IEI Integration Corp.

MODEL:

DRPC-243-MTL Series

Embedded system with Intel® Core™ Ultra Processors (Series 1) (Meteor Lake platform), 2 x SO-DIMM DDR5 Solt (16GB pre-installed), HDMI/DP/USB-C, 3 x 2.5GbE LAN, 4 x COM, 6 x USB, 12~28V DC, RoHS.

User Manual

Rev. 1.00 –July 6, 2026

RoHS Lead Free

Revision

Date	Version	Changes
July 6, 2026	1.00	Initial release

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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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1

Introduction

1.1 Overview

Figure 1-1: DRPC-243-MTL

The DRPC-243-MTL is an embedded system with Intel® Core™ Ultra Processors (Series 1) (Meteor Lake platform) and two DDR5 SO-DIMM memory (16GB pre-installed). It is designed for harsh environment applications, and supports DIN rail mounting method.

The DRPC-243-MTL accepts a wide range of DC power input (12V ~ 28V), allowing it to be powered anywhere. It is equipped with four USB 3.2 Gen2 (10Gb/s), two USB 2.0, three 2.5GbE, two isolation RS-232 ports, two isolation RS-422/485 ports, one HDMI and one DisplayPort++ and one USB-C to provide rich I/O options for various applications. Two RS-232 are reserved inside for expansion

Furthermore, the DRPC-243-MTL also has a PCIe x4 slot that can support half-size expansion cards.

1.2 Features

The DRPC-243-MTL features are listed below:

- Intel® Core™ Ultra Processors (Series 1) (Meteor Lake platform)
- 2 x DDR5 SO-DIMM memory slot（16GB pre-installed）

- 1 x 2.5" SATA 6Gb/s HDD/SSD bay
- 4 x USB 3.2 Gen2 (10Gb/s) port
- 2 x USB 2.0 port
- 3 x 2.5GbE LAN
- 2 x isolation RS232 & 2 x isolation RS422/485
- Support M.2 M Key, M.2 A key and M.2 B key expansions
- Wide range DC power input (12V~28V)
- Cold forging heat dissipation
- PCIe x4 slot expansion (optional)
- DIN rail mounting support
- RoHS compliant

1.3 Model Variations

Model No.	CPU
DRPC-243-MTL-U5AD-R10	Intel® Core™ Ultra 5 125U (up to 4.3GHz, 12-core, 15W TDP)
DRPC-243-MTL-U7AD-R10	Intel® Core™ Ultra 7 155U (up to 4.8GHz, 12-core, 15W TDP)

Table 1-1: Model Variations of DRPC-243-MTL

1.4 Technical Specifications

The DRPC-243-MTL technical specifications are listed in (Table 1-2)

Model name		DRPC-243-MTL-U5AD	DRPC-243-MTL-U7AD
Chassis	Dimensions	190 (W) x 150 (D) x 81 (H) mm	
	System fan	Fanless (Fan optional)	
	Chassis Construction	Extruded Aluminum alloys	
Motherboard	CPU	Intel® Core™ Ultra 5 125U (up to 4.3GHz, 12-core, 15W TDP)	Intel® Core™ Ultra 7 155U (up to 4.8GHz, 12-core, 15W TDP)
	Chipset	SoC	
	System Memory	2 x SO-DIMM slot DDR5 5600 MHz (16 GB pre-installed) (up to 96GB)	
Storage	Hard drive	1 x 2.5" SATA 6Gb/s SSD bay	
I/O Interfaces	USB	4 x USB3.2 Gen2 Type-A 2 x USB2.0 Type-A	

	Ethernet	1 x 2.5GbE by Intel® I226LM controller 2 x 2.5GbE by Intel® I226-V controller
	COM	2 x RS-232 (DB9 with 2.5KV isolation) 2 x RS-232 (optional) 2 x RS-422/485 with AFC (DB9 with 2.5KV isolation)
	DIO	1 x 12-bit (6-in,6-out) (optional)
	Display	1 x HDMI 1.4b (up to 4K@30Hz) 1 x DP 1.4b (up to 4K@60Hz) 1 x USB-C (up to 4K@60Hz Display, supports 40Gbps data transfer, 15W power delivery)
	TPM	Intel® PTT (Firmware TPM 2.0) Optional TPM module via 20-pin header (IEI TPM module P/N:TPM-IN03)
	Others	1 x Power button, 1 x 2-pin terminal block for Remote Power switch, 1 x Reset button, 1 x AT/ATX switch, 1 x Power LED (green), 1 x SSD LED (for M.2 M-key, yellow), 1 x 4-pin external system fan connector
Expansions	M.2	1 x 2230 A-key (PCIe Gen4 x1/ USB2.0) 1 x 3042/52 B-key (PCIe Gen4 x1/USB 3.2 Gen2/USB 2.0) 1 x On-board SIM card socket (hinge type) for M.2 B key 1 x 2280 M-key (PCIe Gen4 x4)
	Backplane	1 x PCIe Gen4 x4 (optional)
Power	Power input	3-pin terminal block: 12~28 VDC
	Internal PWR	4-pin 60w @12V
	Consumption	24V @ 3A (Intel® Core™ Ultra5 125U with 16GB memory)
Reliability	Mounting	DIN-Rail, Wall Mount
	Operating Temp	-20°C ~ 60°C with air flow (SSD)
	Storage Temp	-25°C ~ 85°C
	Humidity	10% ~ 95%, non-condensing
	Operating shock	IEC 60068-2-27 half-sine, 5G, 11ms, 100 shocks with SSD
	Operating vibration	MIL-STD-810H 514.8C-I with SSD
	Weight	1.6/2.4 KG
	Safety/EMC	CE, FCC

OS	Supported OS	Microsoft ® Windows 10 / Windows 11, Linux

Table 1-2: Technical Specifications

1.5 Front Panel

The front panel of the DRPC-243-MTL has the following features.

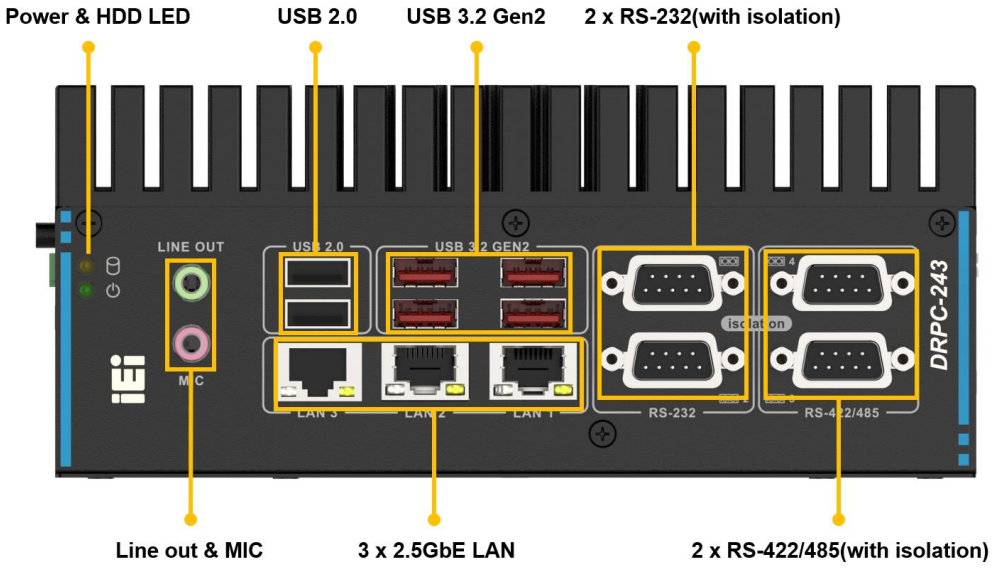


Figure 1-2: Front Panel

1.6 Left Side Panel

The left side panel of the DRPC-243-MTL is shown below.

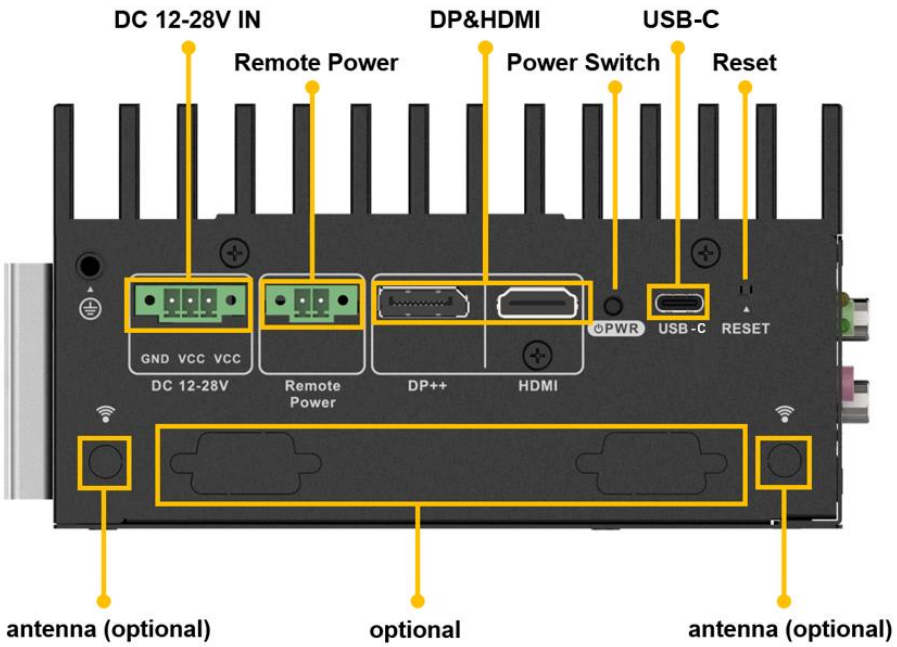


Figure 1-3: Left Side Panel

1.7 Right Side Panel

The DRPC-243-MTL Series' right side panel contains one system fan connector.

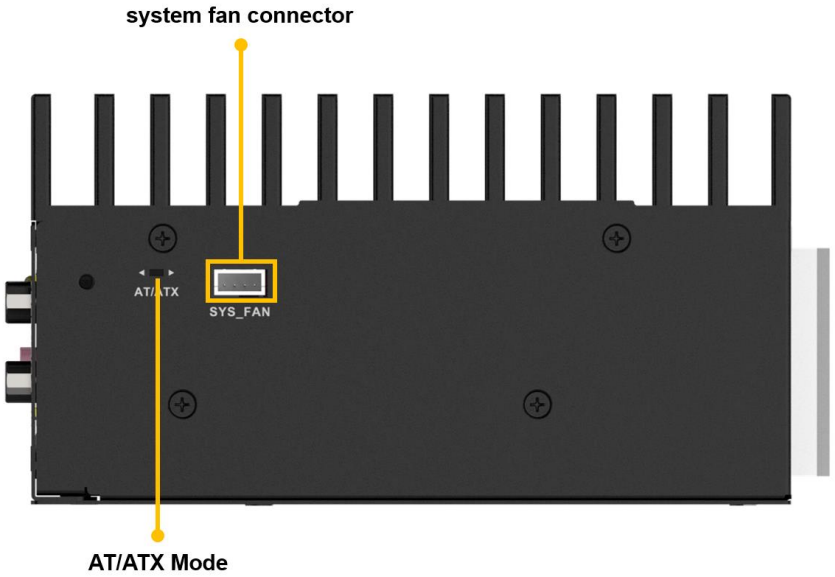


Figure 1-4: Right Side Panel

1.8 Physical Dimensions

The physical dimensions of the DRPC-243-MTL are shown in (Figure 1-5).

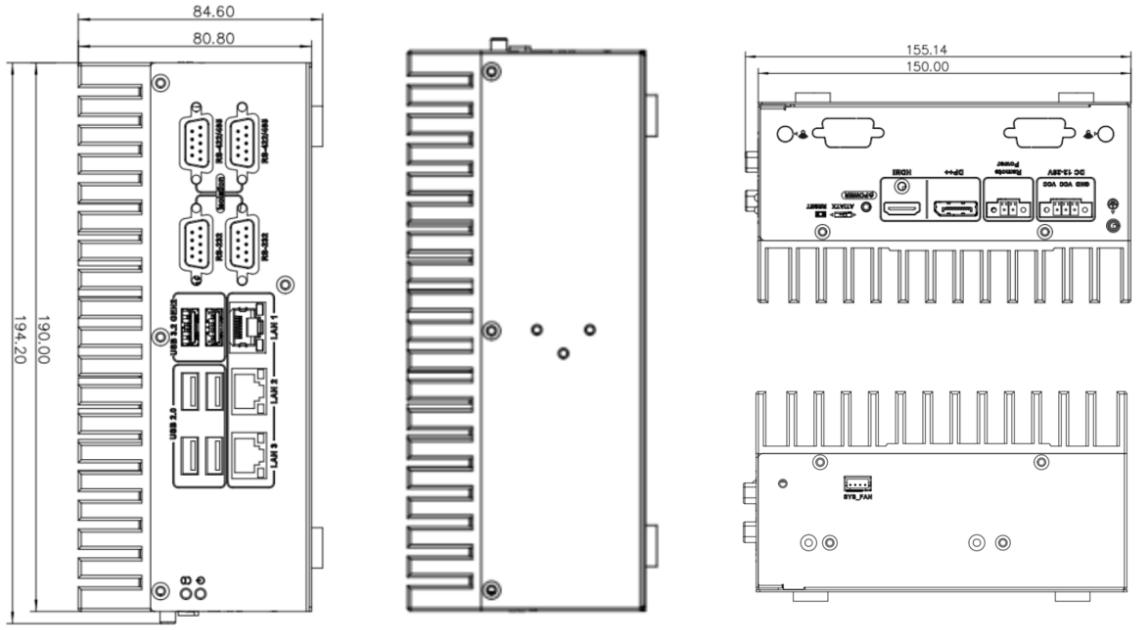


Figure 1-5: Physical Dimensions

With expansion layer Dimensions

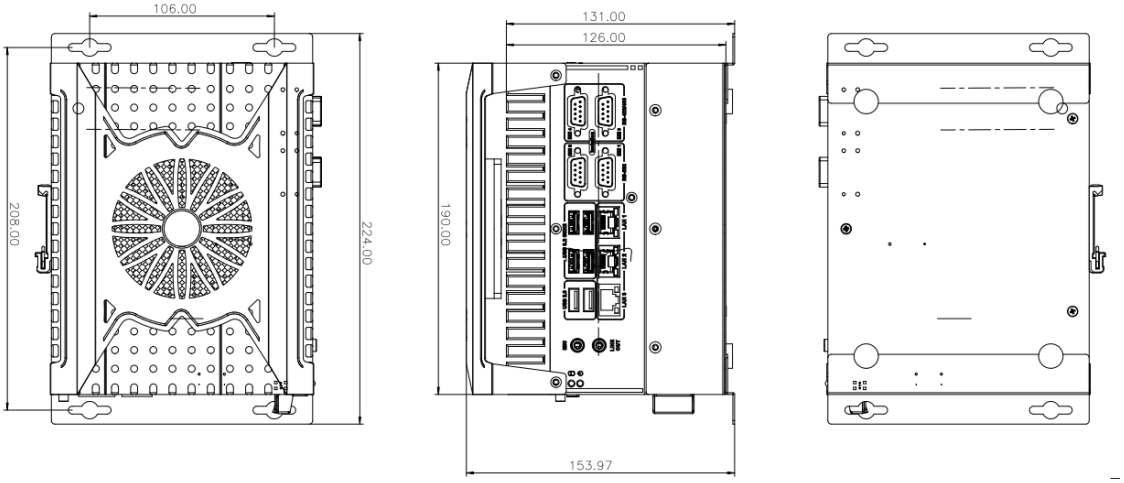


Figure 1-6: DRPC-243-MTL Dimensions

Chapter

2

Unpacking

2.1 Anti-static Precautions

WARNING:

Failure to take ESD precautions during installation may result in permanent damage to the DRPC-243-MTL and severe injury to the user.

Electrostatic discharge (ESD) can cause serious damage to electronic components, including the DRPC-243-MTL. Dry climates are especially susceptible to ESD. It is therefore critical that whenever the DRPC-243-MTL 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 board touch any grounded conducting material. During the time the board is handled, frequently touch any conducting materials that are connected to the ground.
- ***Use an anti-static pad***: When configuring the DRPC-243-MTL, place it on an anti-static pad. This reduces the possibility of ESD damaging the DRPC-243-MTL.

2.2 Unpacking Precautions

When the DRPC-243-MTL is unpacked, please do the following:

- Follow the anti-static precautions outlined in **Section 2.1**.
- Make sure the packing box is facing upwards that the DRPC-243-MTL does not fall out of the box.
- Make sure all the components shown in **Section 2.3** are present.

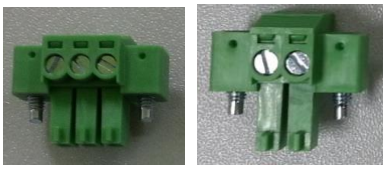
2.3 Unpacking Checklist

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 DRPC-243-MTL from or contact an IEI sales representative directly. To contact an IEI sales representative, please send an email to sales@ieiworld.com.

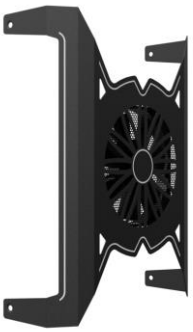
The DRPC-243-MTL Series is shipped with the following components:

Standard		
Quantity	**Item and Part Number**	**Image**
1	DRPC-243-MTL	
2	DIN-Rail mounting kit	
1	Screw pack	

Standard		
Quantity	**Item and Part Number**	**Image**
2	Terminal Blocks	

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

Optional	
Wi-Fi module (**P/N**: EMB-WIFI-KIT02I3-R10)	
DIO cable (P/N: 32031-000601-100-RS)	
DC power conversion cable (P/N: 32102-054800-100-RS)	
COM Cable (**P/N**: 32205-005401-100-RS)	
Power adapter (120W) (**P/N**: 63040-010120-300-RS)	

Optional	
Power adapter (180W) (**P/N**: 63040-010180-200-RS)	
Power cord (P/N: 32702-003600-100-RS-------European standard line)	
Wall Mount Kit (P/N:41020-0578C2-00-HF*2)	
Expansion Chassis (DRPC-240 Series 1 Slot Expansion Chassis with Riser Card) (P/N: TXC-DRPC-240-1S-R10)	
External Fan module (P/N: SF-DRPC-240-R10)	
TPM Module (P/N: TPM-IN03-R10)	

Optional	
M.2 SSD Heatsink (P/N: M2-SSD-HS-01)	/

** Each Wi-Fi module needs two antennas and two RF cables to fully support Wi-Fi function.*

Chapter

3

Installation

3.1 Installation Precautions

CAUTION:

The DRPC-243-MTL has more than one power supply connection point.

To reduce the risk of electric shock, disconnect all power sources before installing or servicing the DRPC-243-MTL.

During installation, be aware of the precautions below:

- **Read the user manual**: The user manual provides a complete description of the DRPC-243-MTL, installation instructions and configuration options.
- **DANGER! Disconnect Power**: Power to the DRPC-243-MTL 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 DRPC-243-MTL is opened while the power cord is still connected to an electrical outlet.
- **Qualified Personnel**: The DRPC-243-MTL 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 DRPC-243-MTL. The DRPC-243-MTL's cooling vents must not be obstructed by any objects. Blocking the vents can cause overheating of the DRPC-243-MTL. Leave at least 5 cm of clearance around the DRPC-243-MTL to prevent overheating.
- **Grounding**: The DRPC-243-MTL 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 DRPC-243-MTL.

3.2 Back Cover Removal

Before installing or maintaining the internal components, the cover must be removed from the DRPC-243-MTL Series. Follow the steps below to complete the task.

Step 1: Loosen the 5 screws on the top cover.

Step 2: Take off the back cover (Figure 3-1).

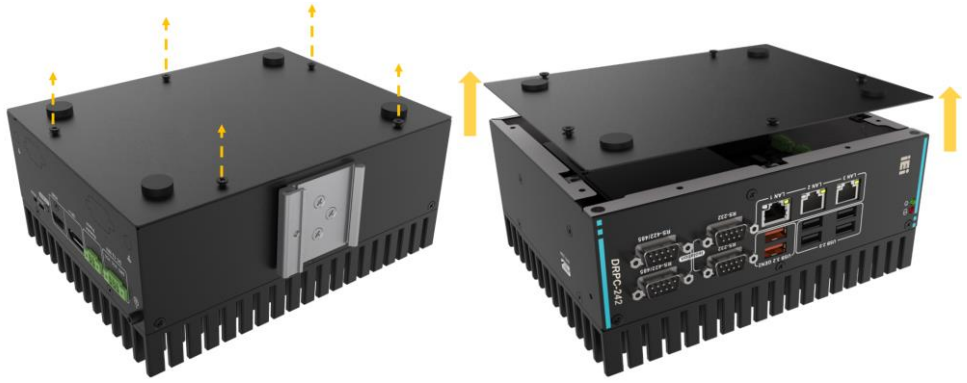


Figure 3-1: Remove the Cover

3.3 HDD Disk Bracket Removal

The HDD bracket must be removed first before installing a hard disk or M.2 modules.

Step 1: Remove the 3 screws on the side panels.

Step 2: Remove the HDD bracket as indicated by the arrows in Figure 3-2.

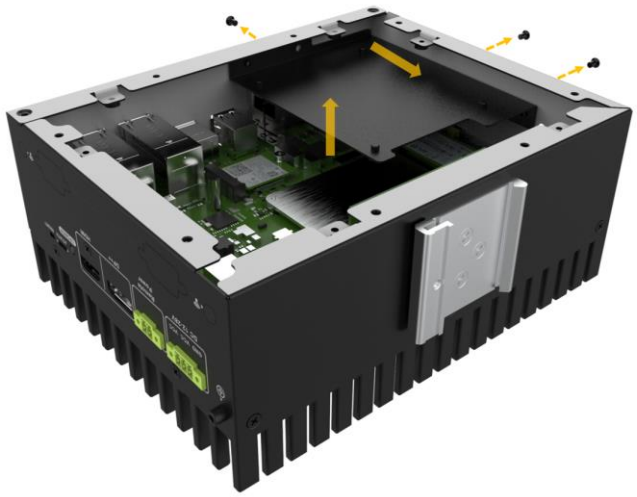


Figure 3-2: Removing the HDD Bracket

3.4 Memory Installation

The DRPC-243-MTL 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: Open the two handles of the memory slot.

Step 2: Remove the old memory module and insert a new memory module. Carefully align the memory module so the notch on the memory lines up with the notch on the memory socket.

Step 3: Once aligned, press down until the memory module is properly seated and the two handles fully clip into place (Figure 3-3).

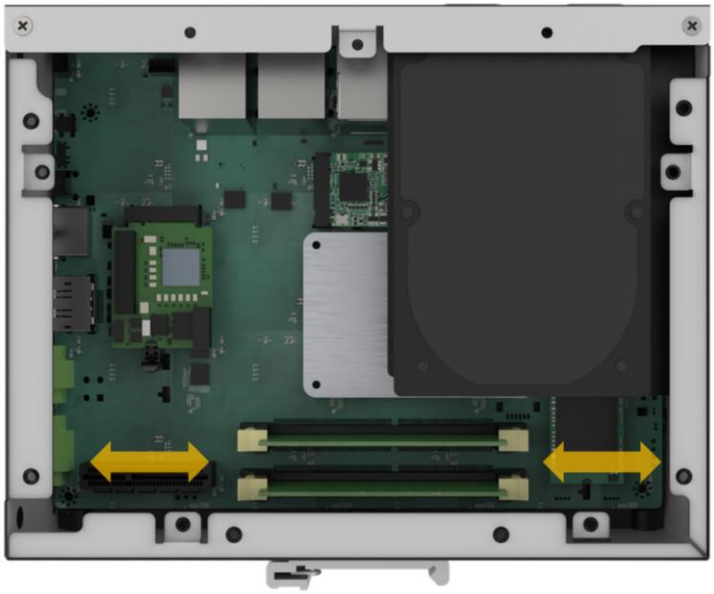


Figure 3-3: Memory Installation

3.5 Storage Installation

The DRPC-243-MTL supports two types of storage, one M.2 M Key & one 2.5" SSD. Before installing a M.2 SSD or 2.5" SSD/HDD, please follow the steps described in **Section 3.3** to remove the HDD bracket.

3.5.1 2.5-inch SSD Installation

Step 1: Place the HDD bracket onto the rear of the 2.5-inch hard disk. Fasten 4 screws to secure it.

Step 2: Plug in the hard drive cable, and install the HDD bracket back into the DRPC-243-MTL (pay attention to the positioning stud) using 3 screws (**Figure 3-4**).

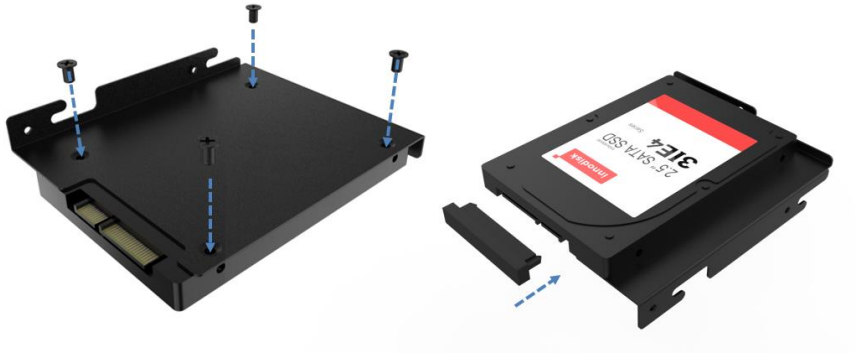


Figure 3-4: HDD Installation

3.5.2 M.2 SSD Installation

To install an M.2 B Key or M Key, please follow the steps below.

Step 1: Locate the M.2 module slot. See **section 4.2.6**

Step 2: Remove the retention screw secured on the motherboard.

Step 3: Line up the notch on the module with the notch on the slot. Slide the M.2 module into the socket at an angle of about 20º (**Figure 3-5)**.

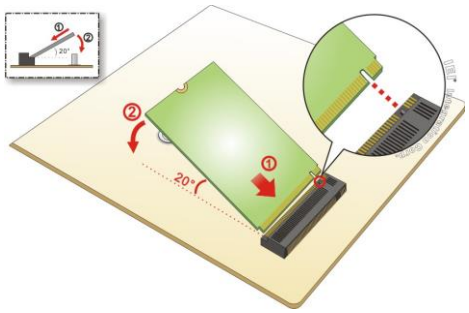


Figure 3-5: Inserting the M.2 Module into the Slot at an Angle

Step 4: Secure the M.2 module with the previously removed retention screw (**Figure 3-6)**.

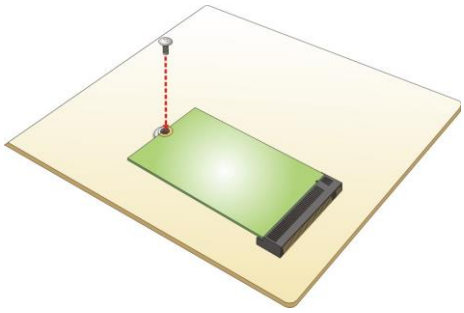


Figure 3-6: Securing the M.2 Module

3.6 Wi-Fi Module Installation (Optional)

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

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

Step 1: Locate the M.2 A Key module slot. See **section 4.2.8**

Step 2: Remove the retention screw secured on the motherboard.

Step 3: 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 20º (**Figure 3-7**).

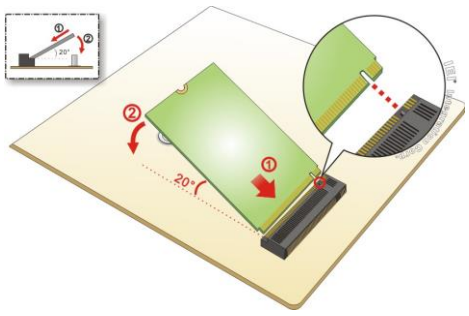


Figure 3-7: Inserting the WLAN Module

Step 4: Secure the WLAN module with the retention screw previously removed **(Figure 3-8**).

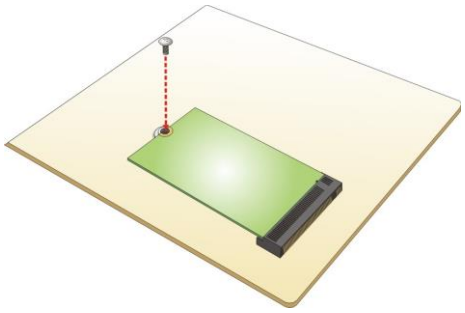


Figure 3-8: Securing the WLAN Module

Step 5: Connect the two RF cables to the antenna connectors on the WLAN module (**Figure 3-9**).

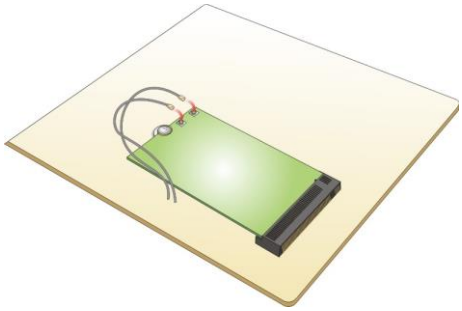


Figure 3-9: Connecting RF Cables

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 3-10)**.

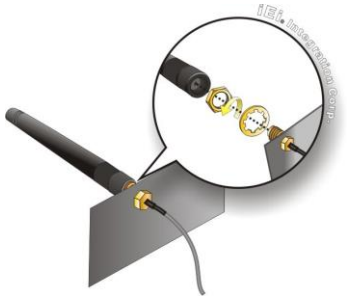


Figure 3-10: Securing SMA Connector and External Antenna Installation

3.7 IO extension Installation (Optional)

DRPC-243-MTL products have reserved GPIO port, serial port for function expansions. Optional cable or module are ready for purchase. To install these expansion components, follow the steps below.

3.7.1 Serial Port Installation

Step 1: Locate the Serial port connector. See Section

Step 2: Connect the serial cable to the serial connector on the mainboard. (**Figure 3-11**)

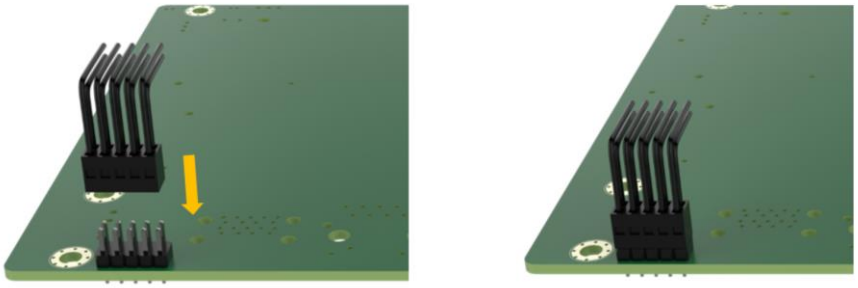


Figure 3-11: RS-232 Cable Installation

Step 3: Knock out the reserved holes on the chassis and secure the DB9 end of the serial cable to the panel. (**Figure 3-12**)

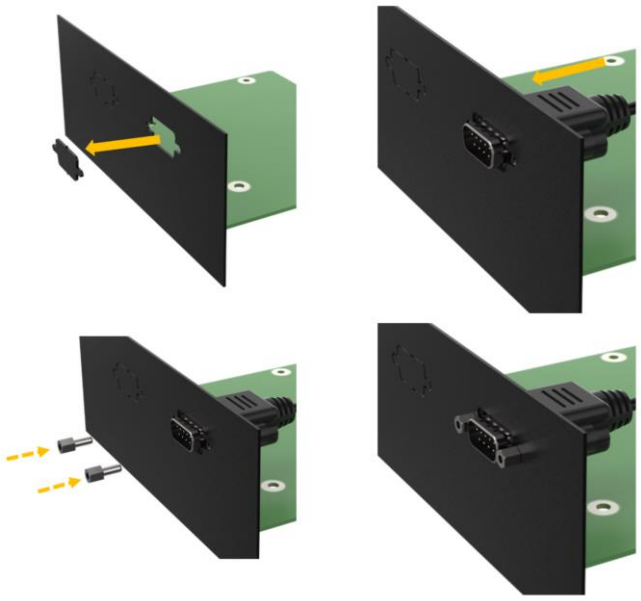


Figure 3-12: RS-232 DB9 Cable Installation

3.7.2 GPIO Installation

Step 1: Locate the GPIO port connector.

Step 2: Connect the GPIO cable to the GPIO connector on the mainboard.

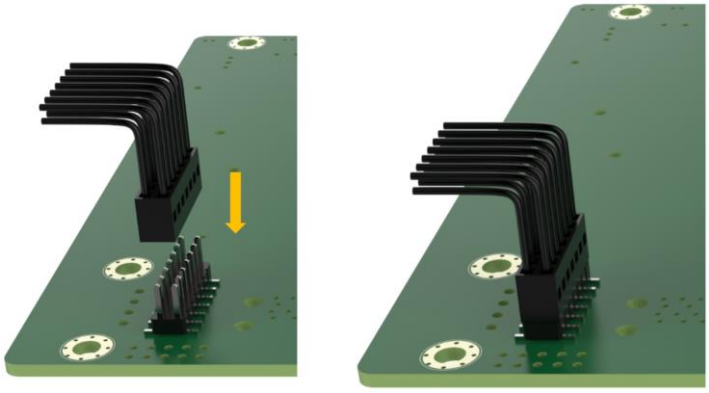


Figure 3-13: Connect the GPIO cable to the GPIO connector

Step 3: Knock out the reserved holes on the chassis and secure the DB15 end of the GPIO cable to the panel.

Figure 3-14: Knock out the reserved holes

3.8 Expansion Chassis Installation (Optional)

The **DRPC-243-MTL** provides an option for adding PCIe x4 function, which is achieved by installing the expansion chassis (P/N: TXC-DRPC-240-1S-R10). The installation steps are described below.

Step 1: Before installing the expansion chassis, ensure the fan wire inside the system will not be pressed or damaged (adjust the wiring if necessary). Align the riser card on the expansion chassis with the PCIe x4 slot inside the DRPC-243.

Step 2: Once aligned, insert the riser card into the PCIe slot. Secure the expansion chassis with 8 screws.

Step 3: To install an expansion card, open the cover on the top cover of the expansion chassis by removing 6 screws. Remove the blank bracket and install the PCIe card. Reinstall the bracket screw and the top cover after installing the card (**Figure 3-15**).

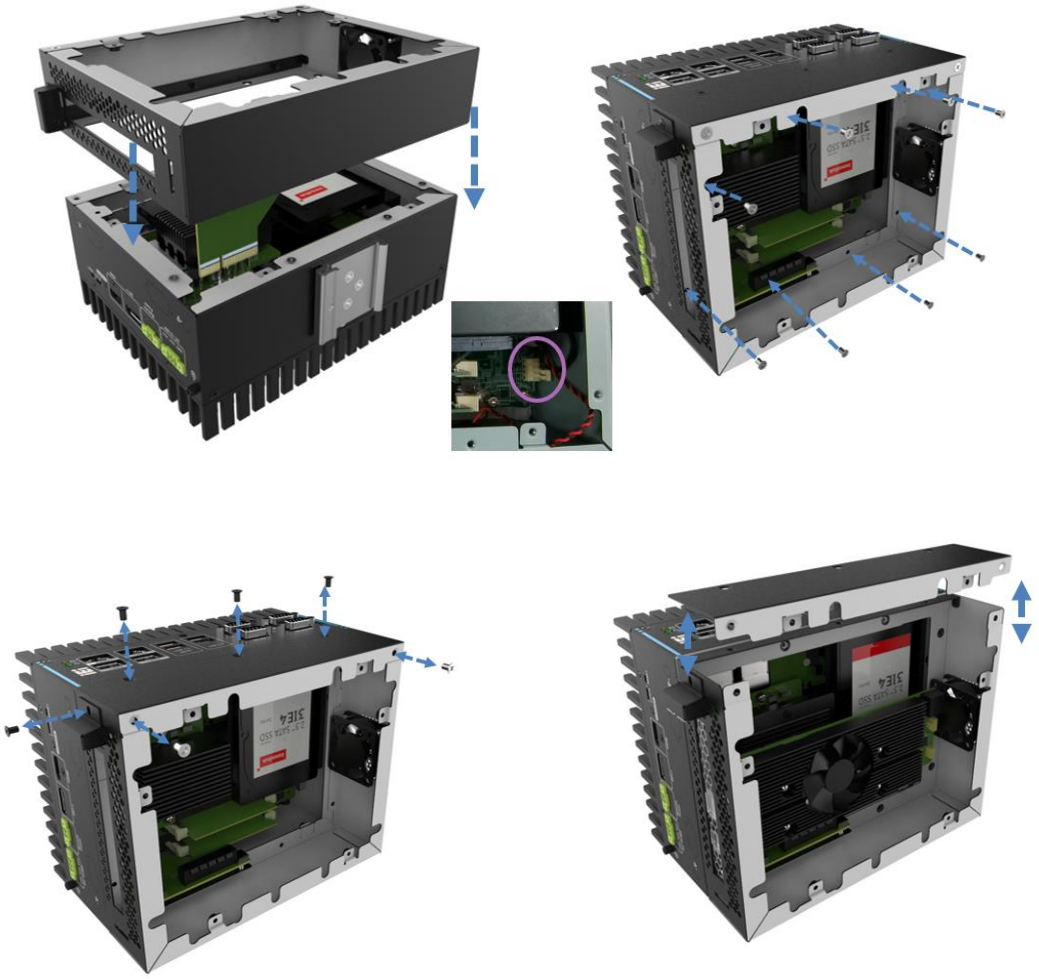


Figure 3-15: Expansion Chassis Installation

3.9 Back Cover Installation

Install the back cover, and fasten the 5 screws on the side.

Figure 3-16: Back Cover Installation

3.10 System Fan Installation (Optional)

When encountering high performance and high heat, additional cooling was needed. The optional external fan can help the DRPC-243-MTL solve the thermal problem.

To install the optional external fan, follow the steps below.

Step 1: Remove the 4 screws (2 on the front panel, 2 on the rear panel) on the DRPC-243-MTL as shown in the figure below.

Step 2: Install the expansion fan module (SF-DRPC-W-R10) to the DRPC-243-MTL, and secure it using the 4 screws removed previously.

Step 3: Connect the fan cable to the fan connector on the side panel.

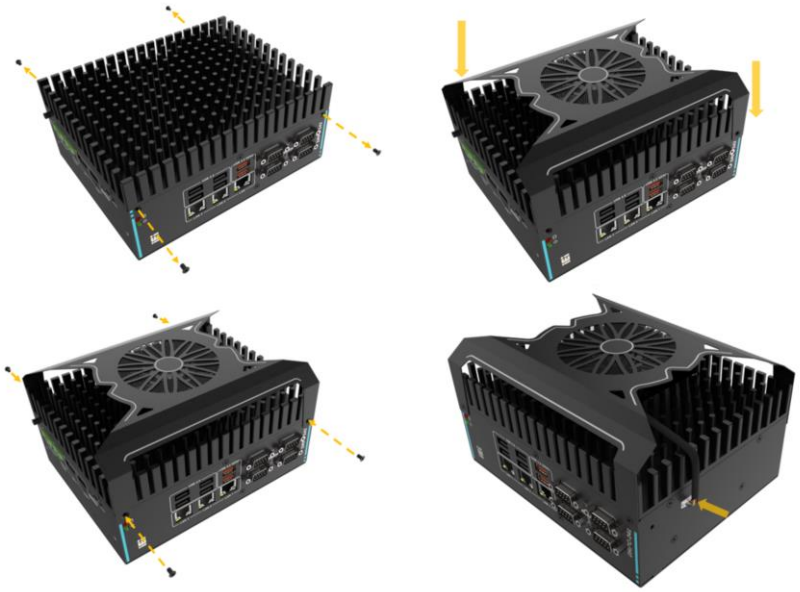


Figure 3-17: External Fan Module Installation

3.11 Mounting Brackets Installation

DRPC-243-MTL comes with standard rail mounting bracket and supports optional wall mounting bracket. Follow these steps to install.

3.11.1 DIN-Rail Installation

Step 1: Turn the embedded system over.

Step 2: Align the retention screw holes in each bracket with the corresponding retention screw holes on the rear surface.

Figure 3-18: Align the retention screw holes

Step 3: Secure the brackets to the system by inserting retention screws (**Figure 3-19**)

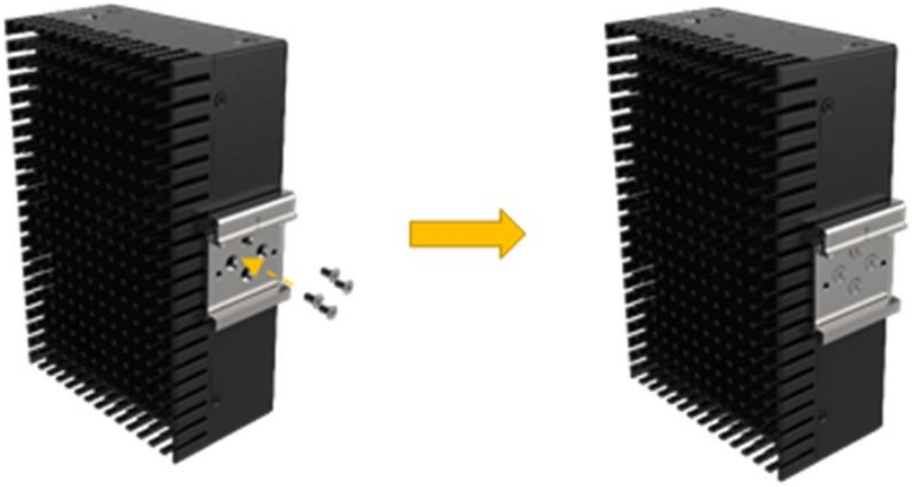


Figure 3-19: DIN Rail Mounting Bracket Installation

Step 4: Attach the upper edge of the mounting bracket at an angle. Push the system towards the DIN rail until mounting bracket hangs securely.

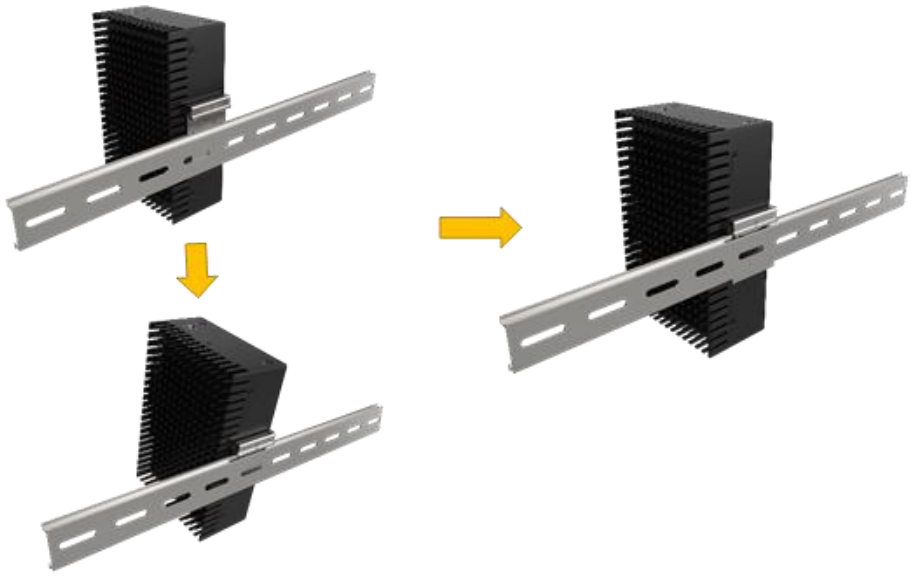


Figure 3-20: Mounting the system

3.11.2 Wall Mounting Installation

DRPC-243-MTL can be mounted by using the optional wall mount bracket, follow the steps below to install.

Step 1: Turn the embedded system over.

Step 2: Align the retention screw holes in each bracket with the corresponding retention screw holes on the bottom surface.

Figure 3-21: Align the retention screw holes

Step 3: Secure the brackets to the system by inserting retention screws into each bracket (**Figure 3-22**&**Figure 3-23**)

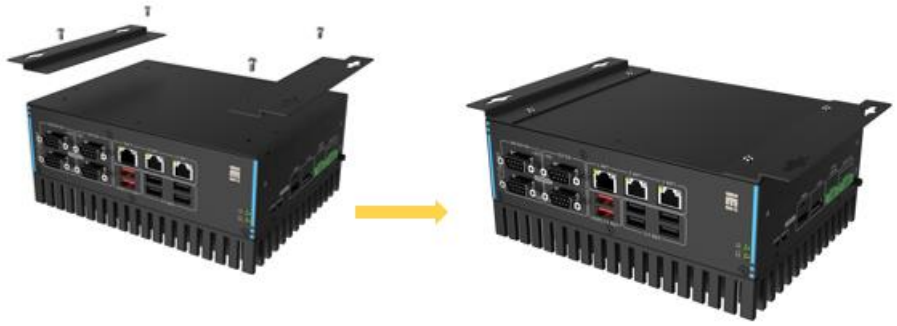


Figure 3-22: Mounting Bracket Retention Screw

Figure 3-23: Mounting the system

3.12 TPM Module Installation

To install the TPM module, follow the steps below.

Step 1: Locate the TPM connector (JTPM1) on the system motherboard. See **Section 4.1.1**

Step 2: Insert the TPM module into the connector. Line up the pins of the TPM module with the pins of the connector (**Figure 3-24**).

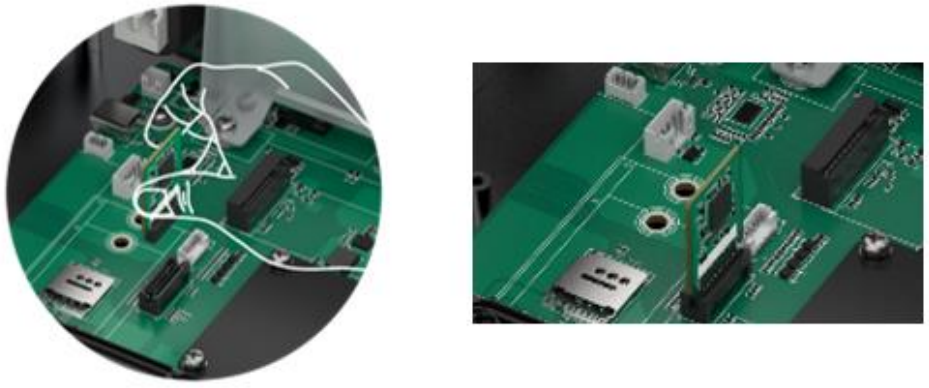


Figure 3-24: Insert the TPM Module

3.13 External Peripheral Interface Connectors

The DRPC-243-MTL has the following connectors. Detailed descriptions of the connectors can be found in the subsections below.

- Ethernet
- Power button
- Power DC jack
- HDMI
- DP
- USB

3.13.1 HDMI/ DP Connector

To connect the HDMI/DP devices, please plug in HDMI/DP connector in the right direction as shown below:

Figure 3-25: HDMI/DP Connection

3.13.2 LAN Connectors

The LAN connectors allow connection to an external network

Step 1: Locate the RJ-45 connectors. The locations of the RJ-45 connectors are shown in Chapter 1.

Step 2: Align the connectors. Align the RJ-45 connector on the LAN cable with one of the RJ-45 connectors on the DRPC-243-MTL. See **Figure 3-26**.

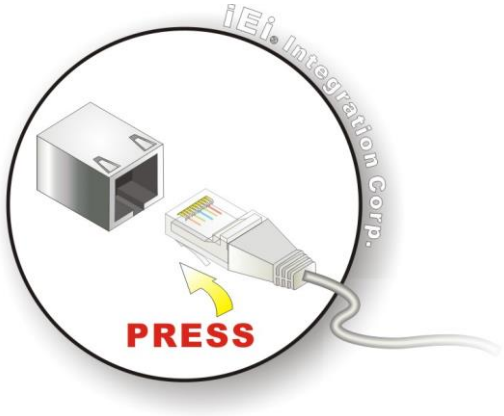


Figure 3-26: LAN Connection

Step 3: Insert the LAN cable RJ-45 connector. Once aligned, gently insert the LAN cable RJ-45 connector into the on-board RJ-45 connector

The RJ-45 Ethernet connector has two status LEDs, one green and one yellow. The green LED indicates activity on the port and the yellow LED indicates the port is linked.

Figure 3-27: RJ-45 Ethernet Connector

Activity / Link LED		Speed LED	
STATUS	**DESCRIPTION**	**STATUS**	**DESCRIPTION**
Off	No link	Off	10 Mbps connection
Yellow	Linked	Orange	1000 Mbps connection
Blinking	TX/RX activity	Green	2.5 Gbps connection

Table 3-1: RJ-45 Ethernet Connector LEDs

3.14 Power Connector

WARNING:

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

The power of the system needs more than 24V 3A

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

Step 2: Push the power button, and the power LED on the front panel turns on.

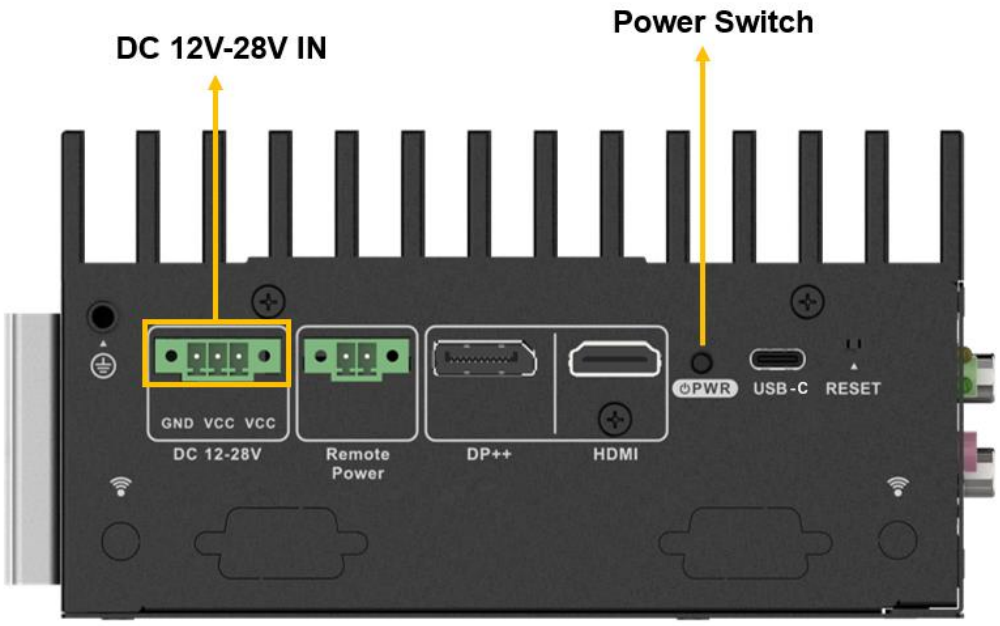


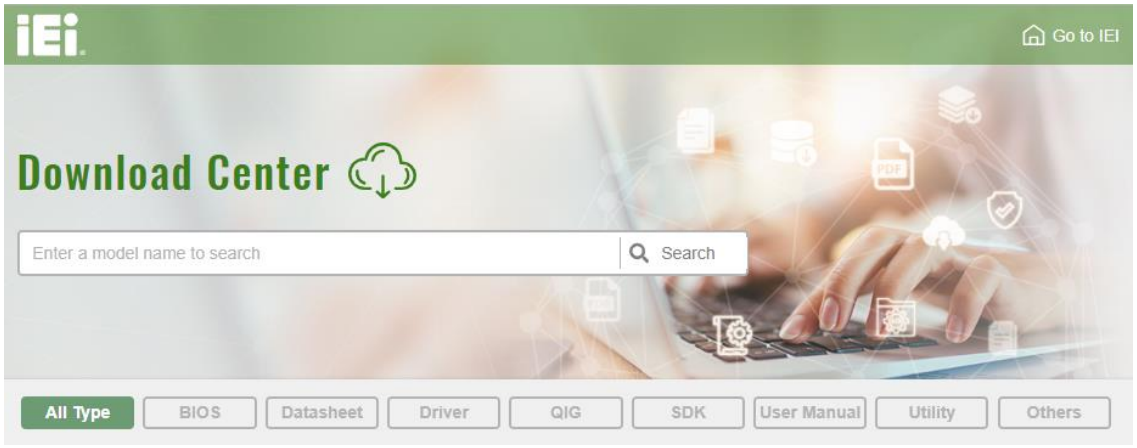
Figure 3-28: Power Connector

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

Figure 3-29: Power & M.2 SSD LED

3.15 Available Drivers

All the drivers for the DRPC-243-MTL are available on IEI Resource Download Center (https://download.ieiworld.com). Type DRPC-243-MTL and press Enter to find all the relevant software, utilities, and documentation.

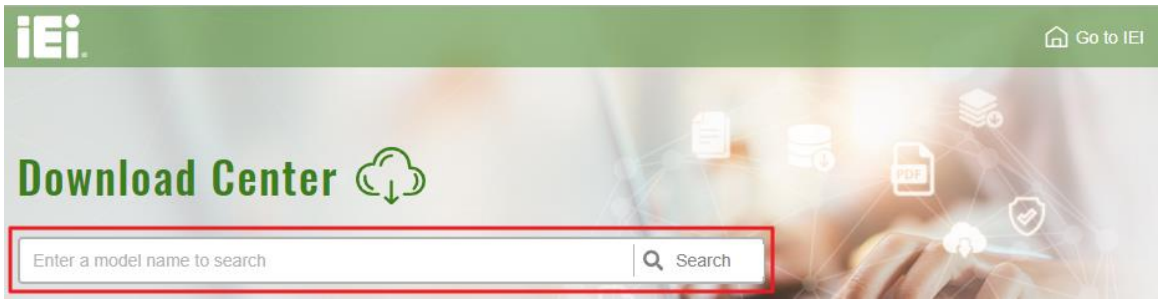


IEI Resource Download Center

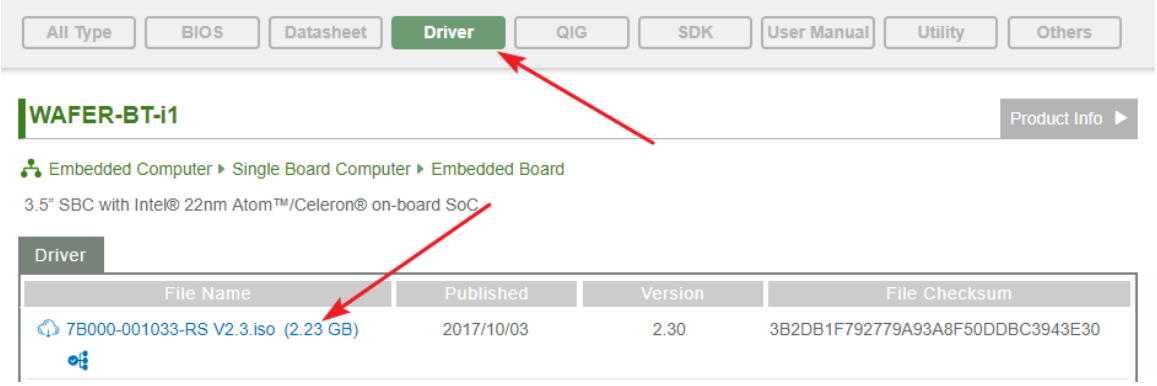
3.15.1 Driver Download

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

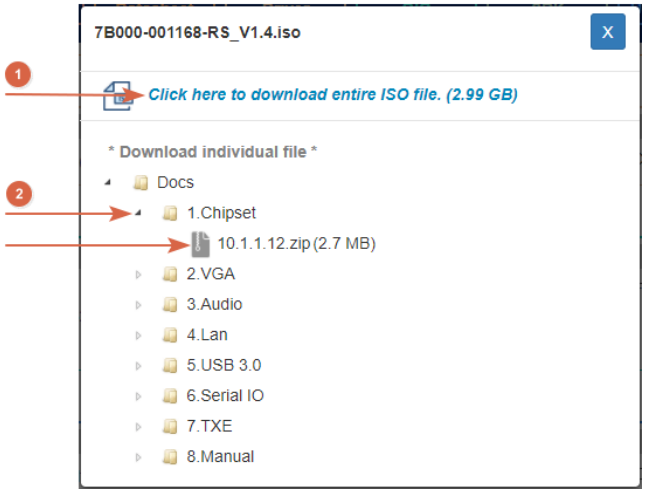
Step 1: Go to https://download.ieiworld.com. Type DRPC-243-MTL and press Enter.



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



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).



Chapter

4

System Motherboard

4.1 Overview

The connectors and jumpers of the system motherboard are listed in the following sections.

4.1.1 Layout

The following diagram shows the locations of the internal/external connectors and jumpers on the motherboard.

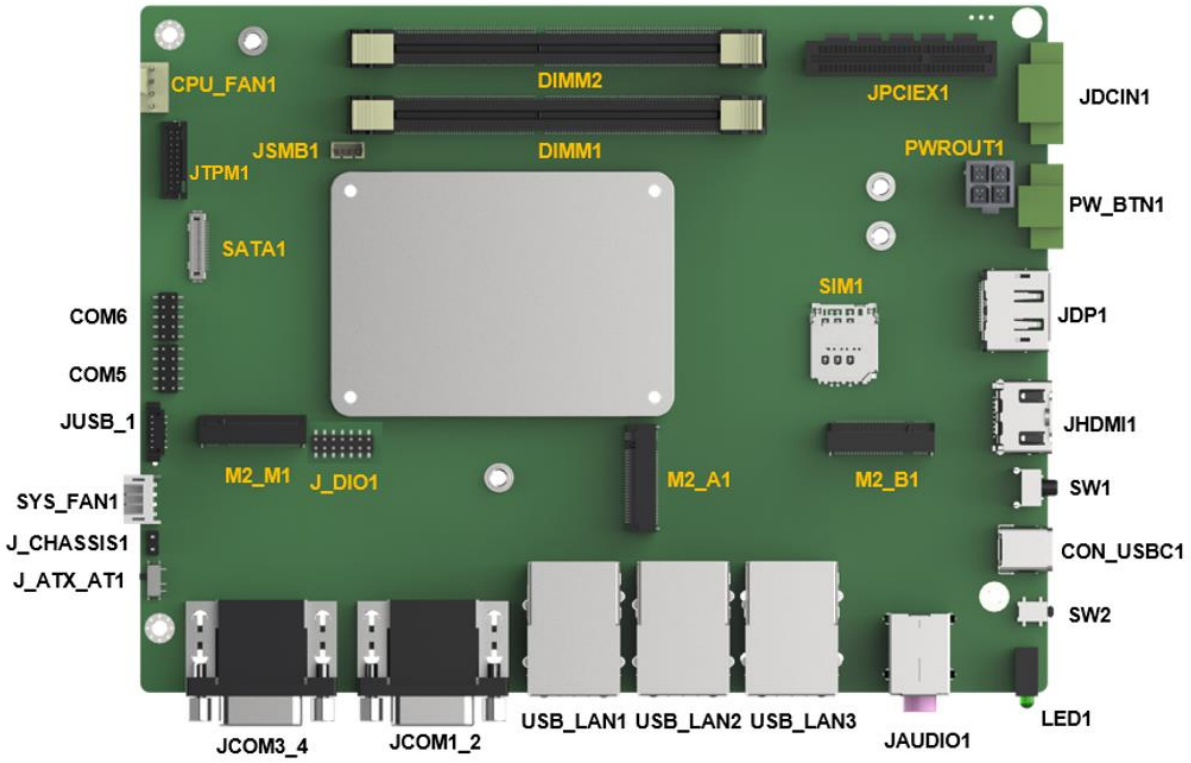


Figure 4-1: Connector and Jumper Locations

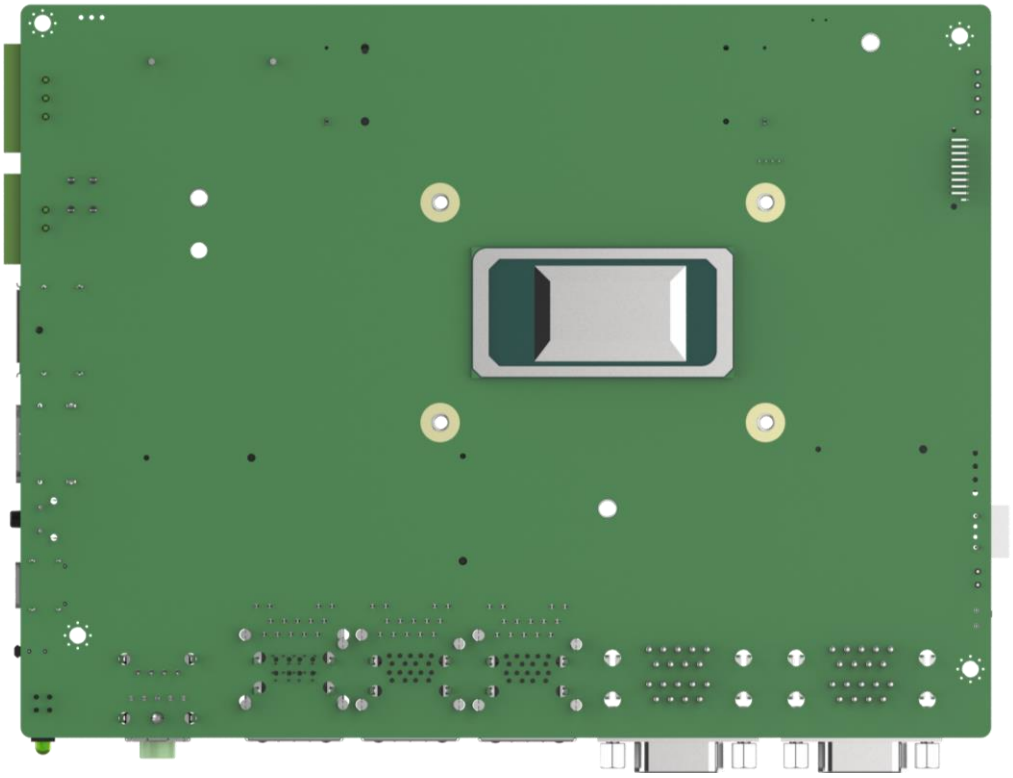


Figure 4-2: System Motherboard (Rear)

4.2 Peripheral Interface Connectors

The table below lists all the connectors on the board.

Connector	Type	Label
USB 2.0 connector	4-pin header; p=2.54mm	JUSB_1
Chassis intrusion connector	2-pin header; p=2.0mm	J_CHASSIS1
SATA connector	Connector; 20pin; p=0.5mm	SATA1
M.2 3042/52 B-key slot	M.2 B-key slot	M2_B1
SIM card slot	SIM slot	SIM1
M.2 2230 A-key slot	M.2 A-key slot	M2_A1
M.2 2280 M-key slot	M.2 M-key slot	M2_M1
SMBus connector	4-pin wafer; p=1.25mm	JSMB1
Digital I/O connector	14-pin header; p=2.00mm	J_DIO1

Fan connector	4-pin wafer; p=2.54mm	CPU_FAN1
	4-pin wafer; p=2.00mm	SYS_FAN1
Edge card socket	64-pin socket	JPCIEX1
12V Power Output connector	4-pin molex	PWROUT1
DDR5 SO-DIMM socket	262-pin DDR5 SO-DIMM	DIMM1; DIMM2
RS-232 serial port connector	10-pin header	COM5; COM6
Clear CMOS button	button	J_CMOS1

Table 4-1: Internal Peripheral Connectors

4.2.1 USB 2.0 connector

CN Label: **JUSB_1**

CN Pinouts: See **Table 4-2**

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	VCC	2	GND
3	USB DATA-	4	USB DATA+

Table 4-2: USB 2.0 Connector Pinouts

4.2.2 Chassis Intrusion Connector

CN Label: **J_CHASSIS1**

CN Pinouts: See **Table 4-3**

PIN NO.	DESCRIPTION
1	CASEOPEN_N
2	GND

Table 4-3: Chassis Intrusion Connector Pinouts

4.2.3 SATA connector

CN Label: **SATA1**

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

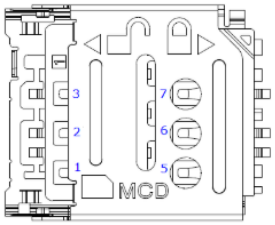
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	GND	11	+V5S
2	GND	12	N/A
3	GND	13	N/A
4	GND	14	GND
5	GND	15	SATA_RX+
6	N/A	16	SATA_RX-
7	+V5S	17	GND
8	+V5S	18	SATA_TX-
9	+V5S	19	SATA_TX+
10	+V5S	20	GND

Table 4-4: SATA Connector Pinouts

4.2.4 SIM card Connector

CN Label: **SIM1**

CN Pinouts: See **Table 4-5**



Pin	Description	Pin	Description
1	SIM_VCC	5	GND
2	SIM_RST	6	N/C
3	SIM_Clock	7	SIM_DATA

Table 4-5: SIM Card Connector Pinouts

4.2.5 M.2 M-key Slot

CN Label: **M2_M1**

CN Pinouts: See **Table 4-6**

The M.2 M key (2280) slot with PCIe Gen4 x4.

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	GND	2	+V3P3S_SSD
3	GND	4	+V3P3S_SSD
5	PCIE_4_RX_DN	6	NC
7	PCIE_4_RX_DP	8	NC
9	GND	10	ACT_N
11	PCIE_TX_DN4	12	+V3P3S_SSD
13	PCIE_TX_DP4	14	+V3P3S_SSD
15	GND	16	+V3P3S_SSD
17	PCIE_3_RX_DN	18	+V3P3S_SSD
19	PCIE_3_RX_DP	20	NC
21	GND	22	NC
23	PCIE_TX_DN3	24	NC
25	PCIE_TX_DP3	26	NC
27	GND	28	NC
29	PCIE_2_RX_DN	30	NC
31	PCIE_2_RX_DP	32	NC
33	GND	34	NC
35	PCIE_TX_DN2	36	NC
37	PCIE_TX_DP2	38	Pull Up +V3.3A
39	GND	40	NC
41	PCIE_1_RX_DN	42	NC
43	PCIE_1_RX_DP	44	NC
45	GND	46	NC
47	PCIE_TX_DN1	48	NC
49	PCIE_TX_DP1	50	PLT_RST_N
51	GND	52	NC
53	PCIE_CLK_DN13	54	NC
55	PCIE_CLK_DP13	56	NC
57	GND	58	NC
59	NC	60	NC
61	NC	62	NC
63	NC	64	NC

65	NC	66	NC
67	NC	68	NC
69	NC	70	+V3P3S_SSD
71	GND	72	+V3P3S_SSD
73	GND	74	+V3P3S_SSD
75	GND		

Table 4-6: M.2 M-key Slot Pinouts

4.2.6 M.2 B-key Slot

CN Label: **M2_B1**

CN Pinouts: See **Table 4-7**

The M.2 B key (3042/52) slot with PCIe Gen4 x1, USB3.2 Gen2 or USB2.0.

Pin	Description	Pin	Description
1	Pull Up +V3.3A	2	VCC3
3	GND	4	VCC3
5	GND	6	FULL_CARD_POWER_O
7	USBD+	8	N/C
9	USBD-	10	N/C
11	GND	12	Module Key
13	Module Key	14	Module Key
15	Module Key	16	Module Key
17	Module Key	18	Module Key
19	Module Key	20	N/C
21	GND	22	N/C
23	GND	24	N/C
25	N/C	26	N/C
27	GND	28	N/C
29	USB3.0_RX-	30	UIM_RST
31	USB3.0_RX+-	32	UIM_CLK
33	GND	34	UIM_DATA
35	USB3.0_TX-	36	UIM_PWR
37	USB3.0_TX+	38	N/C

Pin	Description	Pin	Description
39	GND	40	N/C
41	PCIE_RXN0	42	N/C
43	PCIE_RXP0	44	N/C
45	GND	46	N/C
47	PCIE_TXN1	48	N/C
49	PCIE_TXP1	50	PERST#
51	GND	52	N/C
53	PCIE_CLK#	54	PCIE_WAKE#
55	PCIE_CLK	56	N/C
57	GND	58	N/C
59	N/C	60	N/C
61	N/C	62	N/C
63	N/C	64	N/C
65	N/C	66	N/C
67	RST	68	N/C
69	GND	70	VCC3
71	GND	72	VCC3
73	GND	74	VCC3
75	GND		

Table 4-7: M.2 B-Key Slot Pinouts

4.2.7 M.2 A-key Slot

CN Label: **M2_A1**

CN Pinouts: See **Table 4-8**

The M.2 A key (2230) slot with PCIe Gen4 x1 or USB2.0.

Pin	Description	Pin	Description
1	GND	2	+V3.3A
3	USB+	4	+V3.3A
5	USB-	6	NC
7	GND	8	Module Key
9	Module Key	10	Module Key

Pin	Description	Pin	Description
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_TX0+	36	GND
37	PCIE_TX0-	38	CL_RSTn
39	GND	40	CL_DATA
41	PCIE_RX0+	42	CL_CLK
43	PCIE_RX0-	44	NC
45	GND	46	NC
47	CLK_PCIE0+	48	NC
49	CLK_PCIE0-	50	NC
51	GND	52	BUF_PLT_RST#
53	PCIE_CLKREQ#	54	Pull Up +V3.3A
55	PCIE_WAKE#	56	Pull Up +V3.3A
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
71	NC	72	+V3.3A
73	NC	74	+V3.3A
75	GND		

Table 4-8: M.2 A-Key Slot Pinouts

4.2.8 SMBus Connector

CN Label: **JSMB1**

CN Pinouts: See **Table 4-9**

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

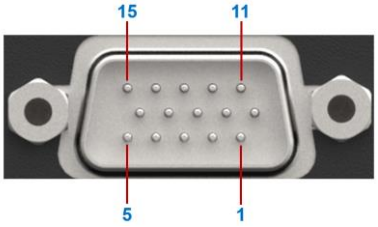
PIN NO.	DESCRIPTION
1	GND
2	SMBUS(I2C) DATA
3	SMBUS(I2C) CLK
4	+5V

Table 4-9: SMBus Connector Pinouts

4.2.9 Digital I/O Connector

CN Label: **J_DIO1**

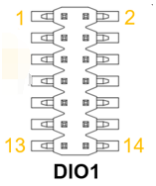
CN Pinouts: See **J_DIO1:** External Digital I/O Connector



PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	GND	2	DIN0
3	DIN1	4	DIN2
5	DIN3	6	DIN4
7	DIN5	8	GND
9	DOUT0	10	DOUT1
11	DOUT2	12	DOUT3
13	DOUT4	14	DOUT5
15	+5VS		

Table 4-10

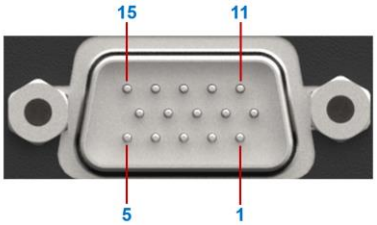
The Digital I/O connector provides programmable input and output for external device.



Pin	Description	Pin	Description
1	GND	2	+5V
3	Output 5	4	Output 4
5	Output 3	6	Output 2
7	Output 1	8	Output 0
9	Input 5	10	Input 4

Pin	Description	Pin	Description
11	Input 3	12	Input 2
13	Input 1	14	Input 0

J_DIO1: External Digital I/O Connector



PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	GND	2	DIN0
3	DIN1	4	DIN2
5	DIN3	6	DIN4
7	DIN5	8	GND
9	DOUT0	10	DOUT1
11	DOUT2	12	DOUT3
13	DOUT4	14	DOUT5
15	+5VS		

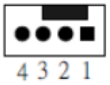
Table 4-10: Digital I/O Connector

4.2.10 Fan Connector

CN Label: **CPU_FAN1**

CN Pinouts: See **Table 4-11**

The product provides fan connector, this connector can supply 12V / 500mA to the cooling fan.



PIN NO.	DESCRIPTION
1	GND
2	+V12S
3	Rotation Signal

PIN NO.	DESCRIPTION
4	PWM Control Signal

Table 4-11: CPU Fan Connector Pinouts

4.2.11 Edge card socket

CN Label: **JPCIEX1**

CN Type: PCIe x4 Slot GEN4

The PCIe x4 slot enables a PCIe x4 expansion module to be connected to the board.

4.2.12 System power supply Connector

CN Label: **PWROUT1**

CN Type: 4-pin Molex

CN Pinouts: See **Table 4-12**

The 12V system power supply Connector for JPCIEX1.

Pin	Description	Pin	Description
1	GND	3	+V12S
2	GND	4	+V12S

Table 4-12: System power supply Connector Pinouts

4.2.13 DDR5 SO-DIMM Socket

CN Label: **DIMM1, DIMM2**

CN Type: 262-pin DDR5 SO-DIMM slot

The SO-DIMM slots are for installing the DDR5 SO-DIMM.

CAUTION:

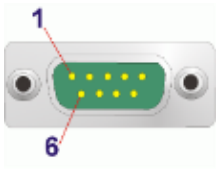
For dual channel configuration, always install two identical memory modules that feature the same capacity, timings, voltage, number of ranks and the same brand.

4.2.14 RS-232 Serial Port Connector

CN Label: **COM5, COM6**

CN Pinouts: See **Table 4-13**

COM5, COM6: External Serial Port Connector



PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	NDCD	2	NDSR
3	NRX	4	NRTS
5	NTX	6	NCTS
7	NDTR	8	NRI
9	GND	10	GND

The serial connector provides RS-232 connection.

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	NDCD	6	NDSR
2	NRXD	7	NRTS
3	NTXD	8	NCTS
4	NDTR	9	NRI
5	GND	10	GND

Table 4-13: RS-232 Serial Port Connector Pinouts

4.2.15 Clear CMOS

CN Label: **J_CMOS1**

CN Pinouts: See **Table 4-14**

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	RTC_RST	2	GND

Table 4-14: Clear CMOS Pinouts

4.3 External Peripheral Interface Connector Panel

The table below lists the connectors on the external I/O panel.

Connector	Type	Label
HDMI connector	HDMI	JHDMI1
DP connector	DP	JDP1
LAN+USB connectors	RJ45+USB 3.2	USB_LAN1 USB_LAN2
LAN+USB connectors	RJ45+USB 2.0	USB_LAN3
RS-422/485 serial port connector	DB9	JCOM3_4
RS-232 serial port connector	DB9	JCOM1_2

Power connector	3-pin wafer terminal blocks P=3.55mm	JDCIN1
Remote Power connector	2-pin wafer terminal blocks P=3.55mm	PW_BTN1
Power button connector	Button	SW1
AT/ATX power mode setting	Switch	J_ATX_AT1
Reset button connector	Button	SW2
System fan connector	4-pin wafer; P=2.00mm	SYS_FAN1
Power/M.2 SSD LED	2-pin wafer	LED1
Audio Line-Out MIC Connector	3.5mm Audio Jack	JAUDIO1
USB4 Connector (USB and DP)	USB Type-C (USB4)	CON_USBC1

Table 4-15: Rear Panel Connectors

The **Figure 4-3** below shows the connectors on the external I/O control panel.

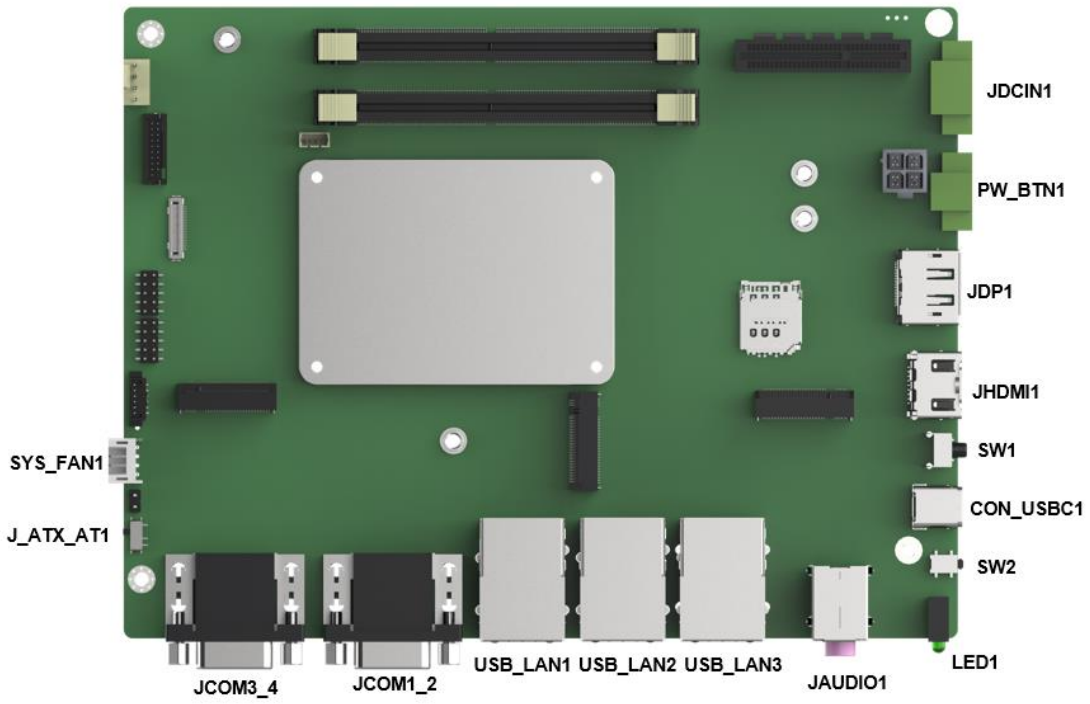


Figure 4-3: External Interface Connector

4.3.1 Power Switch

CN Label: **SW1**

CN Pinouts: See **Table 4-16**

Pressing this switch will power on the system.

Pin	Description
2,3,4	GND
1	PWRBTN_SW#

Table 4-16: Power button connector Pinouts

4.3.2 Reset Button Connector

CN Label: **SW2**

CN Pinouts: See **Table 4-17**

The reset button connector is connected to a reset switch on the system chassis to enable users to reboot the system when the system is turned on.

Pin	Description
1-2	**GND**
3-4	**Reset**

Table 4-17: Reset Button Connector Pinouts

4.3.3 HDMI Connectors

CN Label: **JHDMI1**

CN Type: HDMI connector

CN Pinouts: See **Table 4-18** and **Figure 4-4**

The HDMI connectors can connect to HDMI devices.

Pin	Description	Pin	Description
1	HDMI_DATA2	2	GND
3	HDMI_DATA2#	4	HDMI_DATA1

Pin	Description	Pin	Description
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 4-18: HDMI Connector Pinouts

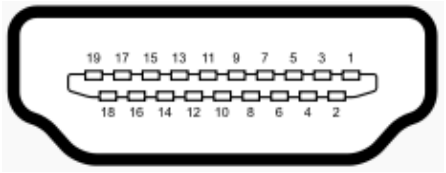


Figure 4-4: HDMI Connector Pinout Locations

4.3.4 DP Connector

CN Label: **DP1**

CN Type: DP connector

CN Pinouts: See **Table 4-19** and **Figure 4-5**

The DP connectors can connect to DP devices.

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	DATA_0P	11	GND
2	GND	12	DATA_3N
3	DATA_0N	13	CONFIG1
4	DATA_1P	14	CONFIG2
5	GND	15	AUX_P
6	DATA_1N	16	GND
7	DATA_2P	17	AUX_N
8	GND	18	DP HPD
9	DATA_2N	19	GND

10	DATA_3P	20	DP PWR

Table 4-19: DP Connector Pinouts

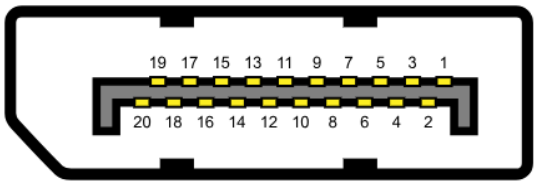
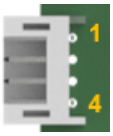


Figure 4-5: DP Connector Pinout Locations

4.3.5 System Fan Connector

CN Label: **SYS_FAN1**

CN Pinouts: See **Table 4-20**



The system fan connector can provide 12V/500mA to a system fan.

PIN NO.	DESCRIPTION
1	GND
2	+V12S
3	Rotation Signal
4	PWM Control Signal

Table 4-20: System Fan Connector Pinouts

4.3.6 DB-9 RS-232/422/485 Serial Port Connectors

The system has two RS-422/485 & two RS-232 serial port connectors. The pinouts for the serial ports are listed in the table below. **(**错误!未找到引用源。 **and Figure 4-6**)

PIN NO.	RS232	RS422	RS485
1	DCD#	TX-	TX-
2	RXD	TX+	TX+
3	TXD	RX+	
4	DTR#	RX-	
5	GND		
6	DSR#		
7	RTS#		
8	CTS#		
9	RI#		

Table 4-21: RS-232 (JCOM1_2) & RS-422/485 (JCOM3_4) Connector Pinouts

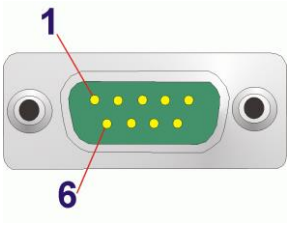


Figure 4-6: RS-232/422/485 Serial Port Connectors Pinout Locations

4.3.7 Audio Line-Out MIC Connector

CN Label: **JAUDIO1**

CN Pinouts: See **Table 4-22**

PIN NO.	DESCRIPTION
Line_Out (Green)	Connect this port to headphone or speaker
Microphone (Pink)	Connect this port to microphone

Table 4-22: Audio Line-Out MIC Connector

4.3.8 USB4 Connector

CN Label: **CON_USBC1**

CN Pinouts: See **Table 4-23**

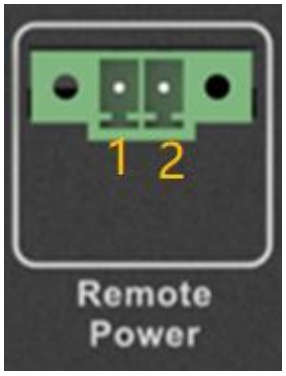
PIN_NUMBER	NET_NAME	PIN_NUMBER	NET_NAME
A1	GND	B4	+VBUS_USBC0
A2	USBC0_CN_TX0_DP	B5	CC2_CN
A3	USBC0_CN_TX0_DN	B6	USBC0_CN_P3_DP
A4	+VBUS_USBC0	B7	USBC0_CN_P3_DN
A5	CC1_CN	B8	SUB2_CN
A6	USBC0_CN_P3_DP	B9	+VBUS_USBC0
A7	USBC0_CN_P3_DN	B10	USBC0_CN_RX0_DN
A8	SUB1_CN	B11	USBC0_CN_RX0_DP
A9	+VBUS_USBC0	B12	GND
A10	USBC0_CN_RX1_DN	G1	GND
A11	USBC0_CN_RX1_DP	G2	GND
A12	GND	G3	GND
B1	GND	G4	GND
B2	USBC0_CN_TX1_DP	N1	
B3	USBC0_CN_TX1_DN	N2	

Table 4-23: USB4 Connector

4.3.9 Remote Power Connector

CN Label: **PW_BTN1**

CN Pinouts: **See Table 4-24**



Pin	Description
1	PWRBTN_SW#
2	GND

Table 4-24: Remote power connector Pinouts

This device is equipped with a 2-pin Remote Power interface to perform remote power-on and power-off operations without accessing the main unit of the machine. Circuit-wise, this interface is electrically identical to the physical power button on a PC host.

Parameter Item	Technical Specification	Remarks
Signal Type	Pulse signal	Continuous normally closed signal is prohibited
Active Level	Low-level active	Pull Pin 1 low to Pin 2 (GND)
Interface Level	+3.3 V DC	Internally pulled up; external voltage input is strictly forbidden
Trigger Mode	Dry contact (Potential-free contact)	Must be isolated via physical relay or switch
Trigger Pulse Width (Time)	50 ~ 1000 ms	—

In industrial automation environments, a PLC normally serves as the master control unit. The following galvanic isolation rules must be strictly followed during wiring connection:

1 Mandatory Relay Isolation

PLC digital outputs (DO) are live contacts (wet contacts) and shall not be directly wired to the machine. An intermediate relay must be installed for isolation.

2 Pulse Width Control

Minimum width: 50 ms (signals shorter than this value may be filtered out)

Maximum width: 4000 ms (4 seconds). If the closed duration exceeds 4 seconds, the system will recognize it as a long press of the power button and force a power cut of the machine.

3 Shielding Requirement

Shielded cables are recommended for signal wires longer than 2 meters to prevent unexpected machine restarts triggered by electromagnetic interference (EMI).

4 Switch Type Logic

Momentary Switch – Recommended

Operating principle: Contacts close while pressed and spring back to open upon release, generating a transient pulse signal.

Latching Switch – Prohibited

Operating principle: Contacts remain closed after being pressed. This will keep the signal persistently low, leading to automatic forced power-off of the machine 4 seconds after power-up.

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.

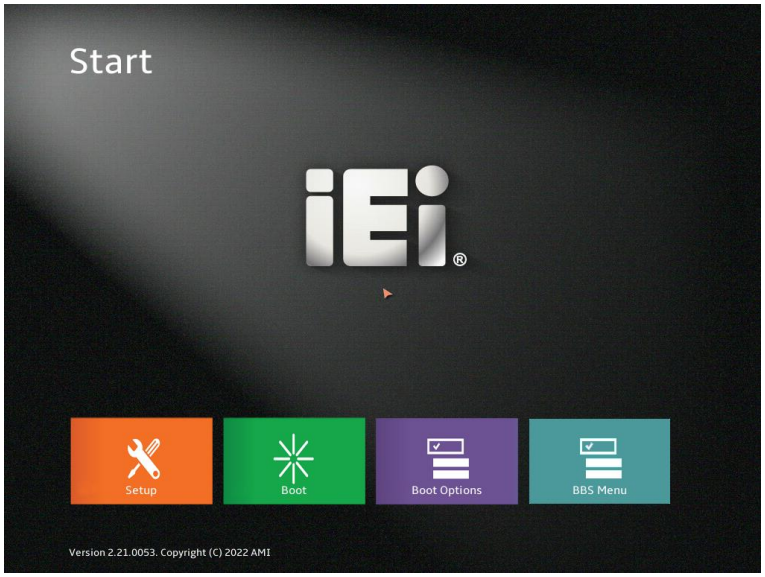


Figure 5-1: BIOS Starting Menu

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

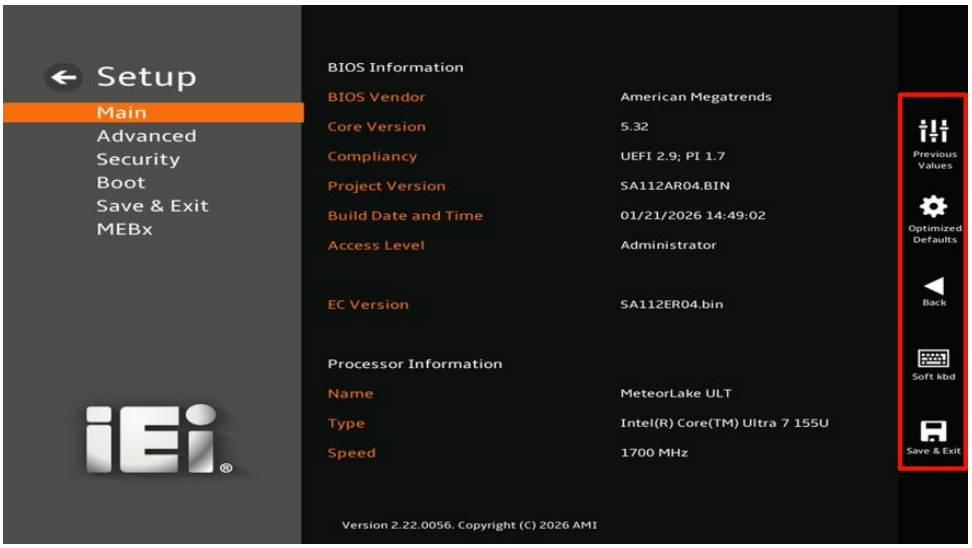
For keyboard navigation, use the navigation keys shown in (**Table 5-1**).

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 (**Table 5-2)**.



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.
- Security – Sets User and Supervisor Passwords.
- Boot – Changes the system boot configuration.
- Save & Exit – Selects exit options and loads default settings
- MEBx – Support Intel AMT function

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.

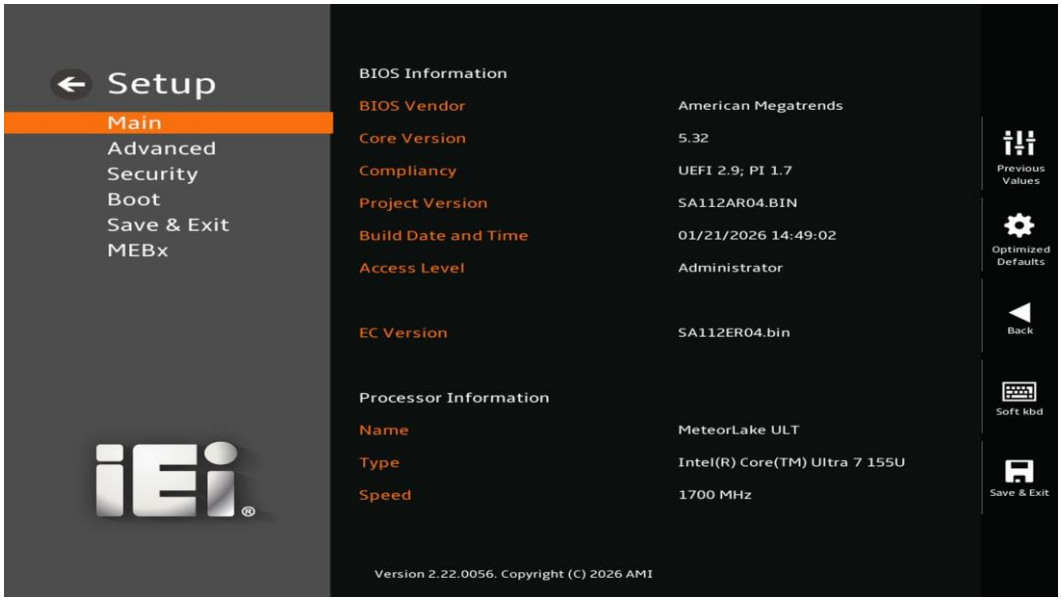


Figure 5-2: BIOS Main (1/3)

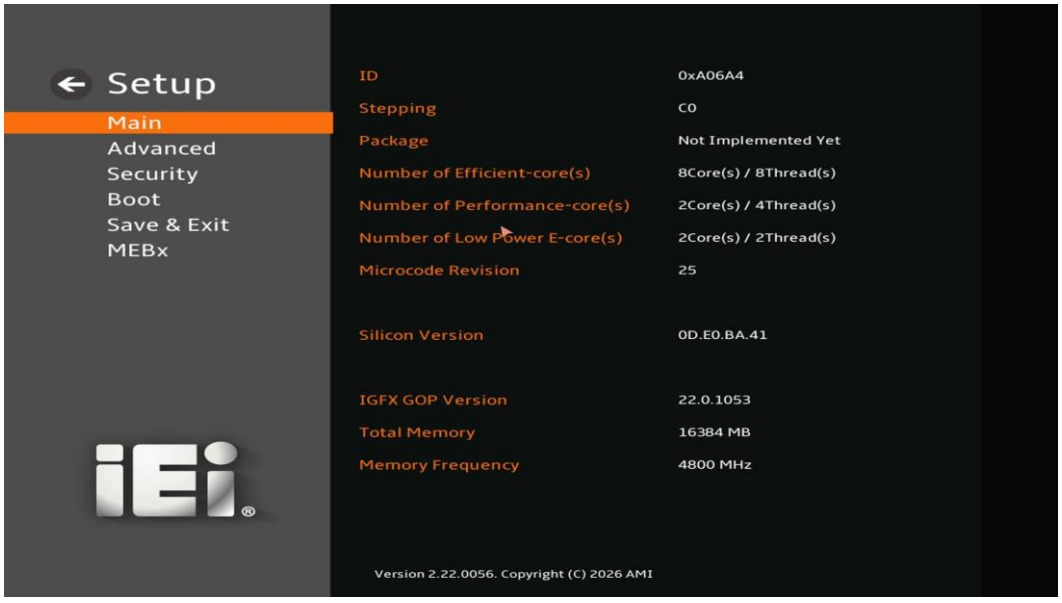


Figure 5-3: BIOS Main (2/3)

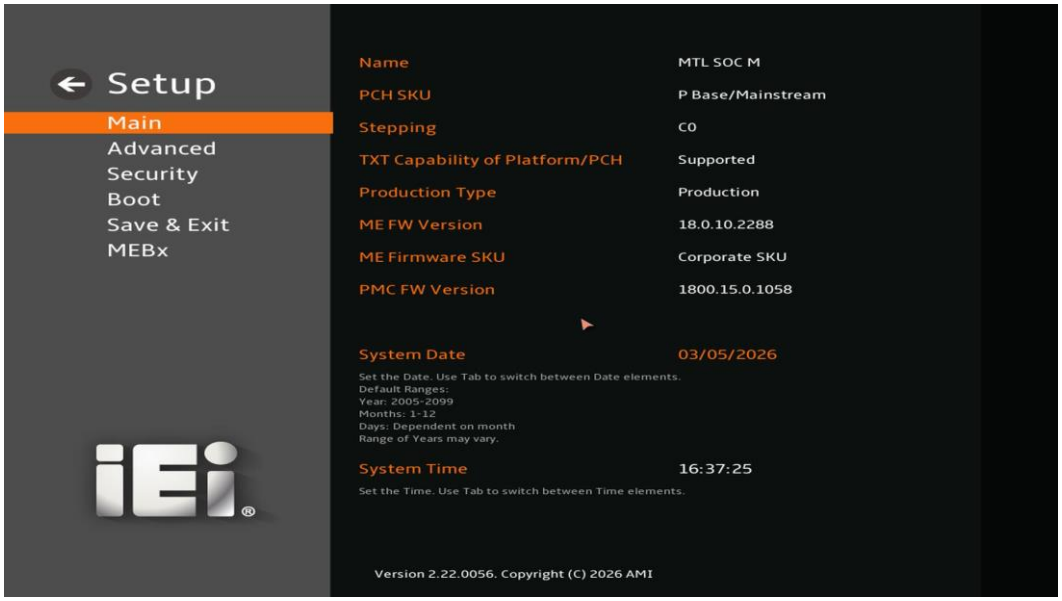


Figure 5-4: BIOS Main (3/3)

➔ **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
- **Compliancy:** Current UEFI & PI version
- **Project Version:** the board version
- **Build Date and Time:** Date the current BIOS version was created
- **Access Level:** Administrator
- **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

- **ID:** Displays the Processor ID
- **Stepping:** Displays the Processor Stepping
- **Package:** Processor packaging information
- **Number of Efficient-core(s):** Specifies the number of efficiency cores and threads of the processor
- **Number of Performance-core(s):** Specifies the core and thread count of the
- processor
- **Number of Low Power E-core(s):** Specifies the number of low-power efficiency cores and threads of the processor.
- **Microcode Revision:** CPU Microcode Revision
- **Silicon Version:** physical hardware revision (stepping) of the CPU or chipset
- **IGFX GOP Version:** Displays the IGFX GOP Version
- **Total Memory:** Total 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
- **TXT Capability of Platform/PCH:** Does the platform support Intel technology
- **Production Type:** Manufacturing Type
- **ME FW Version:** Displays the ME Firmware Version
- **ME Firmware SKU:** Displays the ME Firmware SKU
- **PMC FW Version:** Power management controller firmware version
- **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.

5.3 Advanced

Use the **Advanced** menu 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.

Figure 5-5: BIOS Advanced (1/2)

Figure 5-6: BIOS Advanced (2/2)

5.3.1 Case Open Detection

Case Open Detection: Enables or disables the chassis intrusion detection function to monitor if the computer case has been opened.

Disable: Turn off the chassis intrusion detection function. (Default)

Enable: The system will detect and trigger an alert if the case is opened.

Reset: Clear the current "case opened" status and reset the detection sensor.

5.3.2 CPU Configuration

Use the **CPU Configuration** menu to view detailed CPU specifications or enable the Intel Virtualization Technology.

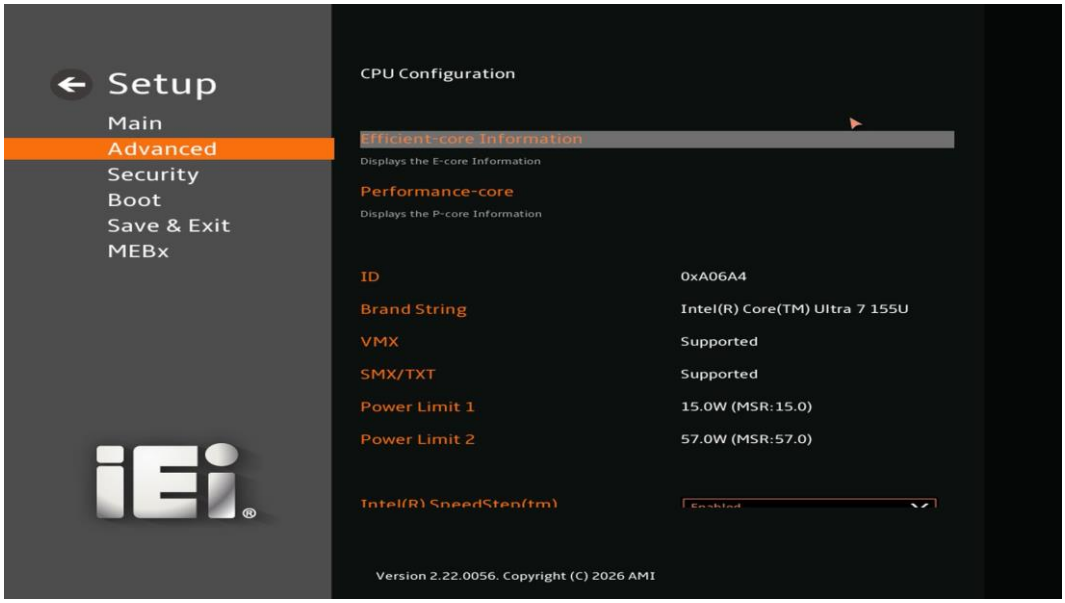


Figure 5-7: CPU Configuration (1/3)

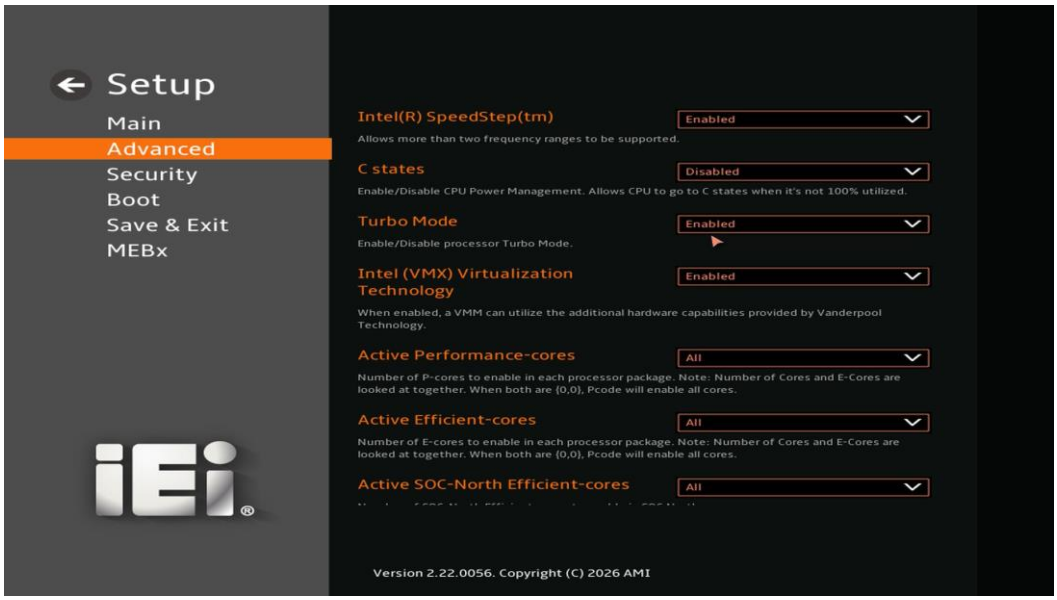


Figure 5-8: CPU Configuration (2/3)

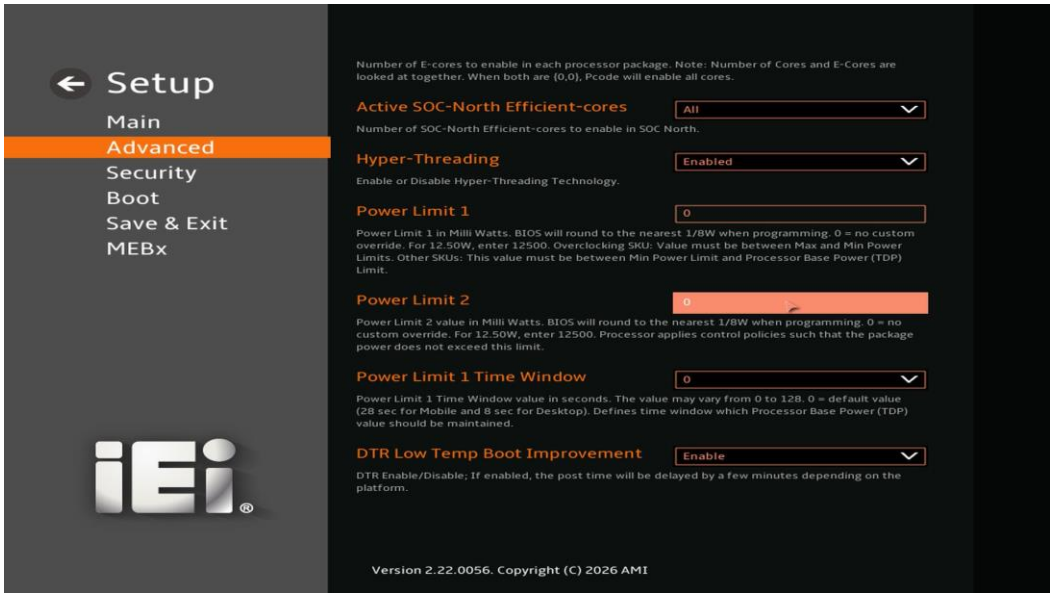


Figure 5-9: CPU Configuration (3/3)

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

Use the Intel(R) SpeedStep (tm) option to enable more than two frequency ranges to be supported.

➔ **Disabled** Disables more than two frequency ranges

➔ **Enabled** **DEFAULT** Enables more than two frequency ranges

➔ **C states [Disabled]**

Use **C states** option to enable or disable CPU Power Management. Allows CPU to go to C states when it's not 100% utilized

➔ **Disabled** **DEFAULT** Disables CPU to go to C states when it's not 100% utilized.

➔ **Enabled** Enables CPU to go to C states when it's not 100% utilized.

➔ **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** Disables Turbo Mode Technology

➔ **Enabled** **DEFAULT** Enables Turbo Mode Technology

➔ **Intel (VXM) Virtualization Technology [Enabled]**

Use the **Intel (VMX) Virtualization Technology** option to enable or disable virtualization on the system. When enabled, a VMM can utilize the additional hardware capabilities provided by Vanderpool Technology.

➔ **Disabled** Disables Intel Virtualization Technology.

➔ **Enabled** **DEFAULT** Enables Intel Virtualization Technology.

➔ **Active Performance-cores [All]**

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

➔ **All** **DEFAULT** Enable all cores in the processor package.

➔ **1** Enable one core in the processor package.

➔ **Active Efficient-cores [All]**

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

➔	**All**	**DEFAULT**	Enable all cores in the processor package.
➔	**7**		Enable seven cores in the processor package.
➔	**6**		Enable six cores in the processor package.
➔	**5**		Enable five cores in the processor package.
➔	**4**		Enable four cores in the processor package.
➔	**3**		Enable three cores in the processor package.
➔	**2**		Enable two cores in the processor package.
➔	**1**		Enable one core in the processor package.
➔	**0**		Enable zero core in the processor package.

➔ **Active SOC-North Efficient-cores**

Number of SOC-North Efficient-cores to enable in SOC North.

➔	**All**	**DEFAULT**	Enable all cores in SOC North.
➔	**0**		Enable no core in SOC North.
➔	**1**		Enable one core in SOC North.

➔ **Hyper-Threading [Enabled]**

Use the **Hyper-Threading** option to enable or disable the Hyper-Threading Technology.

➔	**Disabled**		Disables Hyper-Threading Technology
➔	**Enabled**	**DEFAULT**	Enables Hyper-Threading Technology

➔ **Power Limit 1 [0]**

Use the + or – key to change the **Power Limit 1** value. BIOS will program the default values for Limit 1 and Power Limit 1 Time Window. For 12.50W, enter 12500.

➔ **Power Limit 2 [0]**

Use the + or – key to change the **Power Limit 2** value. BIOS will round to the nearest 1/8W when programming. 0 = no custom override. For 12.50W, enter 12500.

➔ **Power Limit 1 Time Window [0]**

Use the **Power Limit 1 Time Window** option to select the PL1 time duration. The value may vary from 0 to 128. For 0 is the default value

➔ **DTR Low Temp Boot Improvement [Enabled]**

Enables a delay during the POST process to allow components to warm up, ensuring system stability when booting in extreme low-temperature environments.
When **enabled**, the system will intentionally delay the boot sequence for a few minutes to stabilize the hardware timing before entering the OS.

5.3.2.1 Efficient-core Information

Displays the detailed memory cache hierarchy and capacities integrated within the processor's Efficient-cores.

L1 Data Cache: Displays the total amount of Level 1 Data Cache, used for high-speed buffering of frequently used data.

L1 Instruction Cache: Displays the Level 1 Instruction Cache, used to store pre-fetched executable instructions.

L2 Cache: Displays the Level 2 Cache capacity, which serves as a larger, secondary buffer to reduce memory access latency.

L3 Cache: Displays the Level 3 Cache, which is typically shared across all cores to optimize overall system performance.

5.3.2.2 Performance-core

Displays the detailed memory cache hierarchy and capacities integrated within the processor's Performance-cores (P-cores).

L1 Data Cache: Displays the total amount of Level 1 Data Cache per Performance-core, used for rapid data access.

L1 Instruction Cache: Displays the Level 1 Instruction Cache, used to store pre-fetched instructions for the Performance-cores.

L2 Cache: Displays the Level 2 Cache capacity, acting as a high-speed secondary buffer for P-cores.

L3 Cache: Displays the Level 3 Cache, which is shared across all cores to optimize overall data processing efficiency.

5.3.3 System Agent (SA) Configuration

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

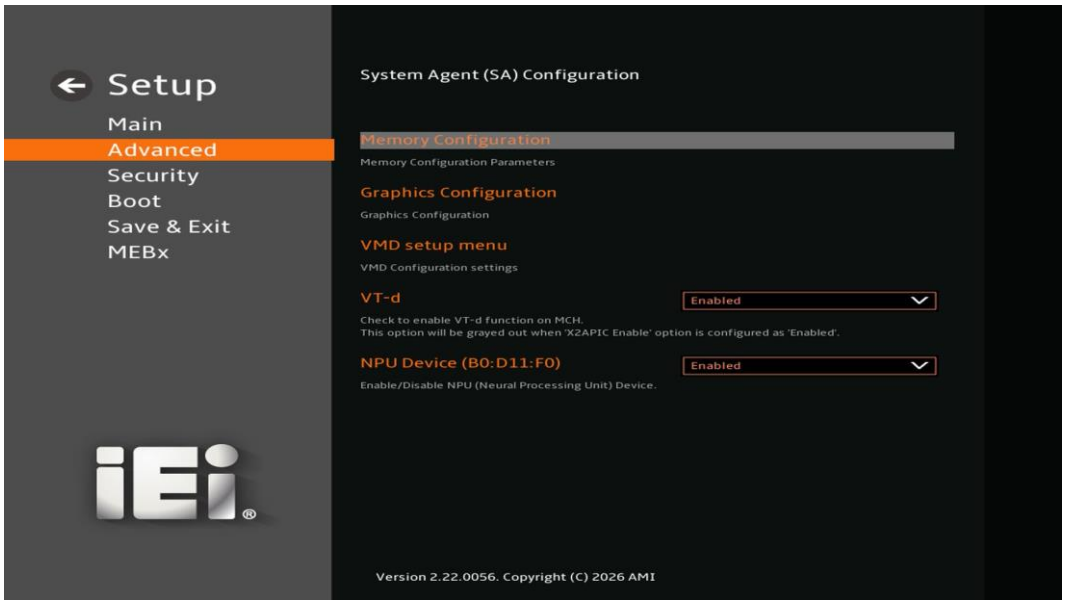


Figure 5-10: System Agent (SA) Configuration

5.3.3.1 Memory Configuration

Use the **Memory Configuration** submenu to view memory information.

Figure 5-11: Memory Configuration

5.3.3.2 Graphics Configuration

Use the **Graphics Configuration** menu to configure the system's graphics.

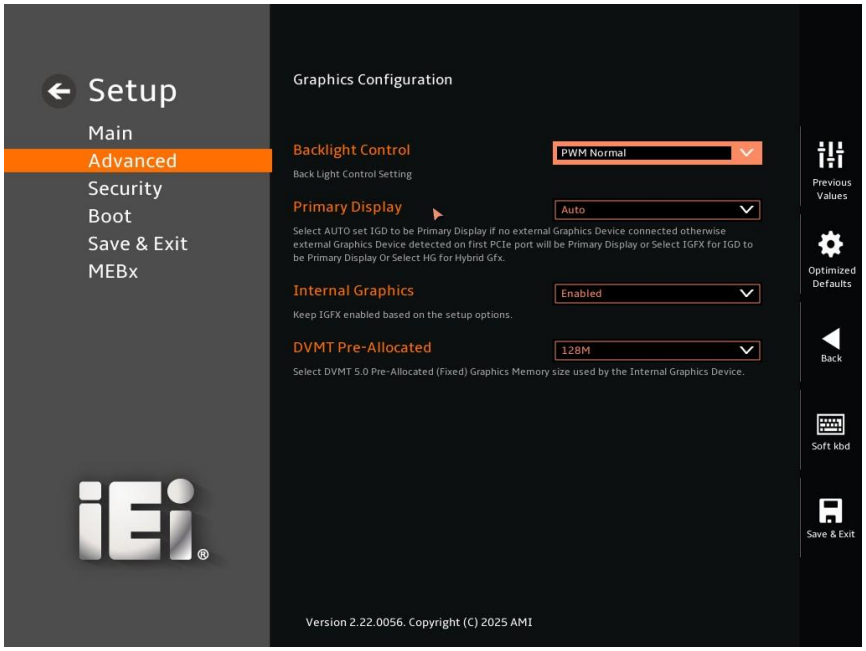


Figure 5-12: Memory Configuration

➔ **Primary Display [Auto]**

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

- **Auto** **Default** If no external graphics card is connected, the integrated graphics device (IGD) will function as the primary display device. If an external graphics card is detected in the first PCIe slot, it will be set as the primary display device.
- **IGFX** Always set the integrated graphics as the primary display device.
- **HG** Enable Hybrid Graphics Mode.

➔ **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.

➔ **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:

- 128M **Default**
- 0M
- 32M
- 64M
- 96M
- 4M
- 8M
- 12M

- 16M
- 20M

➔ **DVMT Total Gfx Mem [MAX]**

Use the **DVMT Total Gfx Mem** option to Selects the maximum amount of system memory that can be dynamically allocated for use by the Internal Graphics Device (IGD). Configuration options are listed below:

- 128M
- 256M Sets a fixed upper limit for the total graphics memory.
- MAX **Default**

  Allows the graphics driver to allocate the maximum possible amount of system memory (typically up to 50% of total RAM) for graphics tasks.

5.3.3.3 VMD Setup menu

Use the **VMD Setup menu** to configure the VMD controller.

Figure 5-13: VMD Setup menu

➔ **Enable VMD Controller [Disabled]**

VMD Controller is an Intel platform technology for managing NVMe SSDs. When

enabled, the system can manage NVMe SSDs connected via PCIe lanes through the VMD controller (typically supporting RAID functionality)

➔	**Disabled**	**DEFAULT**	Disable VMD Controller.
➔	**Enabled**		Enable VMD Controller.

5.3.3.4 VT-d

Check to enable VT-d function on MCH. This option will be grayed out when 'X2APIC Enable' option is configured as '**Enabled**'.

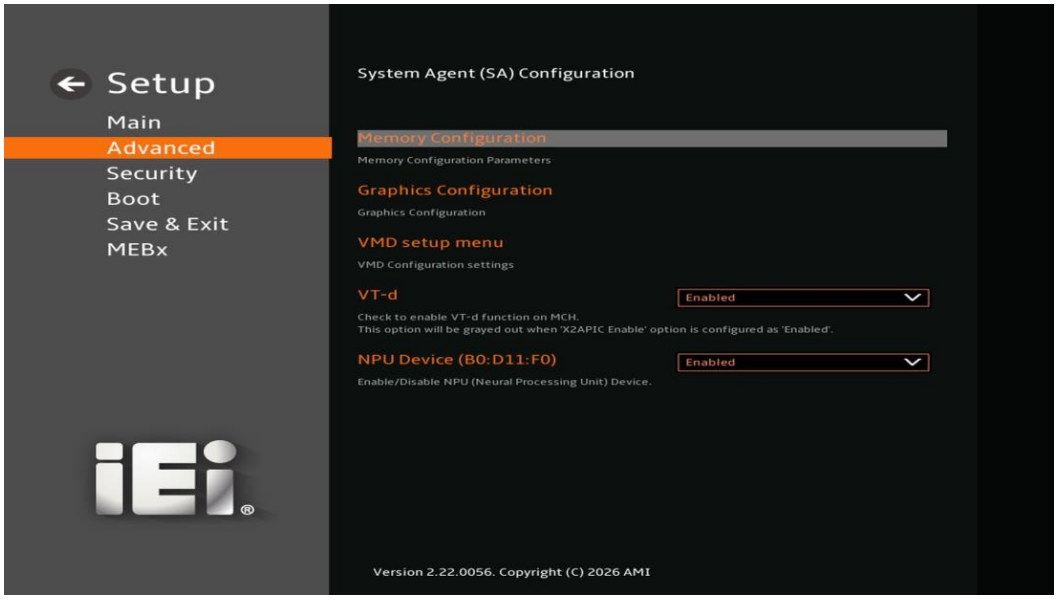


Figure 5-14: VT-d

5.3.3.5 NPU Device (B0: D11: F0)

Enables or disables the integrated Neural Processing Unit (NPU) used for accelerating AI workloads and machine learning tasks.

The **NPU (Neural Processing Unit)** is a specialized hardware accelerator designed to handle complex mathematical operations for artificial intelligence, such as image recognition and data analytics, without taxing the main CPU.

The string **(B0: D11: F0)** represents the device's physical location on the PCI bus (Bus 0, Device 11, Function 0).

Disabled		Turns off the NPU to save power or resolve specific resource conflicts.
Enabled	**DEFAULT**	Activates the NPU for AI inference acceleration.

5.3.4 PCIE Configuration

Use the **PCIE Configuration** menu to configure the M2_B1 slot, M2_M1 slot, JPCIEX1 slot and M2_A1 slot.

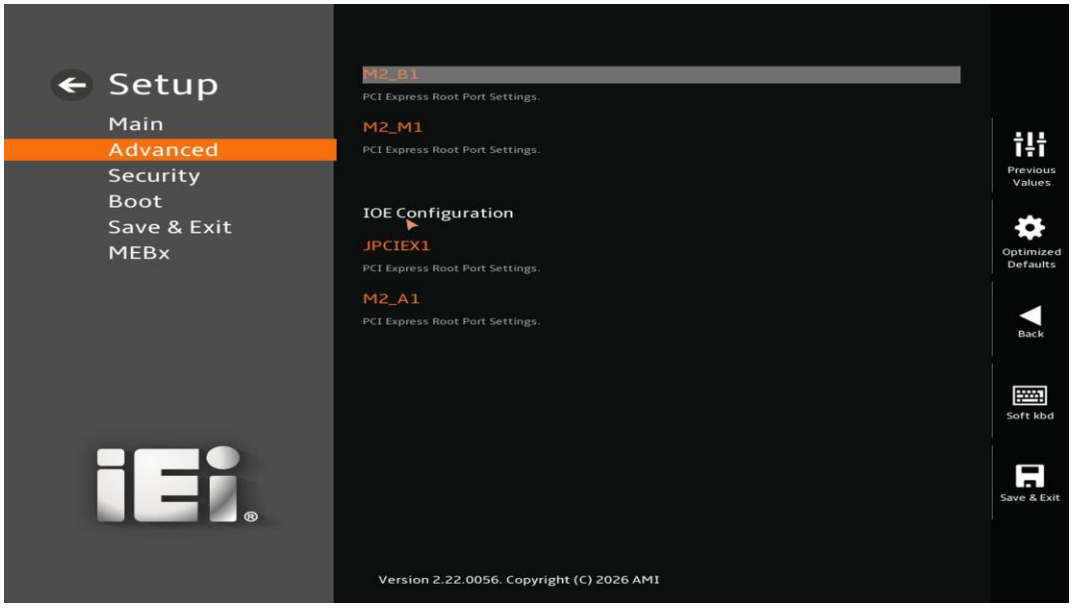


Figure 5-15: PCIE Configuration

5.3.4.1 M2_B1

Use the **M2_B1** menu to change and/or set the configuration of the M2_B1 devices installed in the system.

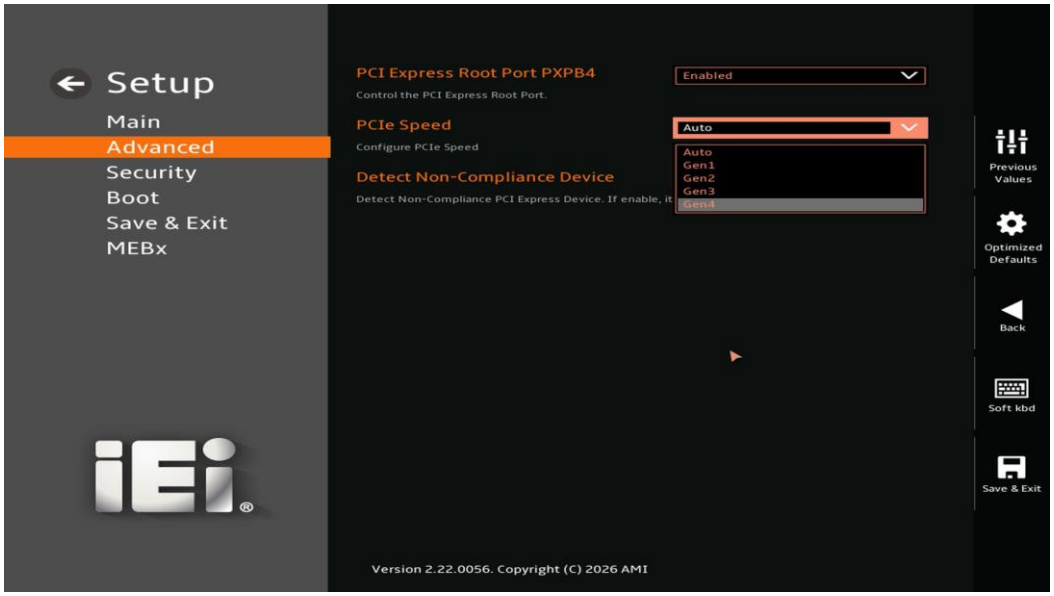


Figure 5-16: M2_B1

➔ **PCI Express Root Port PXPB4 [Enabled]**

Enables or disables the specific PCI Express Root Port (PXPB4) on the chipset to control the connectivity of the connected PCIe device.

➔ **Disabled**		Deactivates the port, which can be used to troubleshoot hardware conflicts or reduce power consumption.
➔ **Enabled**	**DEFAULT**	Activates the port, allowing the system to detect and communicate with the device plugged into this link.

➔ **PCIe Speed [Auto]**

Use the **PCIe Speed** option to specify the PCI Express port speed. Configuration options are listed below.

➔ **Auto**	**DEFAULT**	Auto mode.
➔ **Gen1**		Configure PCIe Speed to Gen1.
➔ **Gen2**		Configure PCIe Speed to Gen2.

➔ **Gen3** Configure PCIe Speed to Gen3.

➔ **Gen4** Configure PCIe Speed to Gen4.

➔ **Detect Non-Compliance Device [Disabled]**

Use the **Detect Non-Compliance Device** to detect Non-Compliance PCI Express Device. If enabled, it will take more time at POST time.

➔ **Disabled** Disable the Detect Non-Compliance Device.

➔ **Enabled** **DEFAULT** Enable the Detect Non-Compliance Device.

5.3.4.2 M2_M1

Use the **M2_M1** menu to change and/or set the configuration of the M2_M1 devices installed in the system.

Figure 5-17: M2_M1

➔ **PCI Express Root Port PXPB4 [Enabled]**

Enables or disables the specific PCI Express Root Port (PXPB4) on the chipset to control the connectivity of the connected PCIe device.

- ➔ **Disabled** — Deactivates the port, which can be used to troubleshoot hardware conflicts or reduce power consumption.
- ➔ **Enabled** **DEFAULT** — Activates the port, allowing the system to detect and communicate with the device plugged into this link.

➔ **PCIe Speed [Auto]**

Use the **PCIe Speed** option to specify the PCI Express port speed. Configuration options are listed below.

- ➔ **Auto** **DEFAULT** — Auto mode.
- ➔ **Gen1** — Configure PCIe Speed to Gen1.
- ➔ **Gen2** — Configure PCIe Speed to Gen2.
- ➔ **Gen3** — Configure PCIe Speed to Gen3.
- ➔ **Gen4** — Configure PCIe Speed to Gen4.

➔ **Detect Non-Compliance Device [Disabled]**

Use the **Detect Non-Compliance Device** to detect Non-Compliance PCI Express Device. If enabled, it will take more time at POST time.

- ➔ **Disabled** — Disable the Detect Non-Compliance Device.
- ➔ **Enabled** **DEFAULT** — Enable the Detect Non-Compliance Device.

5.3.4.3 JPCIEX1

Use the **JPCIEX1** menu to change and/or set the configuration of the JPCIEX1 devices installed in the system.

Figure 5-18: JPCIEX1

➔ **PCI Express Root Port PXPB4 [Enabled]**

Enables or disables the specific PCI Express Root Port (PXPB4) on the chipset to control the connectivity of the connected PCIe device.

➔ **Disabled**		Deactivates the port, which can be used to troubleshoot hardware conflicts or reduce power consumption.
➔ **Enabled**	**DEFAULT**	Activates the port, allowing the system to detect and communicate with the device plugged into this link.

➔ **PCIe Speed [Auto]**

Use the **PCIe Speed** option to specify the PCI Express port speed. Configuration options are listed below.

➔ **Auto**	**DEFAULT**	Auto mode.
➔ **Gen1**		Configure PCIe Speed to Gen1.
➔ **Gen2**		Configure PCIe Speed to Gen2.

➔ **Gen3** Configure PCIe Speed to Gen3.

➔ **Gen4** Configure PCIe Speed to Gen4.

➔ **Detect Non-Compliance Device [Disabled]**

Use the **Detect Non-Compliance Device** to detect Non-Compliance PCI Express Device. If enabled, it will take more time at POST time.

➔ **Disabled** Disable the Detect Non-Compliance Device.

➔ **Enabled** **DEFAULT** Enable the Detect Non-Compliance Device.

5.3.4.4 M2_A1

Use the **M2_A1** menu to change and/or set the configuration of the M2_A1 devices installed in the system.

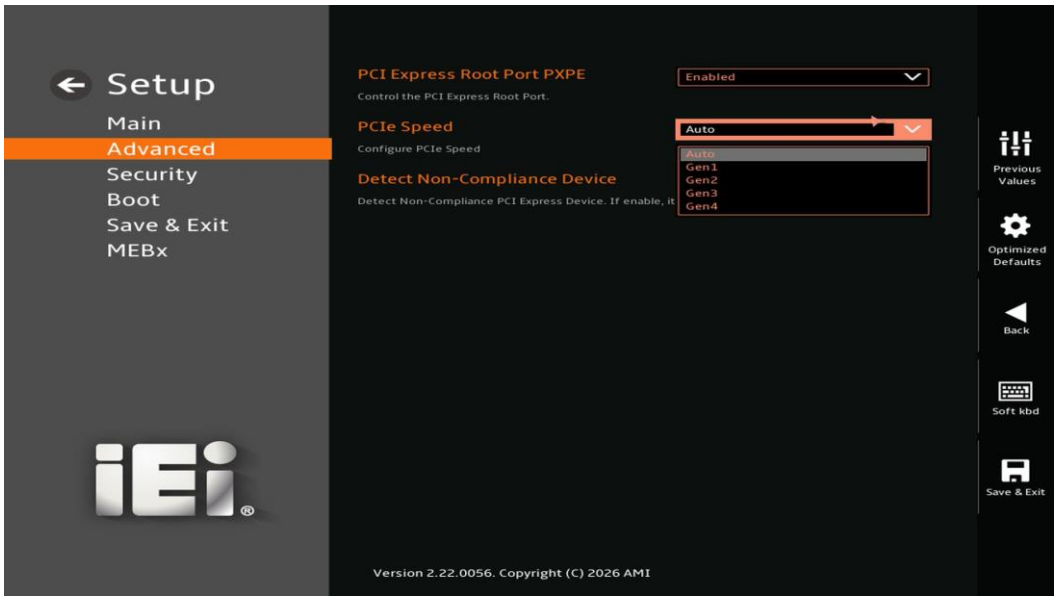


Figure 5-19: M2_A1

➔ **PCI Express Root Port PXPB4 [Enabled]**

Enables or disables the specific PCI Express Root Port (PXPB4) on the chipset to control the connectivity of the connected PCIe device.

- **Disabled** — Deactivates the port, which can be used to troubleshoot hardware conflicts or reduce power consumption.
- **Enabled** **DEFAULT** — Activates the port, allowing the system to detect and communicate with the device plugged into this link.

PCIe Speed [Auto]

Use the **PCIe Speed** option to specify the PCI Express port speed. Configuration options are listed below.

- **Auto** **DEFAULT** — Auto mode.
- **Gen1** — Configure PCIe Speed to Gen1.
- **Gen2** — Configure PCIe Speed to Gen2.
- **Gen3** — Configure PCIe Speed to Gen3.
- **Gen4** — Configure PCIe Speed to Gen4.

Detect Non-Compliance Device [Disabled]

Use the **Detect Non-Compliance Device** to detect Non-Compliance PCI Express Device. If enabled, it will take more time at POST time.

- **Disabled** — Disable the Detect Non-Compliance Device.
- **Enabled** **DEFAULT** — Enable the Detect Non-Compliance Device.

5.3.5 PCH-IO Configuration

Use the **PCH-IO Configuration** menu to configure the PCH parameters.

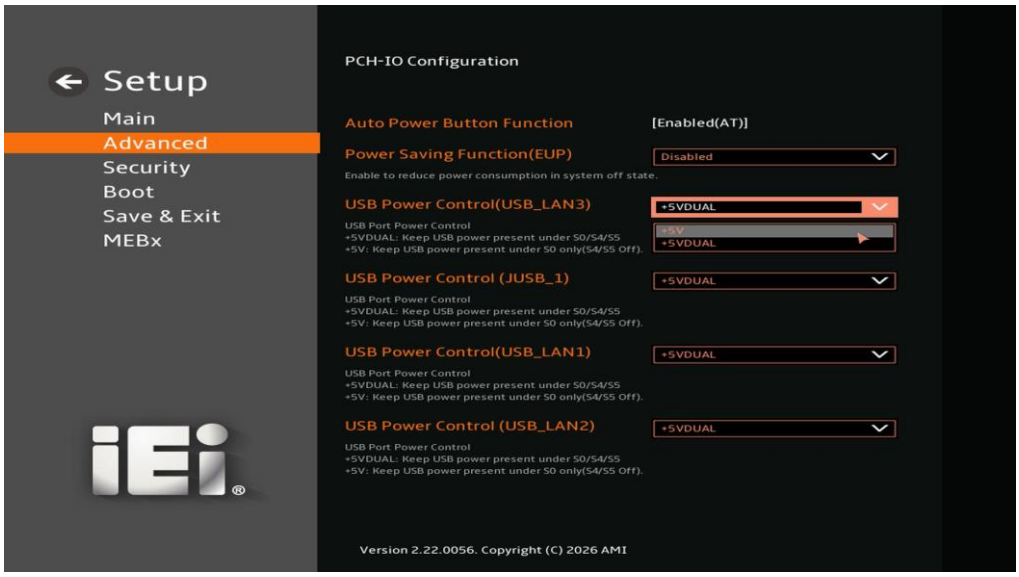


Figure 5-20: PCI-IO Configuration (1/2)

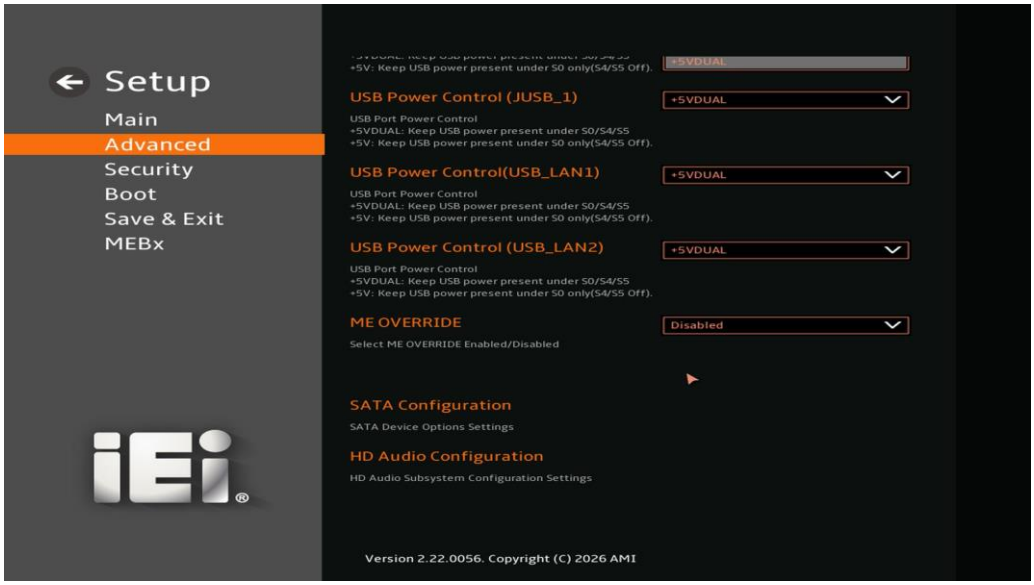


Figure 5-21: PCI-IO Configuration (2/2)

➔ **Auto Power Button Function [Disabled (ATX)]**

The **Auto Power Button Function** BIOS option to show the power mode state is ATX

➔ **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 Control (USB_LAN3) [+5V DUAL]**

Use the **USB Power Control (USB_LAN3)** BIOS option to configure the USB power source for the corresponding USB connectors.

+5V DUAL: Keep USB power present under S0/S4/SS.
+5V: Keep USB power present under so only (S4/S5 Off).

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

➔ **USB Power Control (JUSB_1) [+5V DUAL]**

Use the **USB Power Control (JUSB_1)** BIOS option to configure the USB power source for the corresponding USB connectors.

+5V DUAL: Keep USB power present under S0/S4/SS.
+5V: Keep USB power present under so only (S4/S5 Off).

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

➔ **USB Power Control (USB_LAN1) [+5V DUAL]**

Use the **USB Power Control (USB_LAN1)** BIOS option to configure the USB power source for the corresponding USB connectors.

+5V DUAL: Keep USB power present under S0/S4/SS.
+5V: Keep USB power present under so only (S4/S5 Off).

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

➔ **+5V** Sets the USB power source to +5V

➔ **USB Power Control (USB_LAN2) [+5V DUAL]**

Use the **USB Power Control (USB_LAN2)** BIOS option to configure the USB power source for the corresponding USB connectors.

+5V DUAL: Keep USB power present under S0/S4/SS.
+5V: Keep USB power present under so only (S4/S5 Off).

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

➔ **+5V** Sets the USB power source to +5V

5.3.5.1 SATA Configuration

Use the **SATA Configuration** menu to change and/or set the configuration of the SATA devices installed in the system.

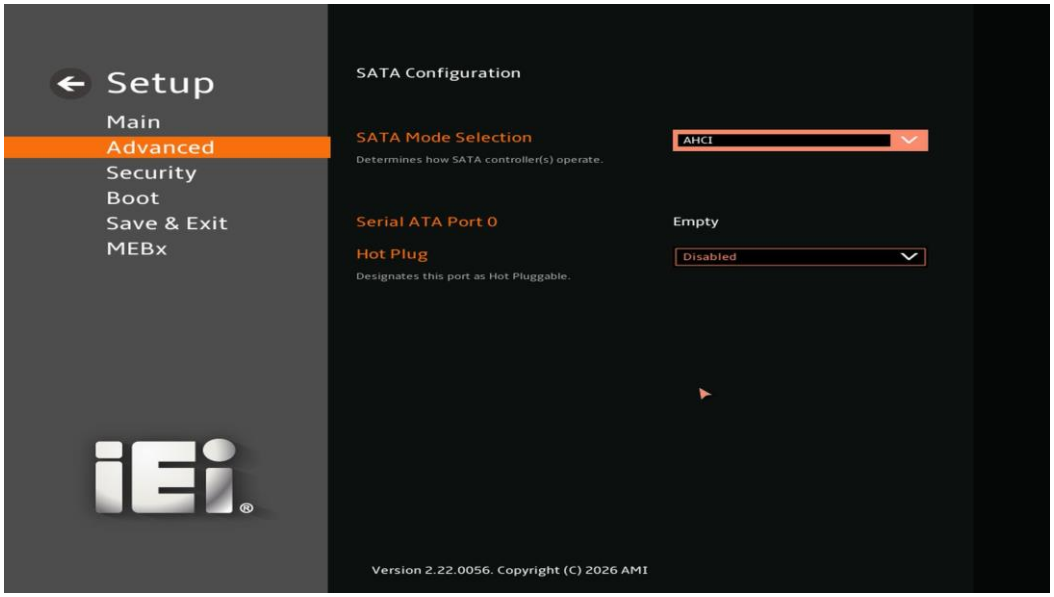


Figure 5-22: SATA Configuration

➔ **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.

➔ **ISATA1 [Empty]**

➔ **Hot Plug [Disabled]**

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

➔ **Disabled** **DEFAULT** Disables the hot-pluggable function of the SATA port.

➔ **Enabled** Designate the SATA port as hot-pluggable

5.3.5.2 HD Audio Configuration

Use the **HD Audio Configuration** menu to configure the HD Audio subsystem configuration settings.

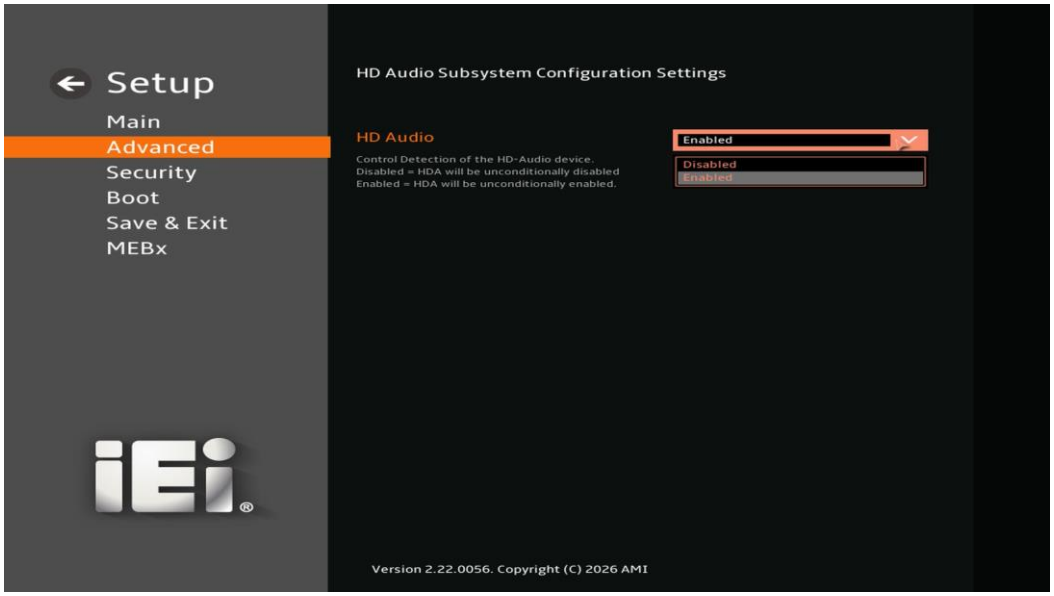


Figure 5-23: HD Audio Configuration

➔ **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.

5.3.6 AMT Configuration

Use the **AMT Configuration** menu to configure settings Intel AMT Supported configurations.

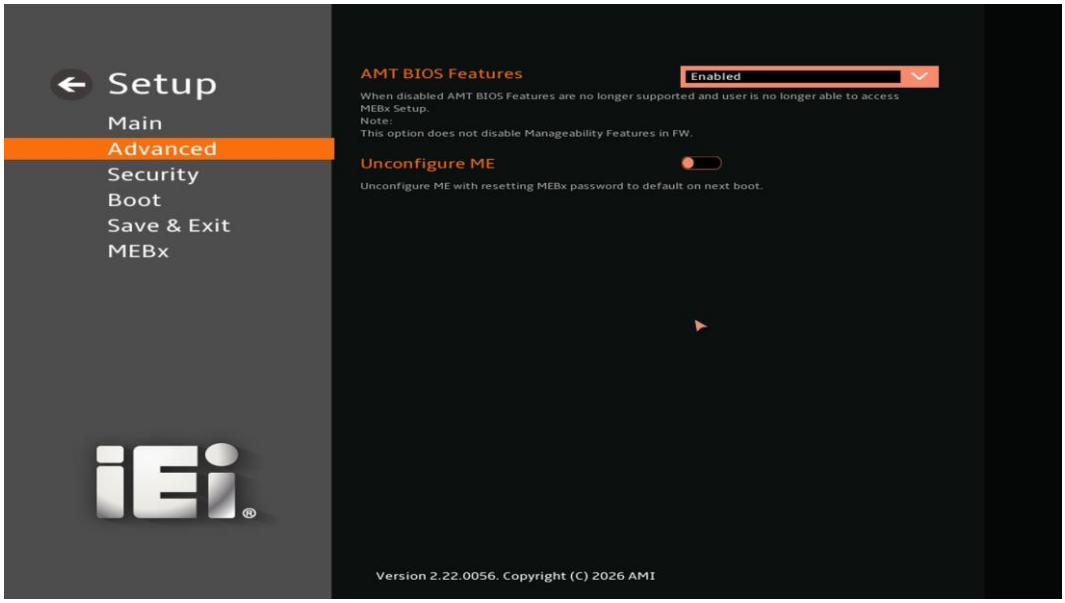


Figure 5-24: AMT Configuration

➔ **AMT BIOS Features**

When disabled **AMT BIOS Features** are no longer supported and user is no longer able to access MEBx Setup.

Note: This option does not disable Manageability Features in FW

➔ **Disabled** Disabled the AMT BIOS Features can reduce potential security risks and may improve system boot speed.

➔ **Enabled** **DEFAULT** Enabled the AMT BIOS Features to use remote management capabilities.

➔ **Unconfigure ME**

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

5.3.7 Trusted Computing

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

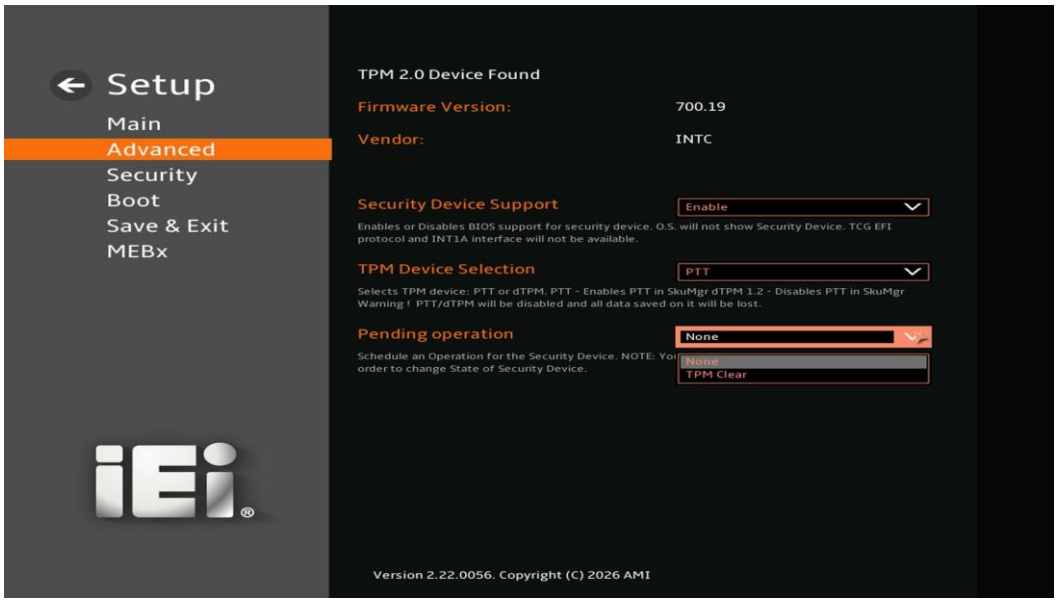


Figure 5-25: Trusted Computing

➔ **Security Device Support [Enable]**

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** — dTPM 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.S

➔ **TPM Clear** TPM information is cleared

5.3.8 iEi One Key Recovery 2

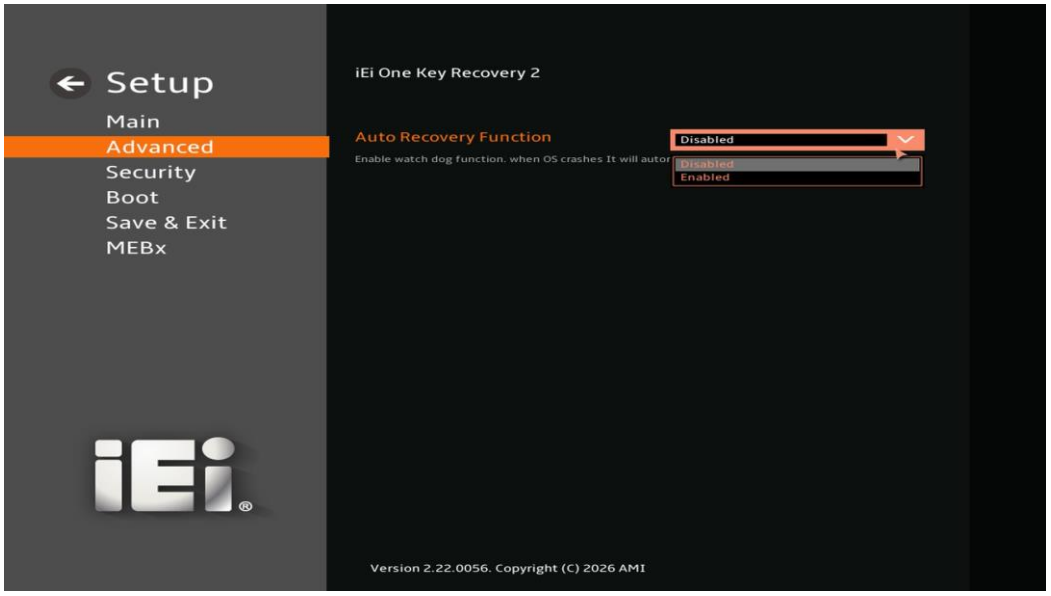


Figure 5-26: iEi One Key Recovery 2

➔ **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 configures RTC wake event.

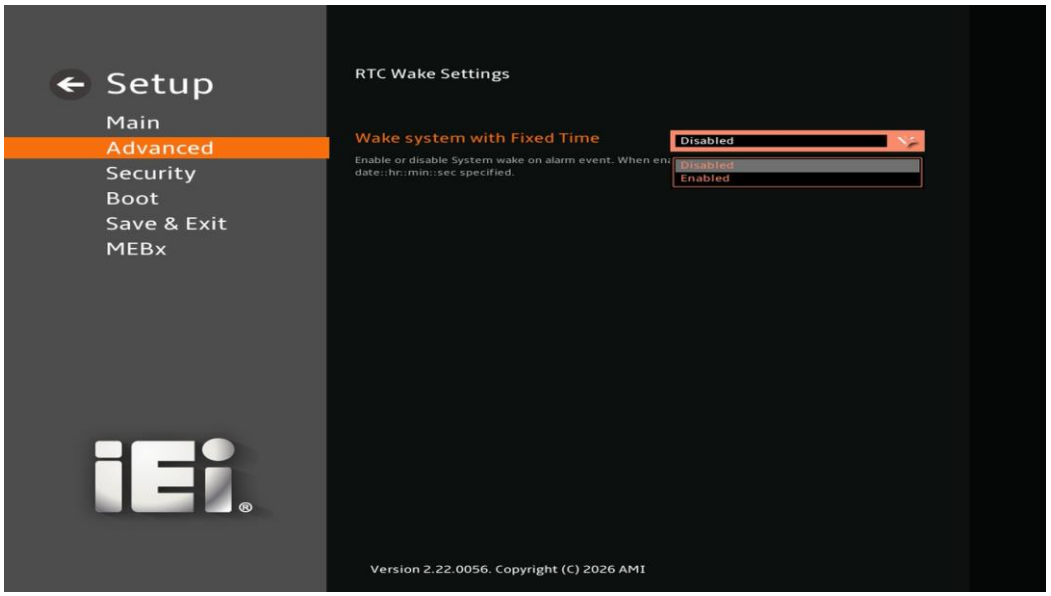


Figure 5-27: RTC Wake Settings

➔ **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**		If selected, the following appears with values that can be selected:

5.3.10 F81966 Super IO Configuration

Use the **F81966 Super IO Configuration** menu to set or change the configurations for the serial ports.

Figure 5-28: F81966 Super IO Configuration

5.3.10.1 Serial Port 1 Configuration

Use the **Serial Port 1 Configuration** to configure the serial port 1.

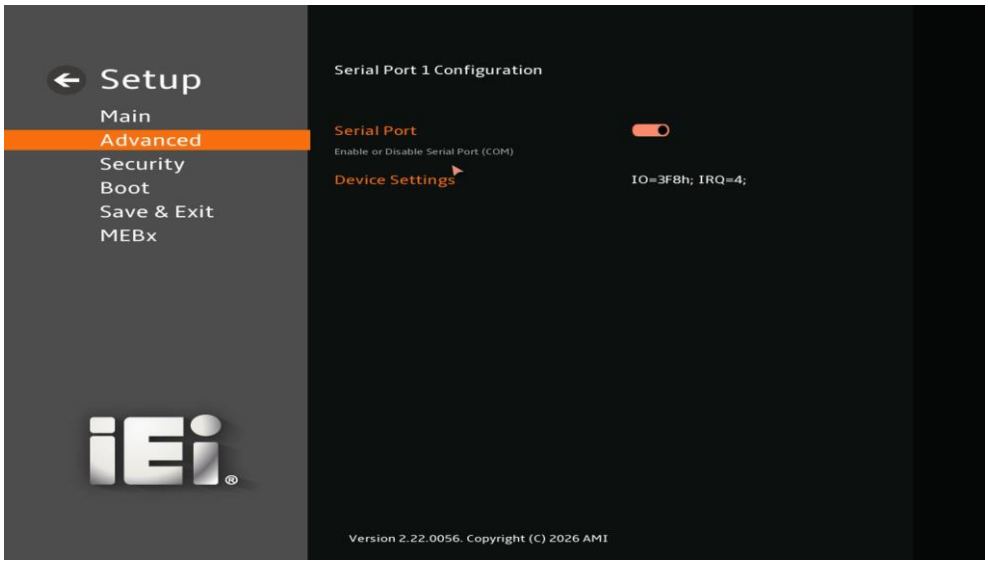


Figure 5-29: Serial Port 1 Configuration

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

5.3.10.2 Serial Port 2 Configuration

Use the **Serial Port 2 Configuration** to configure the serial port 2.

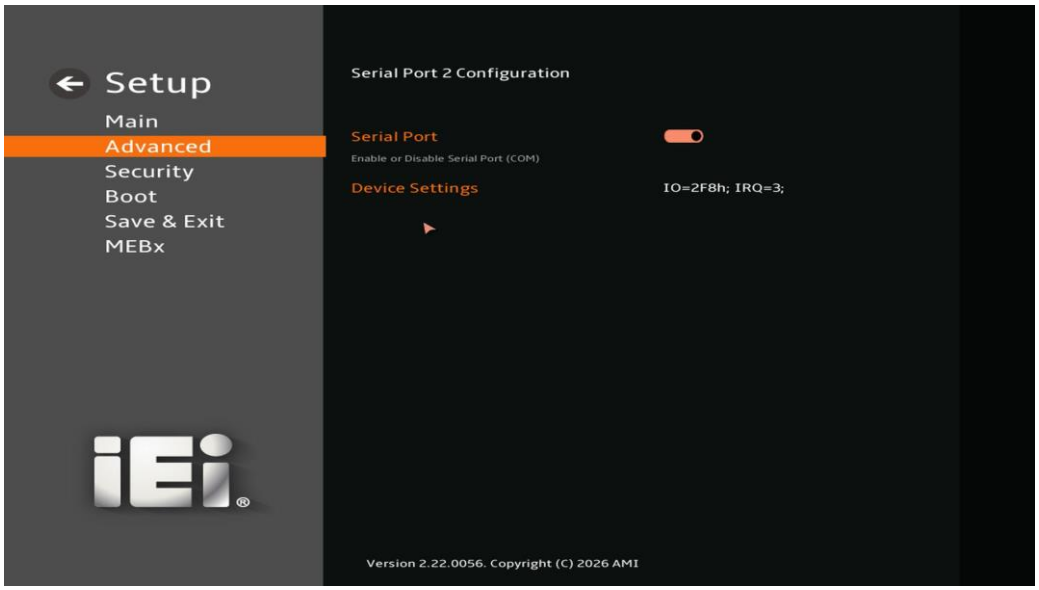


Figure 5-30: Serial Port 2 Configuration

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

5.3.10.3 Serial Port 3 Configuration

Use the **Serial Port 3 Configuration** to configure the serial port 3.

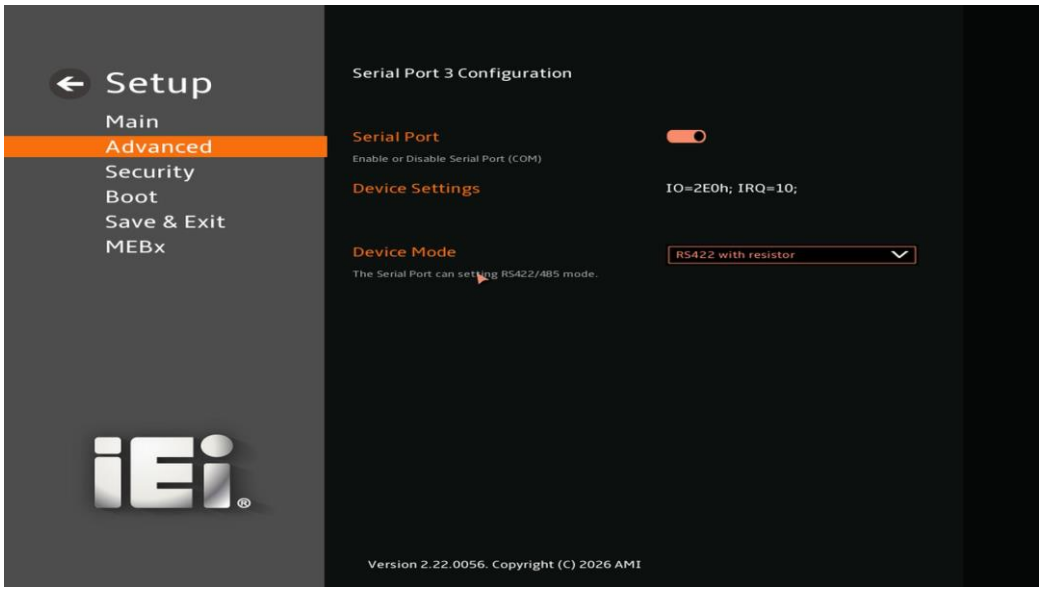


Figure 5-31: Serial Port 3 Configuration

➔ **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=2E0h; IRQ=10** Serial Port I/O port address is 2E0h and the interrupt address is IRQ10

➔ **Device Mode [RS422 with resistor]**

Use the **Device Mode** option to set RS422/485 mode.

➔ **RS422** Serial Port Mode is RS422 mode

➔ **RS485** Serial Port Mode is RS485 mode

5.3.10.4 Serial Port 4 Configuration

Use the **Serial Port 4 Configuration** to configure the serial port 4

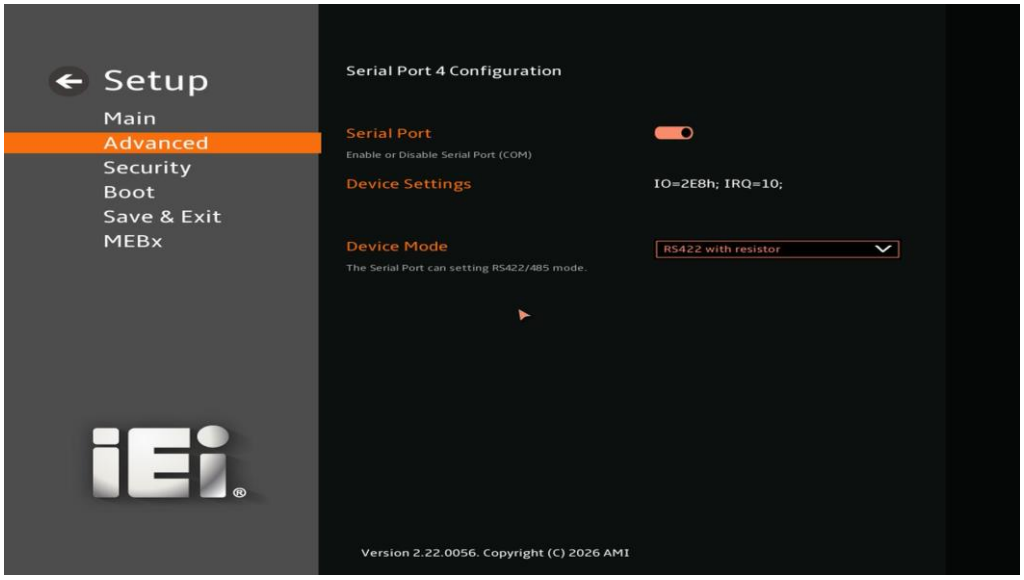


Figure 5-32: Serial Port 4 Configuration

➔ **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=2E8h; IRQ=10** Serial Port I/O port address is 2E8h and the interrupt address is IRQ10

➔ **Device Mode [RS422 with resistor]**

Use the **Device Mode** option to set RS/422/485 mode.

➔ **RS422** Serial Port Mode is RS422 mode

➔ **RS485** Serial Port Mode is RS485 mode

5.3.10.5 Serial Port 5 Configuration

Use the **Serial Port 3 Configuration** to configure the serial port 5

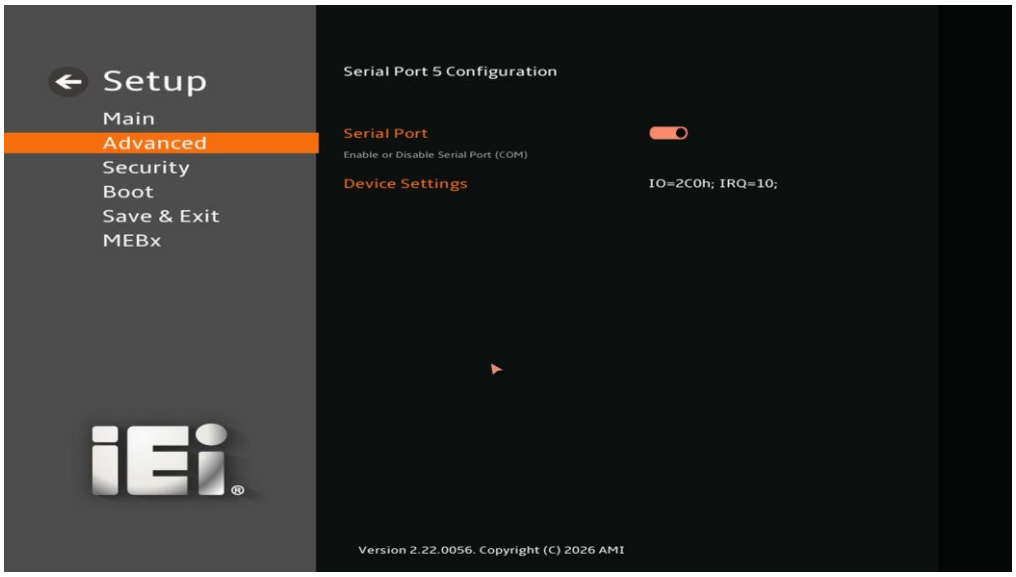


Figure 5-33: Serial Port 5 Configuration

➔ **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=2C0h; IRQ=10** Serial Port I/O port address is 2C0h and the interrupt address is IRQ10

5.3.10.6 Serial Port 6 Configuration

Use the **Serial Port 3 Configuration** to configure the serial port 6

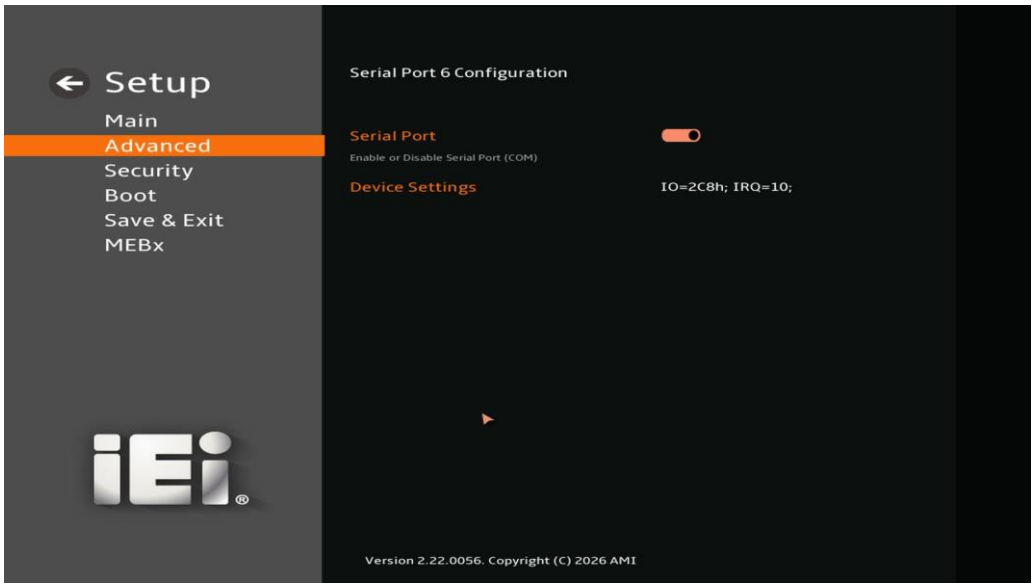


Figure 5-34: Serial Port 6 Configuration

➔ **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=2C8h; IRQ=10** Serial Port I/O port address is 2C8h and the interrupt address is IRQ10

5.3.11 EC IT5571 H/W Monitor

The **EC IT5571 H/W Monitor** 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.

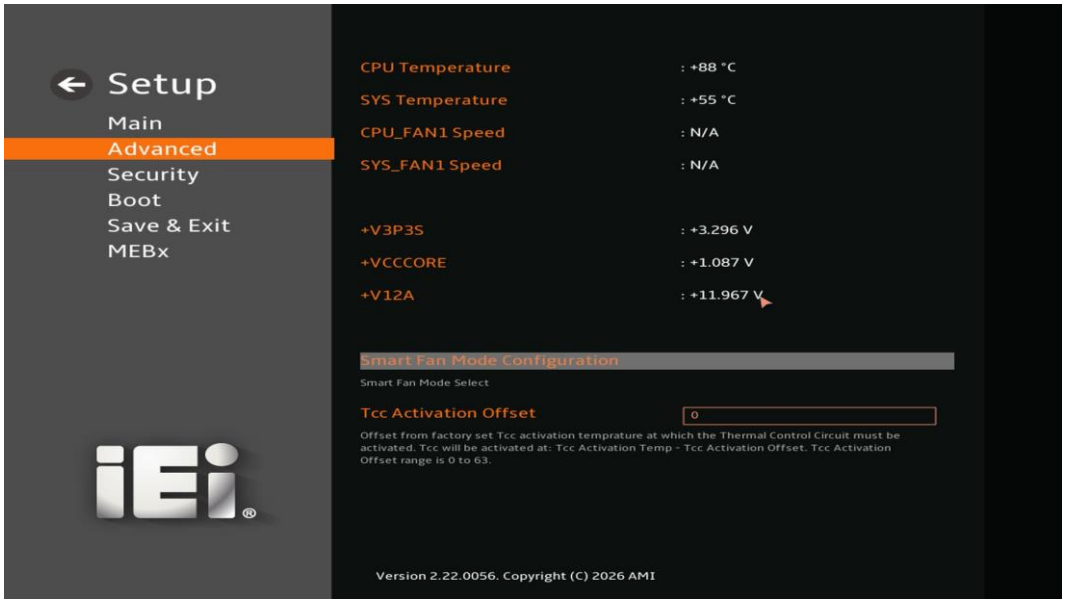


Figure 5-35: EC IT5571 H/W Monitor

➔ **PC Health Status**

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

- CPU Temperature
- SYS Temperature
- CPU_Fan1 Speed
- SYS_Fan1 Speed
- +V3P3S
- +VCCCORE
- +V12A

➔ **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: TCC Activation Temperature = Factory Set Temperature - 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** to configure the CPU/System fan start/off temperature and control mode.

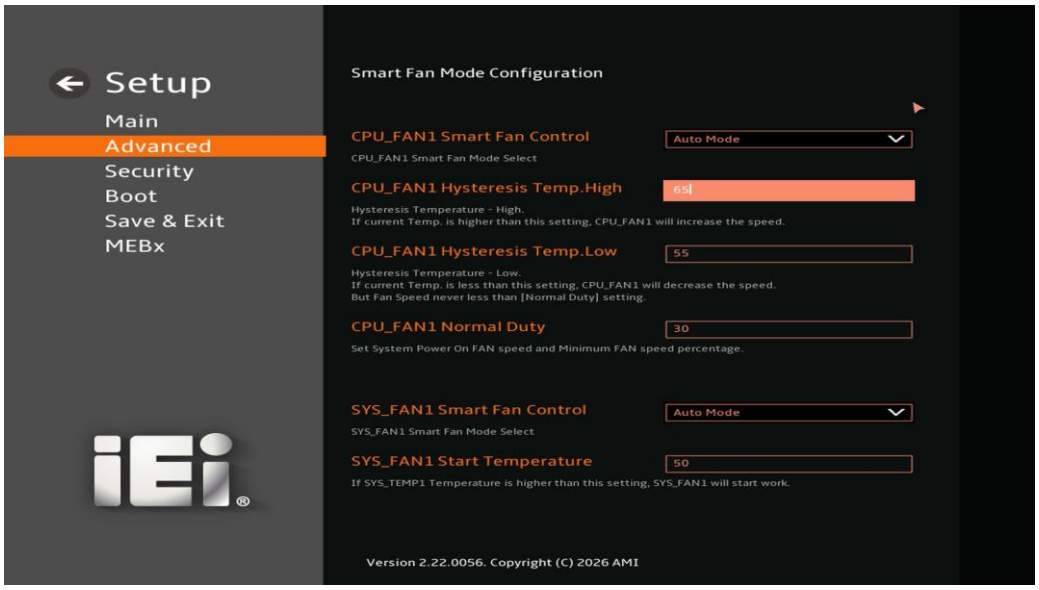


Figure 5-36: Smart Fan Mode Configuration (1/2)

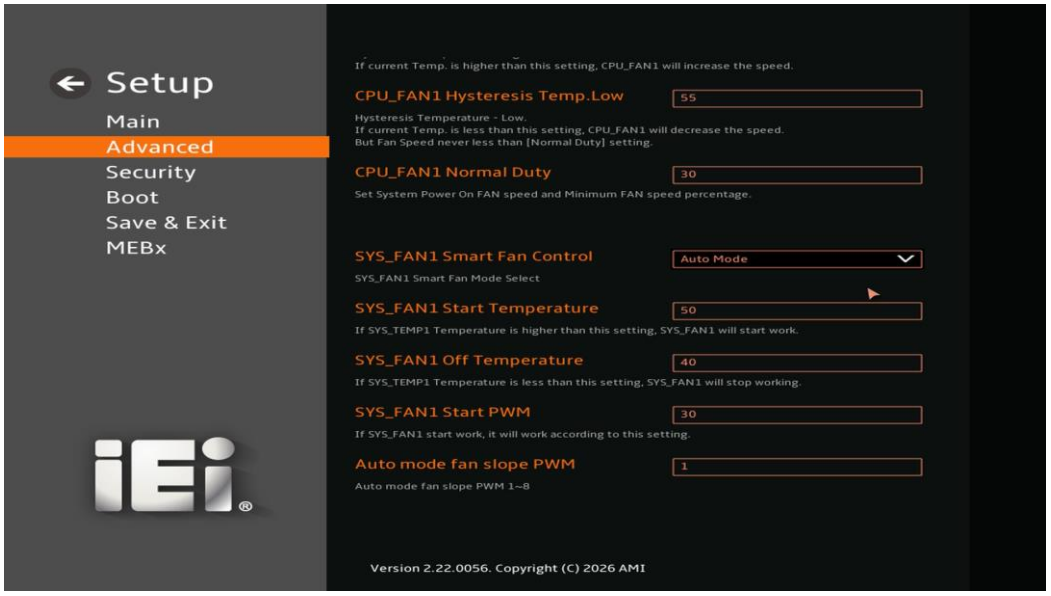


Figure 5-37: Smart Fan Mode Configuration (2/2)

➔ **CPU_FAN 1 Smart Fan Control [Auto Mode]**

Use the **CPU_FAN 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_FAN 1 Hysteresis Temp.High [65]**

If the CPU temperature is higher than this setting, CPU_FAN 1 will start faster. Use the + or – key to change the value or enter a decimal number between 1 and 100.

➔ **CPU_FAN 1 Hysteresis Temp.Low [55]**

If the CPU 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_FAN 1 Normal Duty [30]**

Use the CPU_FAN 1 Normal Duty option to set the PWM start value. Use the + or – key to change the value or enter a decimal number between 1 and 100.

➔ **SYS_FAN1 Smart Fan Control [Auto Mode]**

Use the SYS_FAN1 Smart Fan Control option to configure the System 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.

➔ **SYS_FAN1 Start Temperature [50]**

If the SYS_TEMP1 Temperature is higher than this setting, SYS_FAN1 will start work. Use the + or – key to change the value or enter a decimal number between 1 and 100.

➔ **SYS_FAN1 Off Temperature [40]**

I If the SYS_TEMP1 Temperature is less than this setting, SYS_FAN1 will stop working. To set a value, Use the + or – key to change the value or enter a decimal number between 1 and 100.

➔ **SYS_FAN1 Start PWM [30]**

Use the SYS_FAN1 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 [1]**

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** 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.

Figure 5-38: Serial Port Console Redirection (1/4)

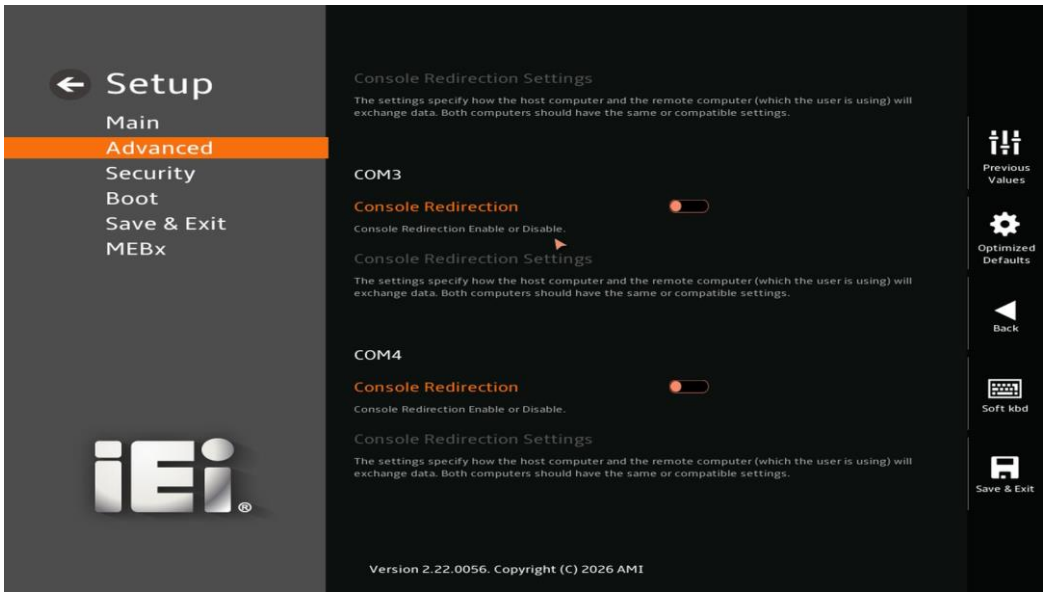


Figure 5-39: Serial Port Console Redirection (2/4)

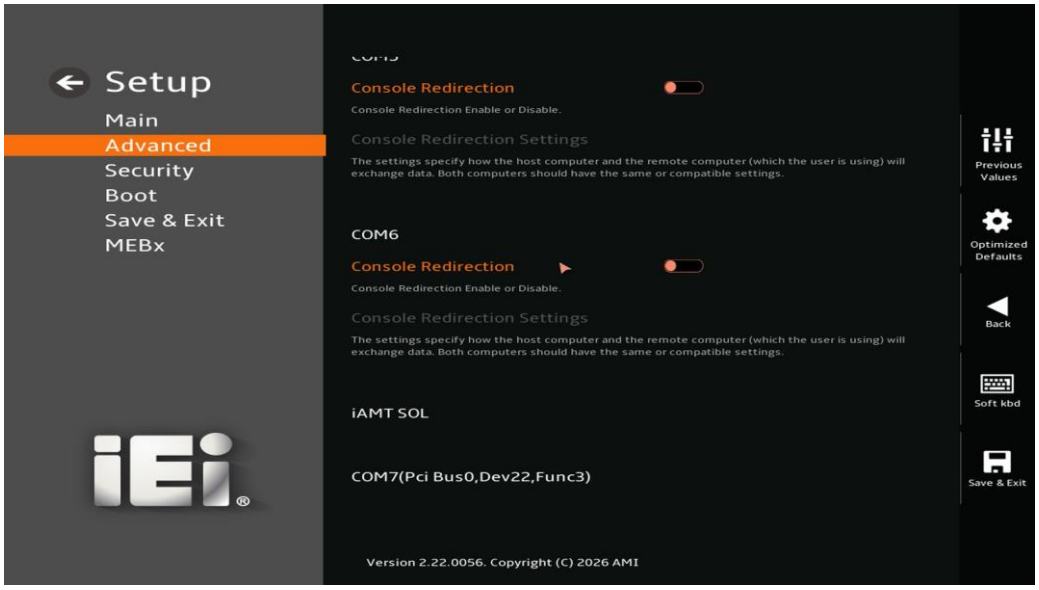


Figure 5-40: Serial Port Console Redirection (3/4)

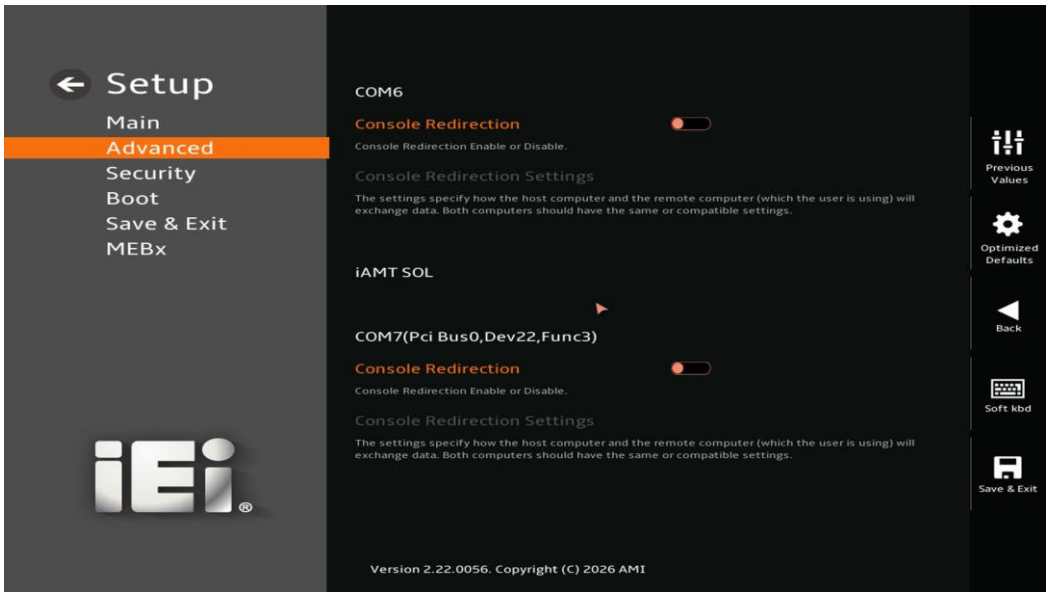


Figure 5-41: Serial Port Console Redirection (4/4)

➔ **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 when the **COM Console Redirection** (for COM1 to COM6) option is enabled.

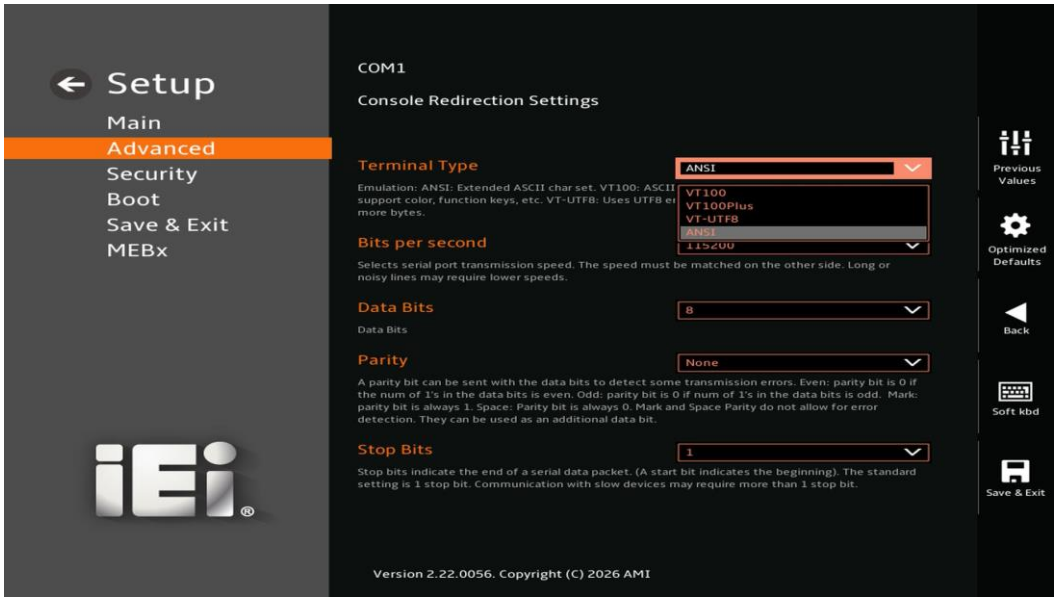


Figure 5-42: COM Console Redirection Settings

➔ **Terminal Type [ANSI]**

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

➔ **VT100**		The target terminal type is VT100
➔ **VT100Plus**		The target terminal type is VT100Plus
➔ **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.

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

5.3.13 PCI Subsystem Setting

Enables or disables the Resizable Base Address Register (BAR) support to allow the CPU to efficiently negotiate the PCIe asset size for improved graphics and compute performance.

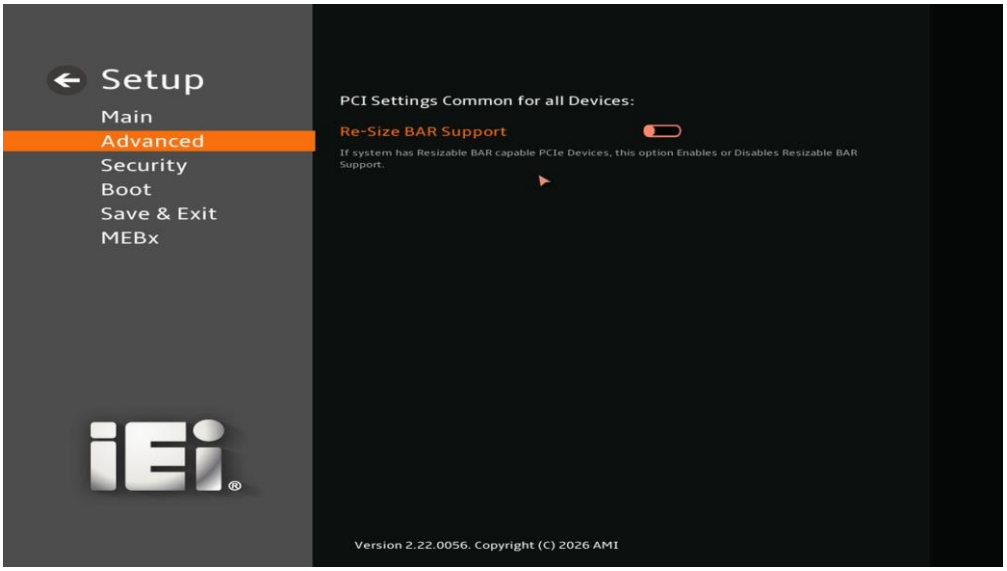


Figure 5-43: PCI Subsystem Setting

5.3.14 NVMe Configuration

Use the **NVMe Configuration** to display the NVMe controller and device information.

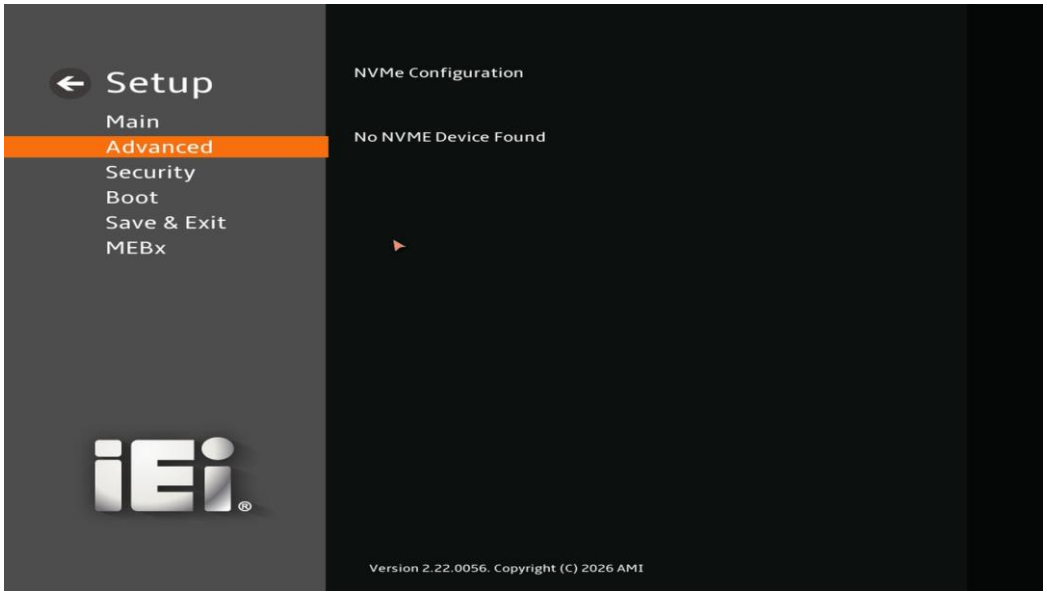


Figure 5-44: NVMe Configuration

5.4 Security

Use the **Security** to set system and user passwords.

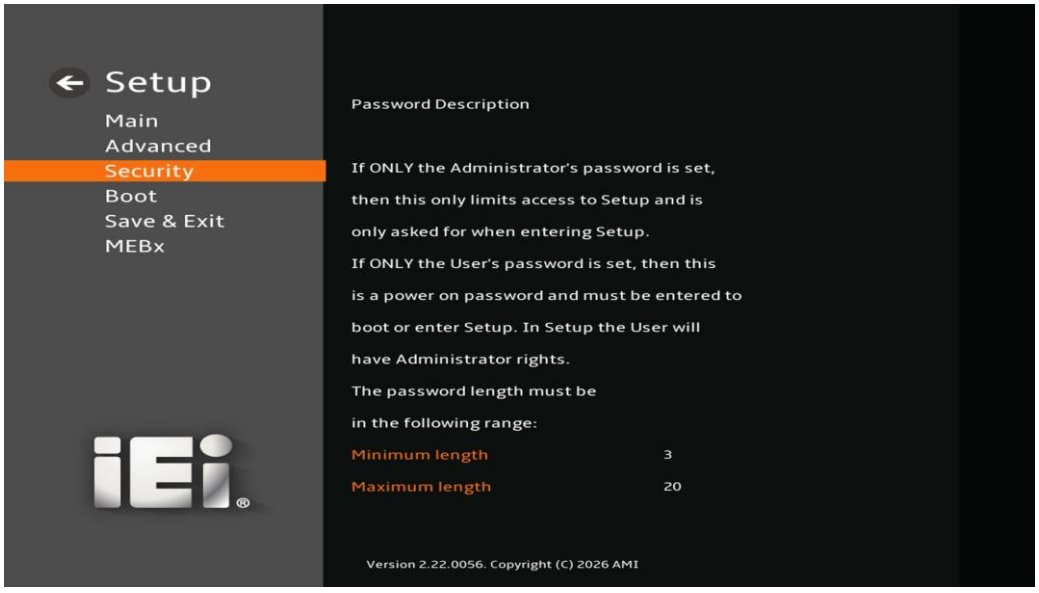


Figure 5-45: Security (1/2)

Figure 5-46: Security (2/2)

➔ **Administrator Password -Not Installed**

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

➔ **User Password -Not Installed**

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

5.5 Boot

Use the **Boot** menu to configure system boot options.

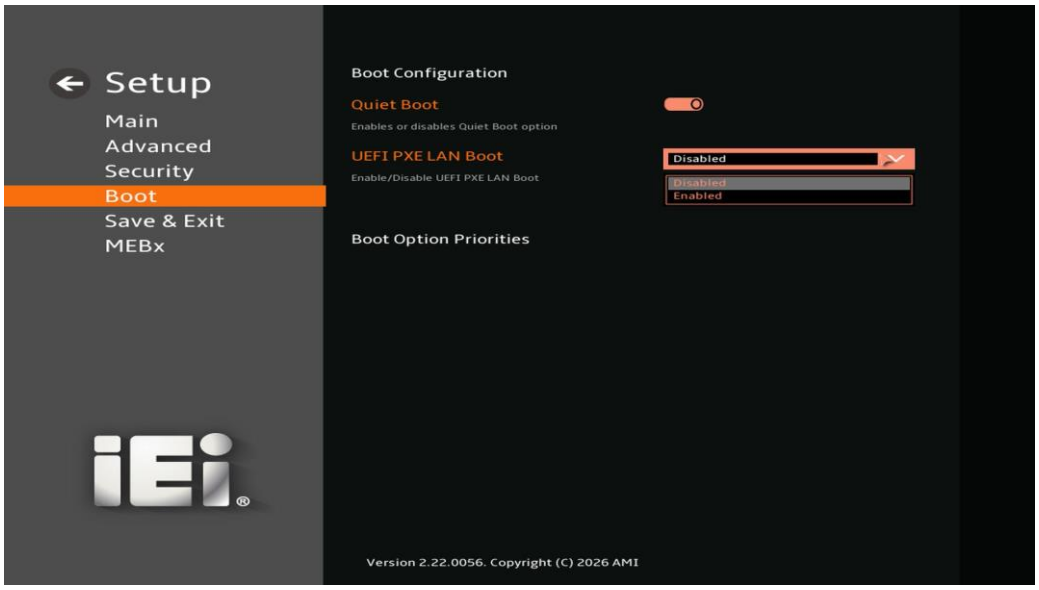


Figure 5-47: Boot

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

➔ **UEFI PXE LAN Boot [Disabled]**

Use the **UEFI PXE LAN Boot** option to Enables or disables the Preboot Execution Environment (PXE) via the UEFI network stack to allow the system to boot from a remote server over the local area network.

➔ **Disabled** **DEFAULT** The system will only boot from local storage devices or USB drives. (Default for security).

➔ **Enabled**

The system will include network controllers in the boot priority list.(Requires a compatible DHCP/TFTP server).

5.6 Save & Exit

Use the **Save & Exit** to load default BIOS values, optimal failsafe values and to save configuration changes.

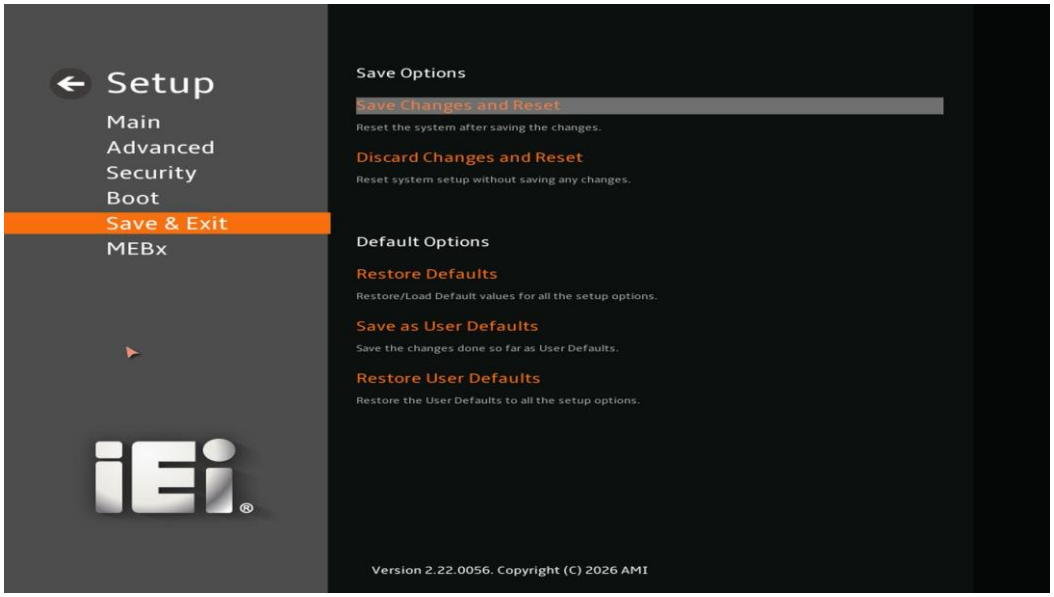


Figure 5-48: Save & Exit

➔ **Save Changes and Reset**

Use the Save Changes and Reset option to save the changes made to the BIOS options and reset the system.

➔ **Discard Changes and Reset**

Use the **Discard Changes and Reset** option to exit the system without saving the changes made to the BIOS configuration setup program.

➔ **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

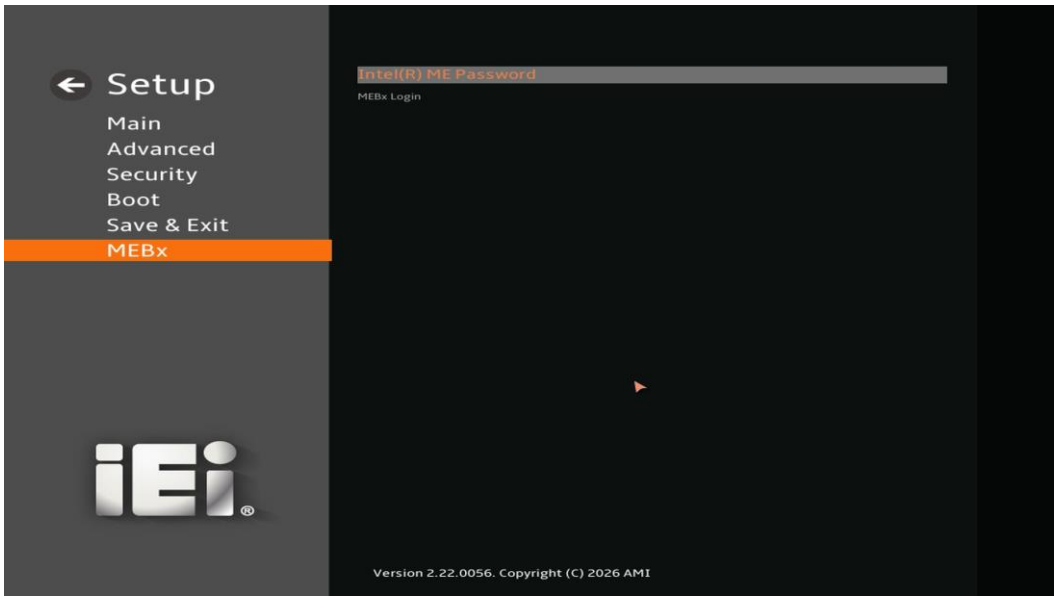


Figure 5-49: MEBx

Appendix

A

Safety Precautions

A.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 DRPC-243-MTL Series.

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

A.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.
- ***This equipment is not suitable for use in locations where children are likely to be present.***
- **DO NOT**:
  - Drop the system against a hard surface.
  - In a site where the ambient temperature exceeds the rated temperature

A.1.2 Anti-static Precautions

WARNING:

Failure to take ESD precautions during the installation of the DRPC-243-MTL Series may result in permanent damage to the DRPC-243-MTL Series and severe injury to the user.

Electrostatic discharge (ESD) can cause serious damage to electronic components, including the DRPC-243-MTL Series. Dry climates are especially susceptible to ESD. It is therefore critical that whenever the DRPC-243-MTL 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.

A.1.3 Product Disposal

CAUTION:

Risk of explosion if the battery is replaced by an incorrect type;

Replacement of a battery with an incorrect type that can defeat a safeguard (for example, in the case of some lithium battery types);

Disposal of a battery into fire or a hot oven, or mechanically crushing or cutting of a battery, that can result in an explosion;

Leaving a battery in an extremely high temperature surrounding environment that can result in an explosion or the leakage of flammable liquid or gas;

A battery subjected to extremely low air pressure that may result in an explosion or the leakage of flammable liquid or gas.

Dispose of used batteries according to instructions and local regulations.

- 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:

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.

A.2 Maintenance and Cleaning Precautions

When maintaining or cleaning the DRPC-243-MTL Series, please follow the guidelines below.

A.2.1 Maintenance and Cleaning

Prior to cleaning any part or component of the DRPC-243-MTL Series, please read the details below.

- The interior of the DRPC-243-MTL Series does not require cleaning. Keep fluids away from the DRPC-243-MTL Series interior.
- Be cautious of all small removable components when vacuuming the DRPC-243-MTL Series.
- Turn the DRPC-243-MTL Series off before cleaning the DRPC-243-MTL Series.
- Never drop any objects or liquids through the openings of the DRPC-243-MTL Series.
- Be cautious of any possible allergic reactions to solvents or chemicals used when cleaning the DRPC-243-MTL Series.

A.2.2 Cleaning Tools

Some components in the DRPC-243-MTL 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 DRPC-243-MTL Series.

- ***Cloth*** – Although paper towels or tissues can be used, a soft, clean piece of cloth is recommended when cleaning the DRPC-243-MTL Series.
- ***Water or rubbing alcohol*** – A cloth moistened with water or rubbing alcohol can be used to clean the DRPC-243-MTL Series.
- ***Using solvents*** – The use of solvents is not recommended when cleaning the DRPC-243-MTL 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 DRPC-243-MTL Series. Dust and dirt can restrict the airflow in the DRPC-243-MTL Series and cause its circuitry to corrode.
- ***Swabs*** - Swabs moistened with rubbing alcohol or water are excellent tools for wiping hard to reach areas. Whenever possible, it is best to use lint free swabs such as foam swabs for cleaning.

Appendix

B

Regulatory Compliance

DECLARATION OF CONFORMITY

CE

This equipment is in conformity with the following EU directives:

- EMC Directive 2014/30/EU
- Low-Voltage Directive 2014/35/EU
- RoHS II Directive 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 R&TTE Directive 1999/5/EC.

English IEI Integration Corp declares that this equipment is in compliance with the essential requirements and other relevant provisions of Directive 1999/5/EC.
Български [Bulgarian] IEI Integration Corp. декларира, че този оборудване е в съответствие със съществените изисквания и другите приложими правила на Директива 1999/5/EC.
Česky [Czech] IEI Integration Corp tímto prohlašuje, že tento zařízení je ve shodě se základními požadavky a dalšími příslušnými ustanoveními směrnice 1999/5/ES.
Dansk [Danish] IEI Integration Corp erklærer h rved, at følgen e udstyr overholder de væsentlige krav og øvrige relevante krav i dire tiv 1999/5/EF.
Deutsch [German] IEI Integration Corp, erklärt dieses Gerät entspricht den grundlegenden Anforderungen und den weiteren entsprechenden Vorgaben der Richtlinie 1999/5/EU.
Eesti [Estonian] IEI Integration Corp deklareerib seadme seadme vastavust direktiivi 1999/5/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 1999/5/CE.

Ελληνική [Greek] IEI Integration Corp ΔΗΛΩΝΕΙ ΟΤΙ ΕΞΟΠΛΙΣΜΟΣ ΣΥΜΜΟΡΦΩΝΕΤΑΙ ΠΡΟΣ ΤΙΣ ΟΥΣΙΩΔΕΙΣ ΑΠΑΙΤΗΣΕΙΣ ΚΑΙ ΤΙΣ ΛΟΙΠΕΣ ΣΧΕΤΙΚΕΣ ΔΙΑΤΑΞΕΙΣ ΤΗΣ ΟΔΗΓΙΑΣ 1999/5/ΕΚ.
Français [French] IEI Integration Corp déclare que l'appareil est conforme aux exigences essentielles et aux autres dispositions pertinentes de la directive 1999/5/CE.
Italiano [Italian] IEI Integration Corp dichiara che questo apparecchio è conforme ai requisiti essenziali ed alle altre disposizioni pertinenti stabilite dalla direttiva 1999/5/CE.
Latviski [Latvian] IEI Integration Corp deklarē, ka iekārta atbilst būtiskajām prasībām un citiem ar to saistītajiem noteikumiem Direktīvas 1999/5/EK.
Lietuvių [Lithuanian] IEI Integration Corp deklaruoja, kad šis įranga atitinka esminius reikalavimus ir kitas 1999/5/EB Direktyvos nuostatas.
Nederlands [Dutch] IEI Integration Corp dat het toestel toestel in overeenstem ing is met de e sentiële eisen en de andere relevante bepalingen van richtlijn 1999/5/EG.
Malti [Maltese] IEI Integration Corp jiddikjara li dan prodott jikkonforma mal-ħtiġijiet essenzjali u ma provvedimenti oħrajn relevanti li hemm fid-Dirrettiva 1999/5/EC.
Magyar [Hungarian] IEI Integration Corp nyilatkozom, hogy a berendezés megfelel a vonatkozó alapvetõ követelményeknek és az 1999/5/EC irányelv egyéb elõírásainak.
Polski [Polish] IEI Integration Corp oświadcza, że wyrobu jest zgodny z zasadniczymi wymogami oraz pozostałymi stosownymi postanowieniami Dyrektywy 1 99/5/EC.
Português [Portuguese] IEI Integration Corp declara que este equipamento está conforme com os requisitos essenciais e outras dis osições da Directiva 1999/5/CE.
Româna [Romanian] IEI Integration Corp declară că acest echipament este in conformitate cu cerinţele esenţiale şi cu celelalte prevederi relevante ale Directivei 1999/5/CE.
Slovensko [Slovenian] IEI Integration Corp izjavlja, da je ta opreme v skladu z bistvenimi zahtevami in ostalimi relevantnimi določili direktive 1999/5/ES.

Slovensky [Slovak] IEI Integration Corp týmto vyhlasuje, že zariadenia spĺňa základné požiadavky a všetky príslušné ustanovenia Smernice 1999/5/ES.
Suomi [Finnish] IEI Integration Corp vakuut aa täten että l itteet on direktiivin 1999/5/EY 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 1999/5/EG.

ROHS STATEMENT

The label on the product indicates this product conforms to European (EU) Restriction of Hazardous Substances (RoHS) that set maximum concentration limits on hazardous materials used in electrical and electronic equipment.

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.

Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 20cm between the radiator & your body.

CHINA ROHS

The label on the product indicates the estimated “Environmentally Friendly Use Period” (EFUP). This is an estimate of the number of years that these substances would “not leak out or undergo abrupt change.” This product may contain replaceable sub-assemblies/components which have a shorter EFUP such as batteries and lamps. These components will be separately marked.

Appendix

C

Hazardous Materials Disclosure

C.1 RoHS II Directive (2015/863/EU)

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

C.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
显示	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。