and text output through the serial port.



BIOS Menu 64: Serial Port Console Redirection (1/3)



BIOS Menu 65: Serial Port Console Redirection (2/3)



BIOS Menu 66: Serial Port Console Redirection (3/3)

→ Console Redirection [Disabled]

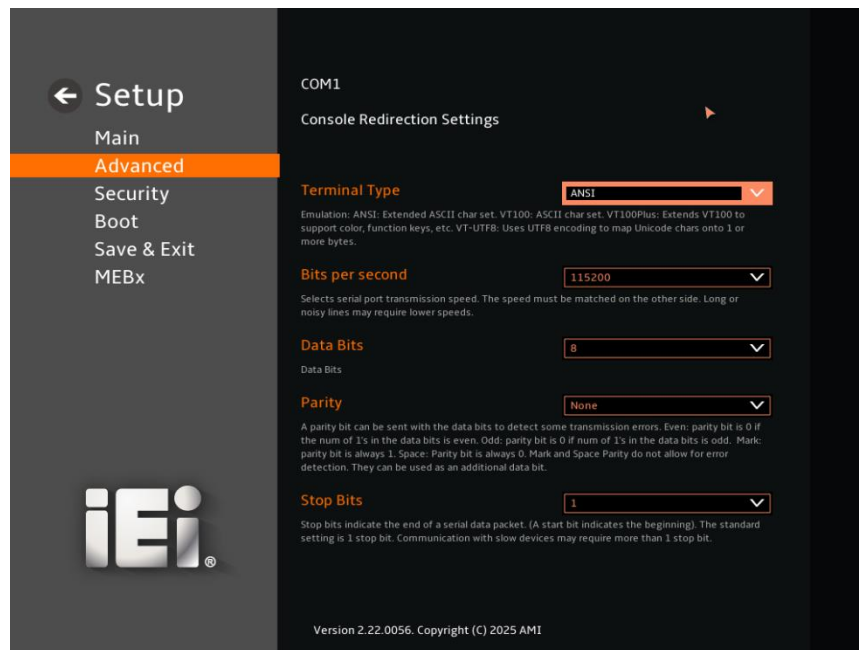
Use **Console Redirection** option to enable or disable the console redirection function.

- **Disabled** **DEFAULT** Disabled the console redirection function
- **Enabled** Enabled the console redirection function

The **Console Redirection Settings** submenu will be available when the **Console Redirection** option is enabled.

5.3.12.1 Console Redirection Settings

The following options are available in the **Console Redirection Settings** submenu (**BIOS Menu 67**) when the **COM Console Redirection (for COM1 to COM6)** option is enabled.



BIOS Menu 67: COM Console Redirection Settings

➔ Terminal Type [ANSI]

Use the **Terminal Type** option to specify the remote terminal type.

- | | | |
|---|----------------|---|
| ➔ | VT100 | The target terminal type is VT100 |
| ➔ | VT100+ | The target terminal type is VT100+ |
| ➔ | VT-UTF8 | The target terminal type is VT-UTF8 |
| ➔ | ANSI | DEFAULT The target terminal type is ANSI |

➔ Bits per second [115200]

Use the **Bits per second** option to specify the serial port transmission speed. The speed must match on the other side. Long or noisy lines may require lower speeds.

- | | | |
|---|--------------|---|
| ➔ | 9600 | Sets the serial port transmission speed at 9600. |
| ➔ | 19200 | Sets the serial port transmission speed at 19200. |

- **38400** Sets the serial port transmission speed at 38400.
- **57600** Sets the serial port transmission speed at 57600.
- **115200** **DEFAULT** Sets the serial port transmission speed at 115200.

→ Data Bits [8]

Use the **Data Bits** option to specify the number of data bits.

- **7** Sets the data bits at 7.
- **8** **DEFAULT** Sets the data bits at 8.

→ Parity [None]

Use the **Parity** option to specify the parity bit that can be sent with the data bits for detecting the transmission errors.

- **None** **DEFAULT** No parity bit is sent with the data bits.
- **Even** The parity bit is 0 if the number of ones in the data bits is even.
- **Odd** The parity bit is 0 if the number of ones in the data bits is odd.
- **Mark** The parity bit is always 1. This option does not allow for error detection.
- **Space** The parity bit is always 0. T This option does not allow for error detection.

→ Stop Bits [1]

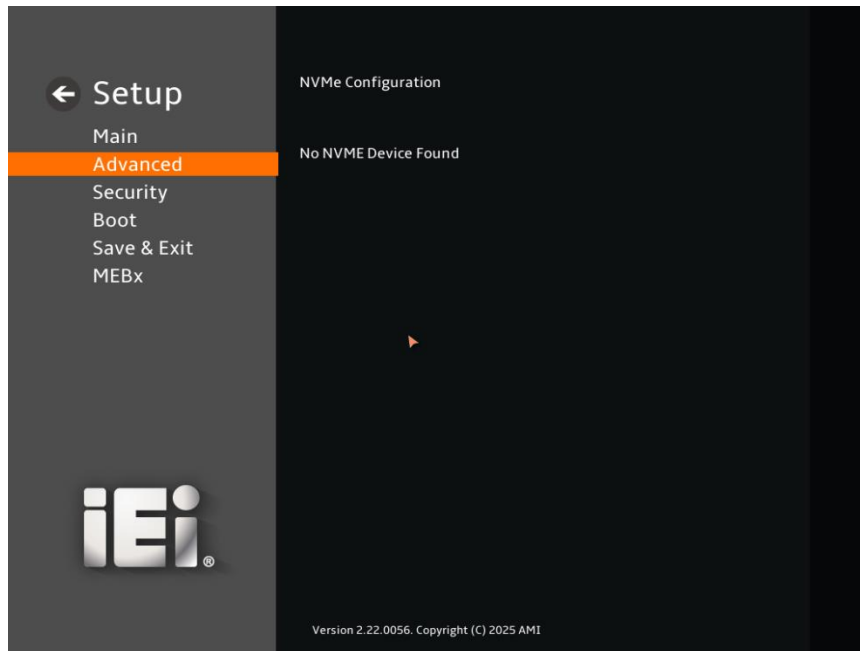
Use the **Stop Bits** option to specify the number of stop bits used to indicate the end of a serial data packet. Communication with slow devices may require more than 1 stop bit.

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- | | | | |
|---|---|---------|------------------------------------|
| ➔ | 1 | DEFAULT | Sets the number of stop bits at 1. |
| ➔ | 2 | | Sets the number of stop bits at 2. |

5.3.13 NVMe Configuration

Use the **NVMe Configuration (BIOS Menu 68)** menu to display the NVMe controller and device information.

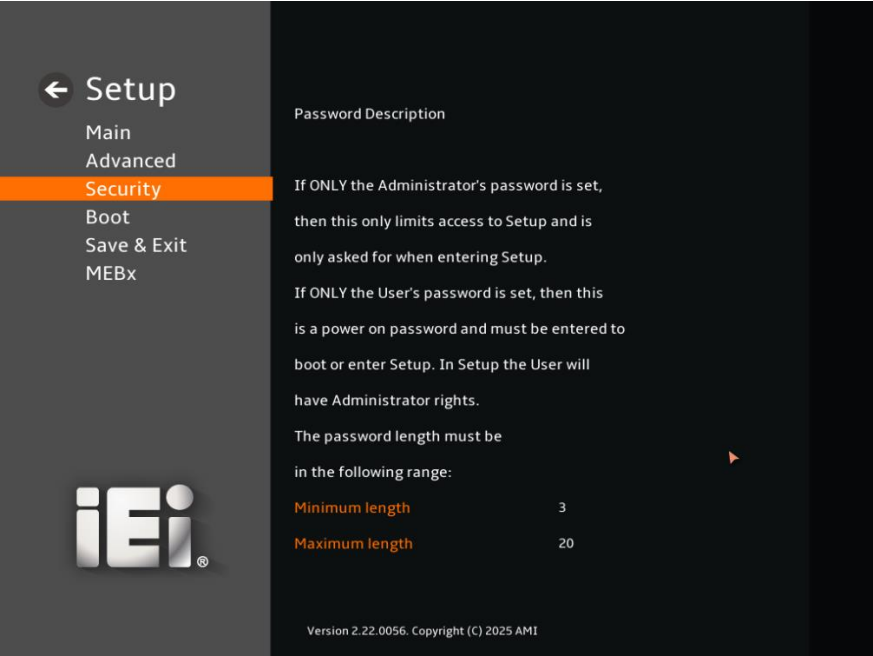


BIOS Menu 68: NVMe Configuration

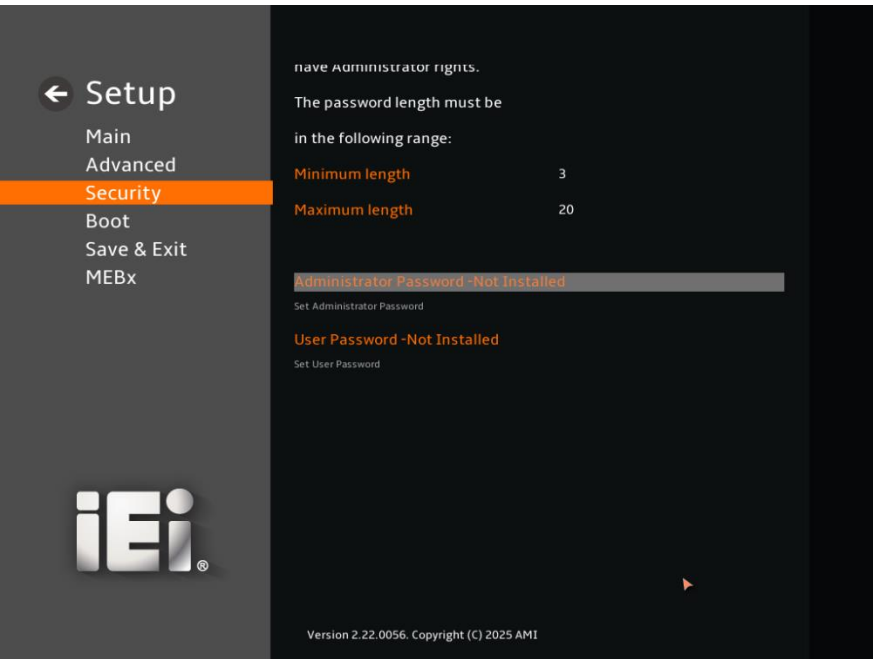


5.4 Security

Use the **Security** menu (**BIOS Menu 69&BIOS Menu 70**) to set system and user passwords.



BIOS Menu 69: Security (1/2)



BIOS Menu 70: Security (2/2)



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→ Administrator Password

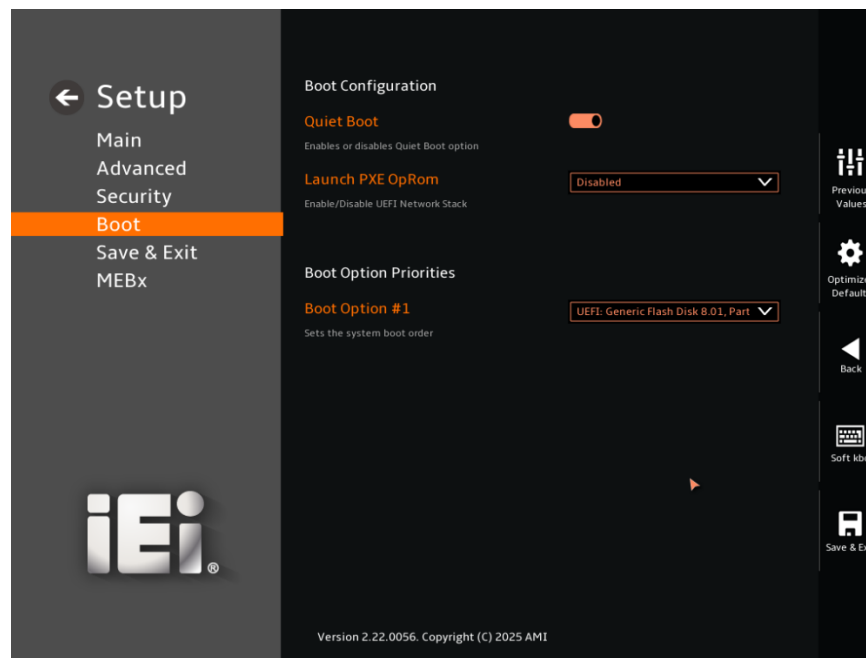
Use the **Administrator Password** to set or change a administrator password.

→ User Password

Use the **User Password** to set or change a user password.

5.5 Boot

Use the **Boot** menu (**BIOS Menu 71**) to configure system boot options.



BIOS Menu 71: Boot Menu

5.5.1 Boot Configuration

→ Quiet Boot [Enabled]

Use the **Quiet Boot** BIOS option to select the screen display when the system boots.

- | | | | |
|---|-----------------|----------------|---|
| → | Disabled | | Normal POST messages displayed |
| → | Enabled | DEFAULT | OEM Logo displayed instead of POST messages |

→ Option ROM Messages [Force BIOS]

Use the **Option ROM Messages** option to set the Option ROM display mode.

- Force BIOS** **DEFAULT** Sets display mode to force BIOS.
- Keep Current** Sets display mode to current.

→ Launch PXE OpRom [Disabled]

Use the **Launch PXE OpRom** option to enable or disable boot option for legacy network devices.

- Disabled** **DEFAULT** Ignore all PXE Option ROMs
- Enabled** Load PXE Option ROMs.

5.5.2 Boot Option Priorities

Use the Boot Option # N to choose the system boots from the peripherals you selected. The following Boot Options are listed as an example.

→ Boot Option #1

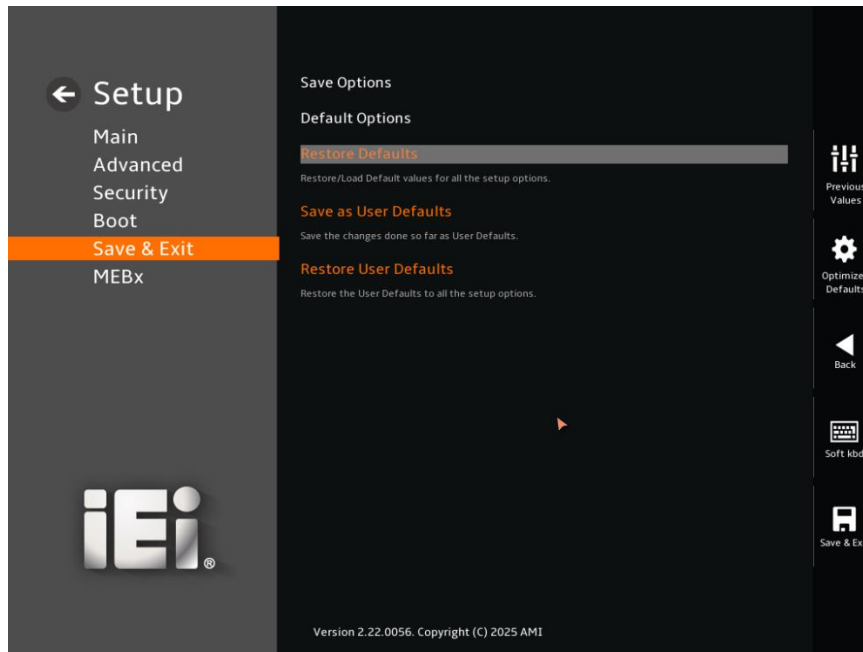
Sets the system boot order **UEFI: KingstonDataTraveler2.0** as the second priority.

- UEFI: KingstonDataTraveler2.0, Partition 1**
- Disabled**

TANK-XM813

5.6 Save & Exit

Use the **Save & Exit** menu (**BIOS Menu 72**) to load default BIOS values, optimal failsafe values and to save configuration changes.



BIOS Menu 72: Save & Exit

→ Restore Defaults

Use the **Restore Defaults** option to load the optimal default values for each of the parameters on the Setup menus. **F3 key can be used for this operation.**

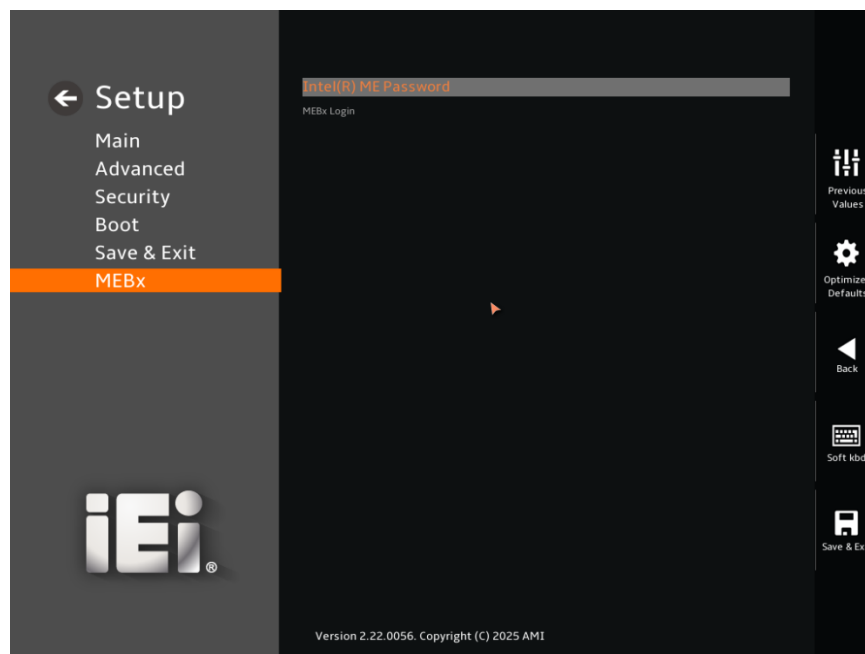
→ Save as User Defaults

Use the **Save as User Defaults** option to save the changes done so far as user defaults.

→ Restore User Defaults

Use the **Restore User Defaults** option to restore the user defaults to all the setup options.

5.7 MEBx



BIOS Menu 73: MEBx

Appendix

A

Regulatory Compliance

DECLARATION OF CONFORMITY



This equipment is in conformity with the following EU directives:

- EMC Directive (2004/108/EC, 2014/30/EU)
- Low-Voltage Directive (2006/95/EC, 2014/35/EU)
- RoHS Directive (2011/65/EU, 2015/863/EU)

If the user modifies and/or install other devices in the equipment, the CE conformity declaration may no longer apply.

If this equipment has telecommunications functionality, it also complies with the requirements of the Radio Equipment Directive 2014/53/EU.

English

IEI Integration Corp declares that this equipment is in compliance with the essential requirements and other relevant provisions of Directive 2014/53/EU.

Български [Bulgarian]

IEI Integration Corp. декларира, че този оборудване е в съответствие със съществените изисквания и другите приложими правила на Директива 2014/53/EU.

Česky [Czech]

IEI Integration Corp tímto prohlašuje, že tento zařízení je ve shodě se základními požadavky a dalšími příslušnými ustanoveními směrnice 2014/53/EU.

Dansk [Danish]

IEI Integration Corp erklærer herved, at følgende udstyr overholder de væsentlige krav og øvrige relevante krav i direktiv 2014/53/EU.

Deutsch [German]

IEI Integration Corp, erklärt dieses Gerät entspricht den grundlegenden Anforderungen und den weiteren entsprechenden Vorgaben der Richtlinie 2014/53/EU.

TANK-XM813

Eesti [Estonian]

IEI Integration Corp deklareerib seadme seadme vastavust direktiivi 2014/53/EÜ põhinõuetele ja nimetatud direktiivist tulenevatele teistele asjakohastele sätetele.

Español [Spanish]

IEI Integration Corp declara que el equipo cumple con los requisitos esenciales y cualesquiera otras disposiciones aplicables o exigibles de la Directiva 2014/53/EU.

Ελληνική [Greek]

IEI Integration Corp ΔΗΛΩΝΕΙ ΟΤΙ ΕΞΟΠΛΙΣΜΟΣ ΣΥΜΜΟΡΦΩΝΕΤΑΙ ΠΡΟΣ ΤΙΣ ΟΥΣΙΩΔΕΙΣ ΑΠΑΙΤΗΣΕΙΣ ΚΑΙ ΤΙΣ ΛΟΙΠΕΣ ΣΧΕΤΙΚΕΣ ΔΙΑΤΑΞΕΙΣ ΤΗΣ ΟΔΗΓΙΑΣ 2014/53/EU.

Français [French]

IEI Integration Corp déclare que l'appareil est conforme aux exigences essentielles et aux autres dispositions pertinentes de la directive 2014/53/EU.

Italiano [Italian]

IEI Integration Corp dichiara che questo apparecchio è conforme ai requisiti essenziali ed alle altre disposizioni pertinenti stabilite dalla direttiva 2014/53/EU.

Latviski [Latvian]

IEI Integration Corp deklarē, ka iekārta atbilst būtiskajām prasībām un citiem ar to saistītajiem noteikumiem Direktīvas 2014/53/EU.

Lietuvių [Lithuanian]

IEI Integration Corp deklaruoja, kad šis įranga atitinka esminius reikalavimus ir kitas 2014/53/EU Direktyvos nuostatas.

Nederlands [Dutch]

IEI Integration Corp dat het toestel toestel in overeenstemming is met de essentiële eisen en de andere relevante bepalingen van richtlijn 2014/53/EU.

Malti [Maltese]

IEI Integration Corp jiddikjara li dan prodott jikkonforma mal-ħtiġijiet essenzjali u ma provvedimenti oħrajn rilevanti li hemm fid-Dirrettiva 2014/53/EU.



Magyar [Hungarian]

IEI Integration Corp nyilatkozom, hogy a berendezés megfelel a vonatkozó alapvető követelményeknek és az 2014/53/EU irányelv egyéb előírásainak.

Polski [Polish]

IEI Integration Corp oświadcza, że wyrobu jest zgodny z zasadniczymi wymogami oraz pozostałymi stosownymi postanowieniami Dyrektywy 2014/53/EU.

Português [Portuguese]

IEI Integration Corp declara que este equipamento está conforme com os requisitos essenciais e outras disposições da Directiva 2014/53/EU.

Româna [Romanian]

IEI Integration Corp declară că acest echipament este în conformitate cu cerințele esențiale și cu celelalte prevederi relevante ale Directivei 2014/53/EU.

Slovensko [Slovenian]

IEI Integration Corp izjavlja, da je ta opreme v skladu z bistvenimi zahtevami in ostalimi relevantnimi določili direktive 2014/53/EU.

Slovensky [Slovak]

IEI Integration Corp týmto vyhlasuje, že zariadenia spĺňa základné požiadavky a všetky príslušné ustanovenia Smernice 2014/53/EU.

Suomi [Finnish]

IEI Integration Corp vakuuttaa täten että laitteet on direktiivin 2014/53/EU oleellisten vaatimusten ja sitä koskevien direktiivin muiden ehtojen mukainen.

Svenska [Swedish]

IEI Integration Corp förklarar att denna utrustningstyp står i överensstämmelse med de väsentliga egenskapskrav och övriga relevanta bestämmelser som framgår av direktiv 2014/53/EU.

**FCC WARNING**

This equipment complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

- This device may not cause harmful interference, and
- 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.

Federal Communication Commission Interference Statement

This equipment has been assembled with components that comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Appendix

B

Safety Precautions

TANK-XM813

B.1 Safety Precautions

**WARNING:**

The precautions outlined in this appendix should be strictly followed. Failure to follow these precautions may result in permanent damage to the TANK-XM813 Series.

Please follow the safety precautions outlined in the sections that follow:

B.1.1 General Safety Precautions

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

- ***Make sure the power is turned off and the power cord is disconnected*** when moving, installing or modifying the system.
- ***Do not apply voltage levels that exceed the specified voltage range.*** Doing so may cause fire and/or an electrical shock.
- ***Electric shocks can occur*** if opened while still powered on.
- ***Do not drop or insert any objects*** into the ventilation openings.
- ***If considerable amounts of dust, water, or fluids enter the system,*** turn off the power supply immediately, unplug the power cord, and contact the system vendor.
- **DO NOT:**
 - Drop the system against a hard surface.
 - In a site where the ambient temperature exceeds the rated temperature

B.1.2 Anti-static Precautions



WARNING:

Failure to take ESD precautions during the installation of the TANK-XM813 Series may result in permanent damage to the TANK-XM813 Series and severe injury to the user.

Electrostatic discharge (ESD) can cause serious damage to electronic components, including the TANK-XM813 Series. Dry climates are especially susceptible to ESD. It is therefore critical that whenever the TANK-XM813 Series 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.

B.1.3 Product Disposal



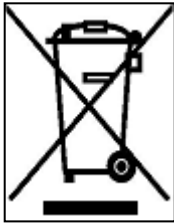
CAUTION:

Risk of explosion if battery is replaced by an incorrect type. Only certified engineers should replace the on-board battery.

Dispose of used batteries according to instructions and local regulations.

TANK-XM813

- Outside the European Union – If you wish to dispose of used electrical and electronic products outside the European Union, please contact your local authority so as to comply with the correct disposal method.
- Within the European Union – The device that produces less waste and is easier to recycle is classified as electronic device in terms of the European Directive 2012/19/EU (WEEE), and must not be disposed of as domestic garbage.



EU-wide legislation, as implemented in each Member State, requires that waste electrical and electronic products carrying the mark (left) must be disposed of separately from normal household waste. This includes monitors and electrical accessories, such as signal cables or power cords. When you need to dispose of your display products, please follow the guidance of your local authority, or ask the shop where you purchased the product. The mark on electrical and electronic products only applies to the current European Union Member States.

Please follow the national guidelines for electrical and electronic product disposal.

B.2 Maintenance and Cleaning Precautions

When maintaining or cleaning the TANK-XM813 Series, please follow the guidelines below.

B.2.1 Maintenance and Cleaning

Prior to cleaning any part or component of the TANK-XM813 Series, please read the details below.

- The interior of the TANK-XM813 Series does not require cleaning. Keep fluids away from the TANK-XM813 Series interior.
- Be cautious of all small removable components when vacuuming the TANK-XM813 Series.
- Turn the TANK-XM813 Series off before cleaning the TANK-XM813 Series.
- Never drop any objects or liquids through the openings of the TANK-XM813 Series.
- Be cautious of any possible allergic reactions to solvents or chemicals used when cleaning the TANK-XM813 Series.
- Avoid eating, drinking and smoking within vicinity of the TANK-XM813 Series.

B.2.2 Cleaning Tools

Some components in the TANK-XM813 Series 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 TANK-XM813 Series.

- ***Cloth*** – Although paper towels or tissues can be used, a soft, clean piece of cloth is recommended when cleaning the TANK-XM813 Series.
- ***Water or rubbing alcohol*** – A cloth moistened with water or rubbing alcohol can be used to clean the TANK-XM813 Series.
- ***Using solvents*** – The use of solvents is not recommended when cleaning the TANK-XM813 Series 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 TANK-XM813 Series. Dust and dirt can restrict the airflow in the TANK-XM813 Series 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.

Appendix

C

Error Beep Code



C.1 PEI Beep Codes

Number of Beeps	Description
1	Memory not Installed
1	Memory was installed twice (InstallPeiMemory routine in PEI Core called twice)
2	Recovery started
3	DXE IPL was not found
3	DXE Core Firmware Volume was not found
4	Recovery failed
4	S3 Resume failed
7	Reset PPI is not available

C.2 DXE Beep Codes

Number of Beeps	Description
1	Invalid password
4	Some of the Architectural Protocols are not available
5	No Console Output Devices are found
5	No Console Input Devices are found
6	Flash update is failed
7	Reset protocol is not available
8	Platform PCI resource requirements cannot be met



NOTE:

If you have any question, please contact IEI for further assistance.



Appendix

D

Hazardous Materials Disclosure

D.1 RoHS Directive (2015/863/EU)

The details provided in this appendix are to ensure that the product is compliant with the RoHS Directive (2015/863/EU). The table below acknowledges the presences of small quantities of certain substances in the product, and is applicable to RoHS Directive (2015/863/EU).

Please refer to the following table.

Part Name	Toxic or Hazardous Substances and Elements									
	Lead (Pb)	Mercury (Hg)	Cadmium (Cd)	Hexavalent Chromium (CR(VI))	Polybrominated Biphenyls (PBB)	Polybrominated Diphenyl Ethers (PBDE)	Bis(2-ethylhexyl) phthalate (DEHP)	Butyl benzyl phthalate (BBP)	Dibutyl phthalate (DBP)	Diisobutyl phthalate (DIBP)
Housing	O	O	O	O	O	O	O	O	O	O
Printed Circuit Board	O	O	O	O	O	O	O	O	O	O
Metal Fasteners	O	O	O	O	O	O	O	O	O	O
Cable Assembly	O	O	O	O	O	O	O	O	O	O
Fan Assembly	O	O	O	O	O	O	O	O	O	O
Power Supply Assemblies	O	O	O	O	O	O	O	O	O	O
Battery	O	O	O	O	O	O	O	O	O	O
O: This toxic or hazardous substance is contained in all of the homogeneous materials for the part is below the limit requirement in Directive (EU) 2015/863. X: This toxic or hazardous substance is contained in at least one of the homogeneous materials for this part is above the limit requirement in Directive (EU) 2015/863.										

TANK-XM813

D.2 China RoHS

此附件旨在确保本产品符合中国 RoHS 标准。以下表格标示此产品中某有毒物质的含量符合中国 RoHS 标准规定的限量要求。

本产品上会附有“环境友好使用期限”的标签,此期限是估算这些物质“不会有泄漏或突变”的年限。本产品可能包含有较短的环境友好使用期限的可替换元件,像是电池或灯管,这些元件将会单独标示出来。

部件名称	有毒有害物质或元素					
	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (CR(VI))	多溴联苯 (PBB)	多溴二苯醚 (PBDE)
壳体	O	O	O	O	O	O
印刷电路板	O	O	O	O	O	O
金属螺帽	O	O	O	O	O	O
电缆组装	O	O	O	O	O	O
风扇组装	O	O	O	O	O	O
电力供应组装	O	O	O	O	O	O
电池	O	O	O	O	O	O
O: 表示该有毒有害物质在该部件所有物质材料中的含量均在 SJ/T11364-2014 與 GB/T26572-2011 标准规定的限量要求以下。 X: 表示该有毒有害物质至少在该部件的某一均质材料中的含量超出 SJ/T11364-2014 與 GB/T26572-2011 标准规定的限量要求。						