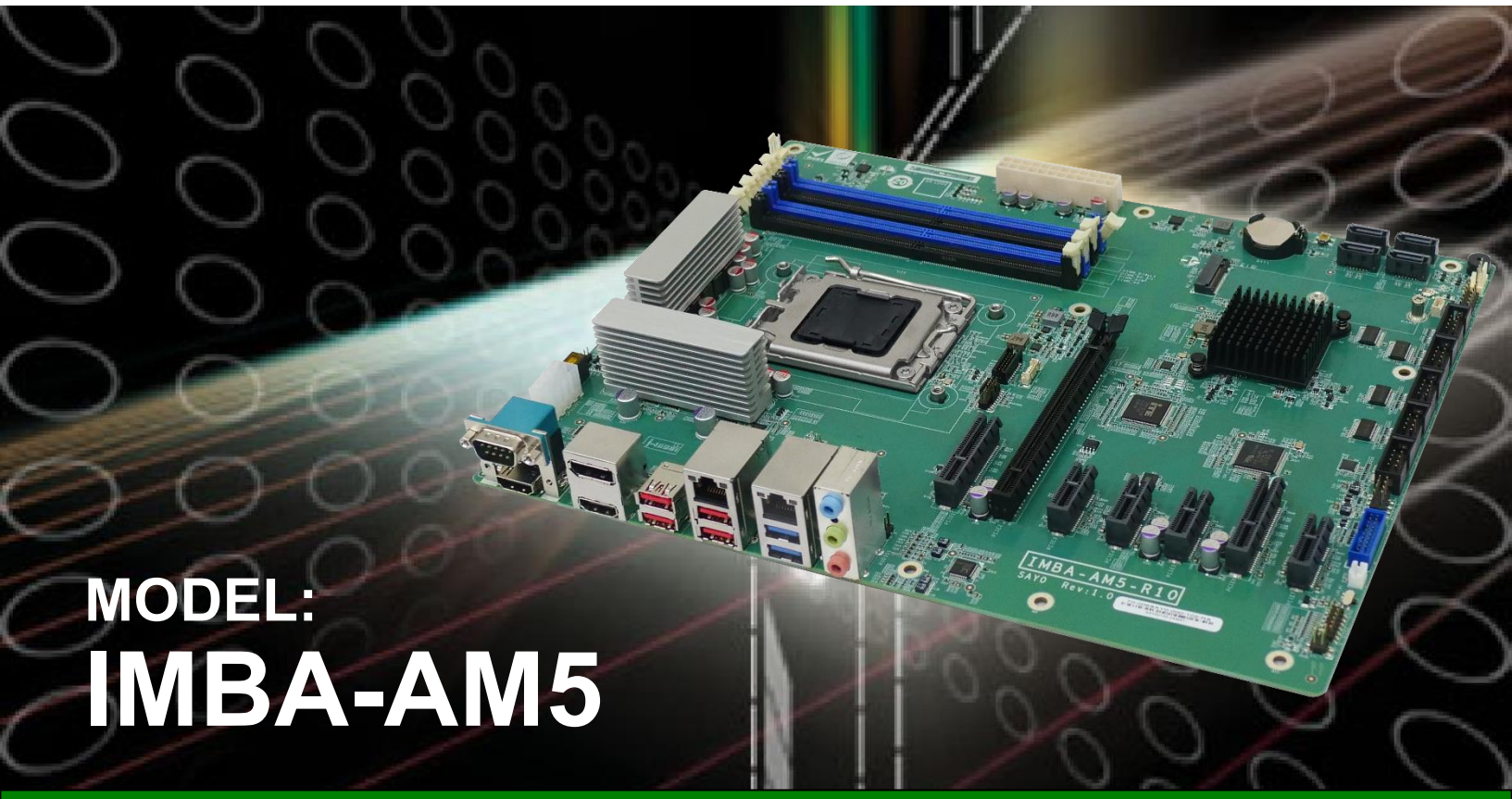
IEI Integration Corp.



MODEL:

IMBA-AM5

ATX Motherboard Supports AMD 7000 & 8000G PHX1 Series Processor, DDR5, Triple Independent Displays, Dual 2.5GbE LAN, M.2, USB 3.2, SATA 6Gb/s, HD Audio and RoHS

User Manual

Rev. 1.00 – June 4, 2025

RoHS Lead Free

Revision

Date	Version	Changes
June 4, 2025	1.00	Initial release

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All registered trademarks and product names mentioned herein are used for identification purposes only and may be trademarks and/or registered trademarks of their respective owners.

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.

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Chapter

1

Introduction

1.1 Introduction

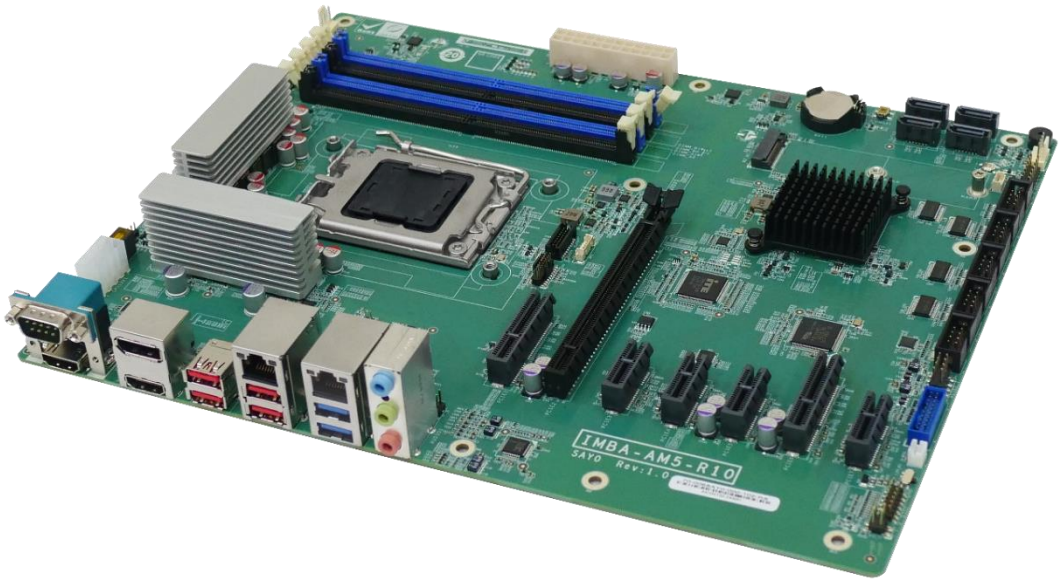


Figure 1-1: IMBA-AM5

The IMBA-AM5 is a ATX motherboard. It accepts a AMD socket AM5 for AMD Ryzen™ 7000&8000G PHX1&9000 series desktop processors and supports four 288-pin 5200 MHz Dual-Channel DDR5 SDRAM Unbuffered DIMMs supported up to 192GB memory. Moreover, the IMBA-AM5 includes one DP and two HDMI for triple independent display.

The IMBA-AM5 provides two 2.5GbE interfaces through the Intel® I226V controllers. Expansion and I/O include four PCIe x1 slot, two PCIe x4 slots, one PCIe x16 slot, four SATA, one M.2 slots, six COM ports, four USB 3.2 Gen 2, four USB 3.2 Gen 1, and two USB 2.0.

1.2 Features

Some of the IMBA-AM5 motherboard features are listed below:

- AMD Socket AM5 for AMD Ryzen™ 7000&8000G PHX1&9000Series Desktop Processors
- Four 288-pin 5200 MHz Dual-Channel DDR5 SDRAM Unbuffered DIMMs supported up to 192GB
- Two 2.5GbE I226V controllers
- Triple independent display by DP and HDMI
- Four SATA 6Gb/s connectors
- Four USB 3.2 Gen 2 ports, four USB 3.2 Gen 1 ports and two USB 2.0
- One M.2 M-key slot PCIe x2 signal
- 1 x PCIe Gen4 x16 with x16 Signal（with Ryzen8000G PHX1 only X8 Signal）
- 2 x PCIe Gen4 x4 open-end
- 4 x PCIe Gen4 x1 open-end
- Six serial ports
- TPM 2.0 security function supported by AMD fTPM
- RoHS compliant

1.3 Connectors

The connectors on the IMBA-AM5 are shown in the figure below.

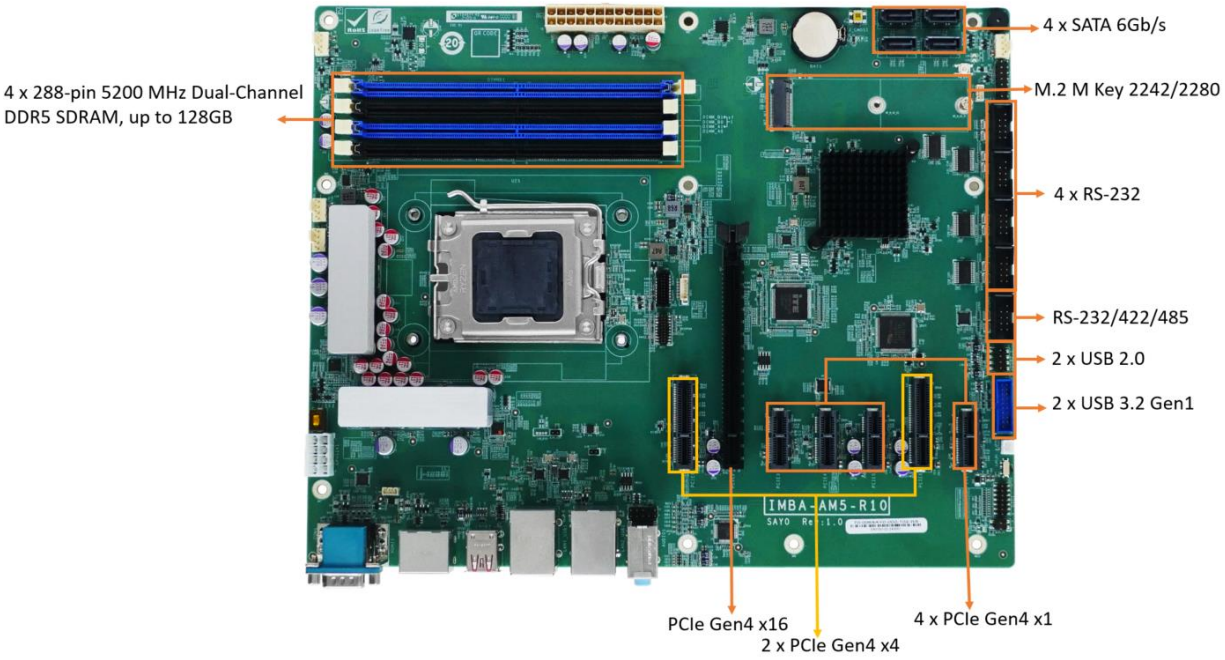


Figure 1-2: Connectors

1.4 Dimensions

The main dimensions of the IMBA-AM5 are shown in the diagram below.

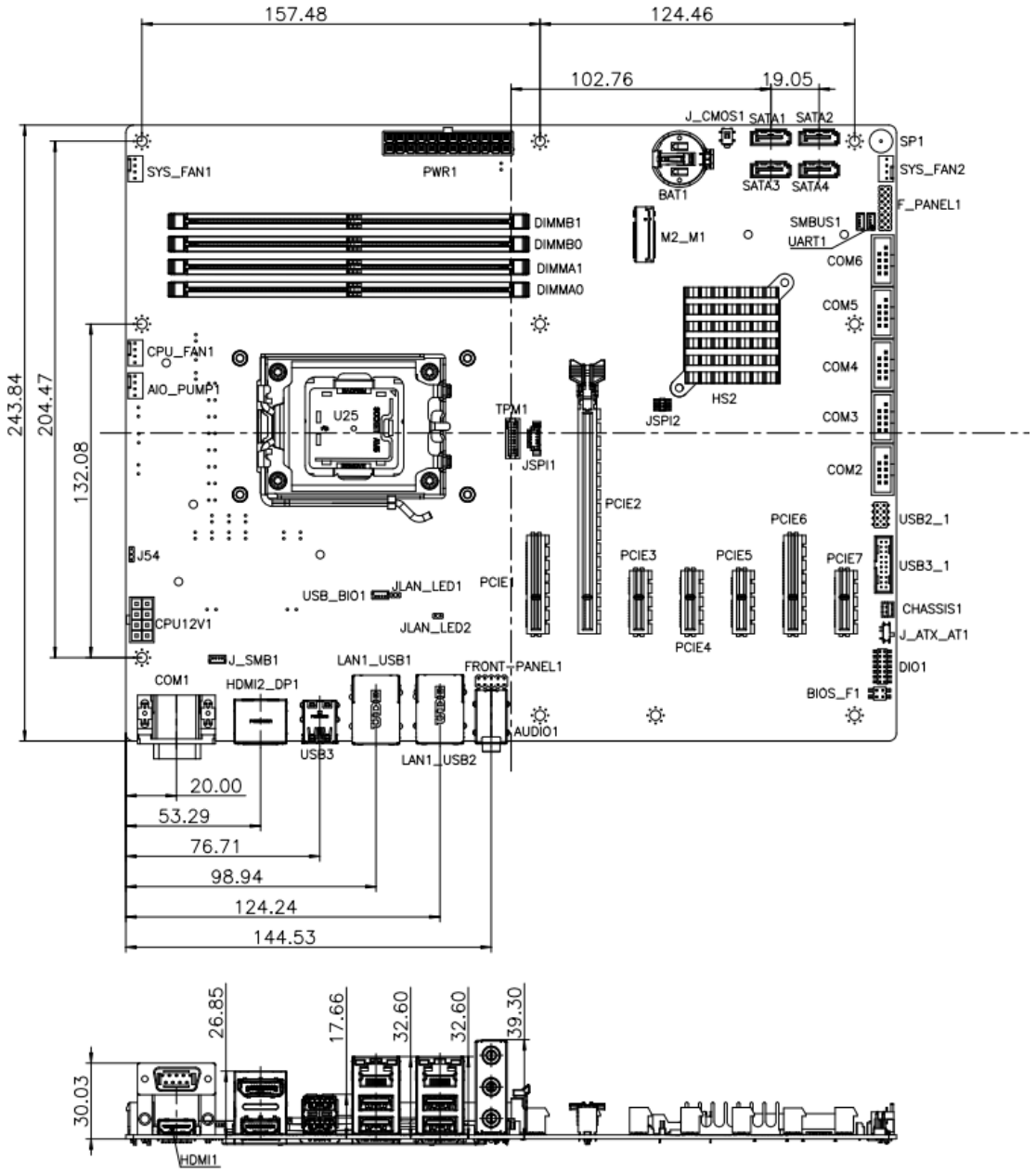


Figure 1-3: IMBA-AM5 Dimensions (mm)

1.5 Data Flow

Figure 1-4 shows the data flow between the system chipset, the CPU and other components installed on the motherboard.

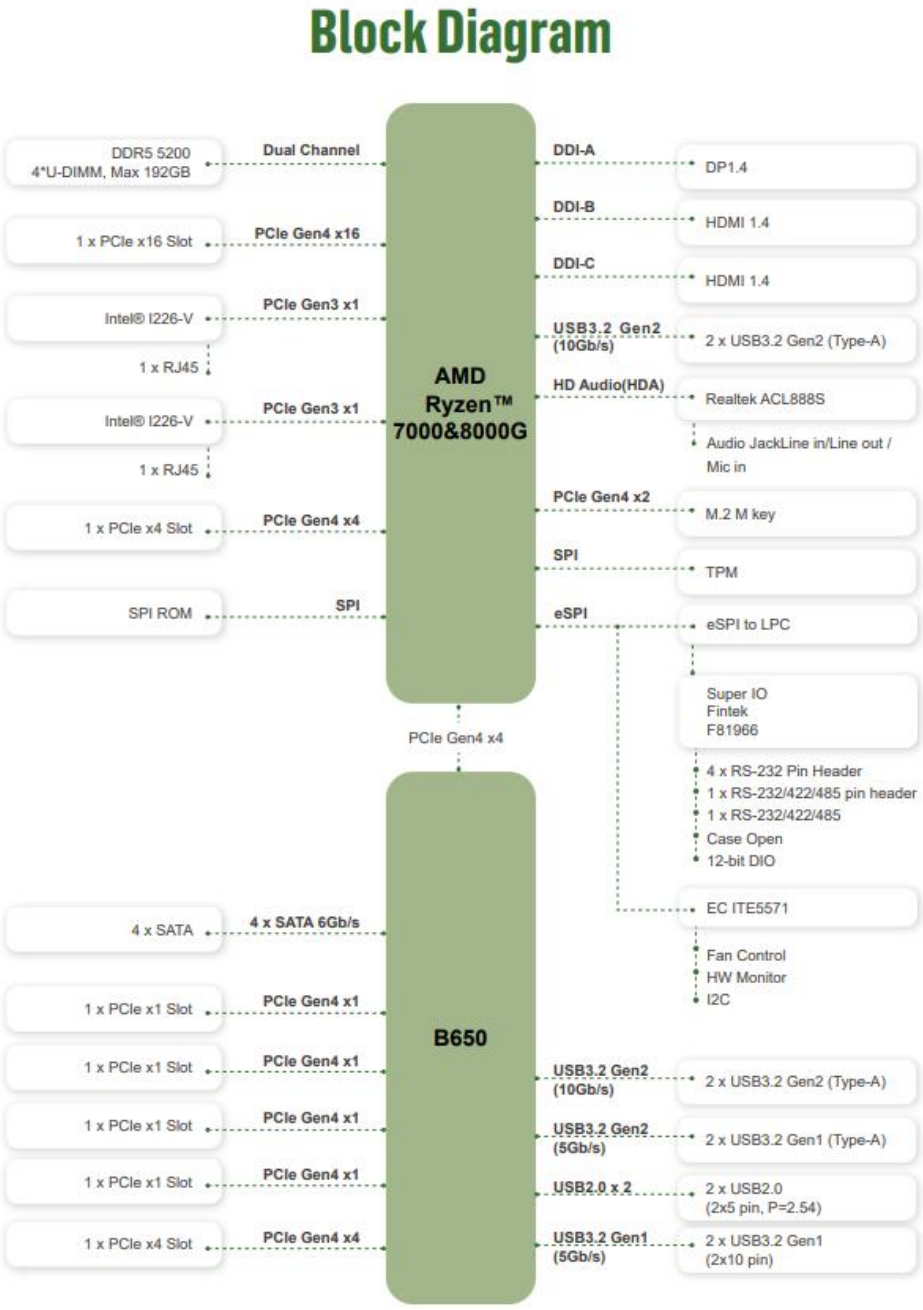


Figure 1-4: Data Flow Diagram

1.6 Technical Specifications

The IMBA-AM5 technical specifications are listed below.

Specification	IMBA-AM5
Form Factor	ATX
CPU Supported	AMD Socket AM5 for AMD Ryzen™ 7000&8000G PHX1&9000Series Desktop Processors
Chipset	B650
Memory	Four 288-pin 5200 MHz Dual-Channel DDR5 SDRAM Unbuffered DIMMs supported up to 192GB
Graphics Engine	Integrated RDNA2 GPU
Display Output	Triple independent display 1 x DP (up to 4096x2304@60Hz) 2 x HDMI (up to 4096x2304@30Hz)
Ethernet Controllers	LAN1: Intel® I226V 2.5GbE controller LAN2: Intel® I226V 2.5GbE controller
Audio	Realtek ALC888S HD Audio codec supports 7.1-channel 3 x Audio jacks (line-out, line-in, mic-in) on rear IO 1 x Front audio (2x5 pin)
BIOS	AMI UEFI BIOS
Watchdog Timer	Software programmable supports 1~255 sec. system reset
Expansions	1 x PCIe Gen4 x16 with x16 Signal（with Ryzen8000G PHX1 only x8 Signal） 2 x PCIe Gen4 x4 open-end 4 x PCIe Gen4 x1 open-end 1 x M.2 M Key (2242/2280, PCIe x2) NVMe support
I/O Interface Connectors	
Audio Connectors	One internal audio connector (10-pin header)
Chassis Intrusion	One 2-pin header

Specification	IMBA-AM5
Digital I/O	12-bit digital I/O
Ethernet	Two RJ-45 GbE ports
Fan	1 x CPU fan connector (1x4 pin) 1 X PUMP fan connector（1x4pin） 2 x System fan connector (1x 4 pin)
Front Panel	1 x Front Panel (2 x 7 pin, Power LED, HDD LED, Speaker, Power Button, Reset Button)
I²C	One 4-pin connector
LAN LED	Two 2-pin headers for LAN1 LED and LAN2 LED
Serial ATA	Four SATA 6Gb/s connectors
Serial Ports	4 x RS-232 (2x5 pin, P=2.54) 1 x RS-232/422/485 (RS-485 support AFC) 1 x RS-232/422/485 (2 x 5, P=2.54) (RS-485 support AFC)
SMBus	One 4-pin connector
USB Ports	4 x USB 3.2 Gen2 (Type-A) (10Gb/s) 2 x USB 3.2 Gen1 (Type-A) (5Gb/s) 2 x USB 3.2 Gen1 (2 x 10 pin) (5Gb/s) 2 x USB 2.0 (2x4 pin, P=2.54)
Environmental and Power Specifications	
Power Supply	AT/ATX power supply
Power Consumption	3.3V@1.62A, 5V@11.63A, 12V@19.46A, 5VSB@0.04A (AMD Ryzen 9 7950X; AMD Ryzen 9 7900 CPU with Apacer D12.35306H.001 32GB DDR5 5600 CL46 memory)
Operating Temperature	0ºC ~ 60ºC
Storage Temperature	-30ºC ~ 70ºC
Operating Humidity	5% ~ 95% (non-condensing)
Physical Specifications	
Dimensions	244 mm x 305 mm

Specification	IMBA-AM5
Weight (GW/NW)	1200g / 700g

Table 1-1: IMBA-AM5 Specifications

Chapter

2

Packing List

2.1 Anti-static Precautions

WARNING!

Static electricity can destroy certain electronics. Make sure to follow the ESD precautions to prevent damage to the product, and injury to the user.

Make sure to adhere to the following guidelines:

- ***Wear an anti-static wristband***: Wearing an anti-static wristband can prevent electrostatic discharge.
- ***Self-grounding***: Touch a grounded conductor every few minutes to discharge any excess static buildup.
- ***Use an anti-static pad***: When configuring any circuit board, place it on an anti-static mat.
- ***Only handle the edges of the PCB***: Don't touch the surface of the motherboard. Hold the motherboard by the edges when handling.

2.2 Unpacking Precautions

When the IMBA-AM5 is unpacked, please do the following:

- Follow the anti-static guidelines above.
- Make sure the packing box is facing upwards when opening.
- Make sure all the packing list items are present.

2.3 Packing List

NOTE:

If any of the components listed in the checklist below are missing, do not proceed with the installation. Contact the IEI reseller or vendor the IMBA-AM5MBA-AM5 was purchased from or contact an IEI sales representative directly by sending an email to sales@ieiworld.com.

The IMBA-AM5 is shipped with the following components:

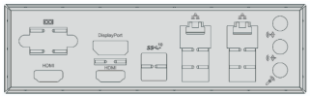
Quantity	Item and Part Number	Image
1	IMBA-AM5 single board computer	
2	SATA cable	
1	I/O shielding	

Table 2-1: Packing List

2.4 Optional Items

The following are optional components which may be separately purchased:

Item and Part Number	Image
RS-232 cable, 230mm, P=2.54 (**P/N**: 32205-000702-200-RS)	

Item and Part Number	Image
USB 3.0 cable 450mm with bracket (**P/N**: 19800-010500-200-RS)	
Dual port USB cable with bracket, 300mm, P=2.54 (**P/N**: 19800-003100-100-RS)	
Cooler module (**P/N**: 19100-000344-00-RS)	
Cooler module (**P/N**: 19100-000345-00-RS)	
Cooler module (**P/N**: 19100-000348-00-RS)	
Cooler module (**P/N**: 19100-000338-00-RS)	

Table 2-2: Optional Items

Chapter

3

Installation

3.1 Anti-static Precautions

WARNING:

Failure to take ESD precautions during the installation of the IMBA-AM5 may result in permanent damage to the IMBA-AM5 and severe injury to the user.

Electrostatic discharge (ESD) can cause serious damage to electronic components, including the IMBA-AM5. Dry climates are especially susceptible to ESD. It is therefore critical that whenever the IMBA-AM5 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 IMBA-AM5, place it on an anti-static pad. This reduces the possibility of ESD damaging the IMBA-AM5.
- ***Only handle the edges of the PCB***: When handling the PCB, hold the PCB by the edges.

3.2 Installation Considerations

NOTE:

The following installation notices and installation considerations should be read and understood before installation. All installation notices must be strictly adhered to. Failing to adhere to these precautions may lead to severe damage and injury to the person performing the installation.

WARNING:

The installation instructions described in this manual should be carefully followed in order to prevent damage to the components and injury to the user.

Before and during the installation please **DO** the following:

- Read the user manual:
  - The user manual provides a complete description of the IMBA-AM5 installation instructions and configuration options.
- Wear an electrostatic discharge cuff (ESD):
  - Electronic components are easily damaged by ESD. Wearing an ESD cuff removes ESD from the body and helps prevent ESD damage.
- Place the IMBA-AM5 on an anti-static pad:
  - When installing or configuring the motherboard, place it on an anti-static pad. This helps to prevent potential ESD damage.
- Turn all power to the IMBA-AM5 off:
  - When working with the IMBA-AM5, make sure that it is disconnected from all power supplies and that no electricity is being fed into the system.

Before and during the installation of the IMBA-AM5, **DO NOT:**

- Remove any of the stickers on the PCB board. These stickers are required for warranty validation.
- Use the product before verifying all the cables and power connectors are properly connected.
- Allow screws to come in contact with the PCB circuit, connector pins, or its components.

3.3 Internal Peripheral Device Connections

This section outlines the installation of peripheral devices to the onboard connectors.

3.3.1 SATA Drive Connection

The IMBA-AM5 is shipped with two SATA drive cables. To connect the SATA drives to the connectors, please follow the steps below.

Step 1: **Locate the connectors**. The locations of the SATA drive connectors are shown in **Chapter 3**.

Step 2: **Insert the cable connector**. Insert the cable connector into the on-board SATA drive connector until it clips into place. See **Figure 3-1**.

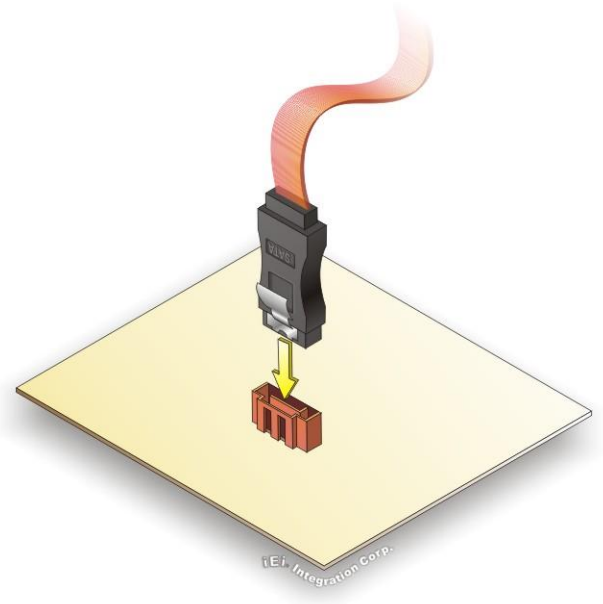


Figure 3-1: SATA Drive Cable Connection

Step 3: **Connect the cable to the SATA disk**. Connect the connector on the other end of the cable to the connector at the back of the SATA drive. See **Figure 3-2**.

Step 4: **Connect the SATA power cable**. Connect the SATA power connector to the back of the SATA drive. See **Figure 3-2**.

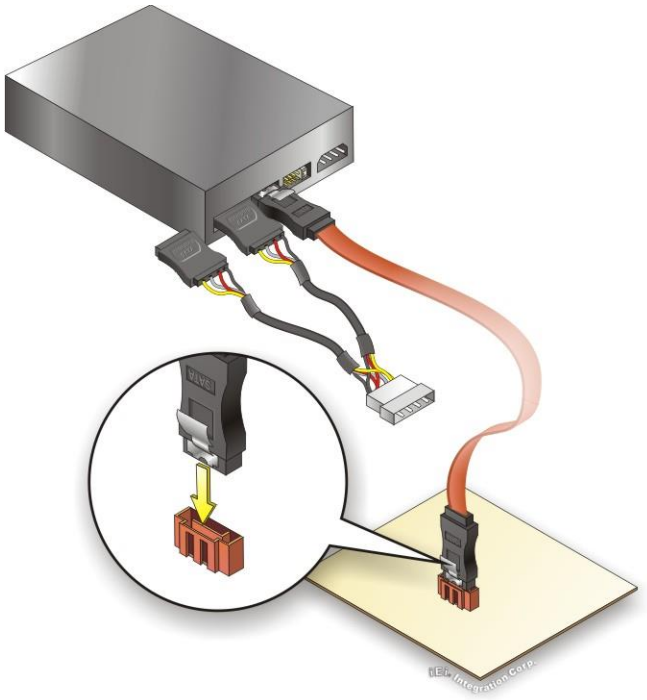


Figure 3-2: SATA Power Drive Connection

The SATA power cable can be bought from IEI. See Optional Items in Section 2.4.

3.4 Socket AM5 CPU Installation

WARNING:

CPUs are expensive and sensitive components. When installing the CPU please be careful not to damage it in anyway. Make sure the CPU is installed properly and ensure the correct cooling kit is properly installed.

DO NOT touch the pins at the bottom of the CPU. When handling the CPU, only hold it on the sides.

To install the CPU, follow the steps below.

Step 1: **Disengage the load lever** by pressing the lever down and slightly outward to clear the retention tab. Fully open the lever. See **Figure 3-3.**

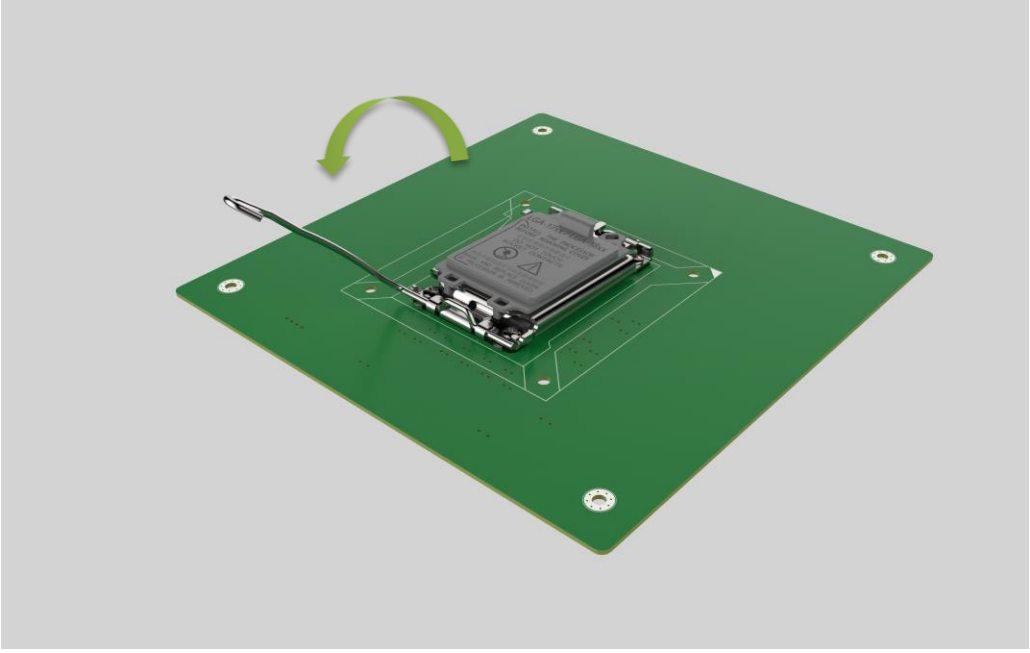


Figure 3-3: Disengage the CPU Socket Load Lever

Step 2: **Open the socket and remove the protective cover.** The black protective cover can be removed by pulling up on the tab labeled "Remove". See **Figure 3-4**.

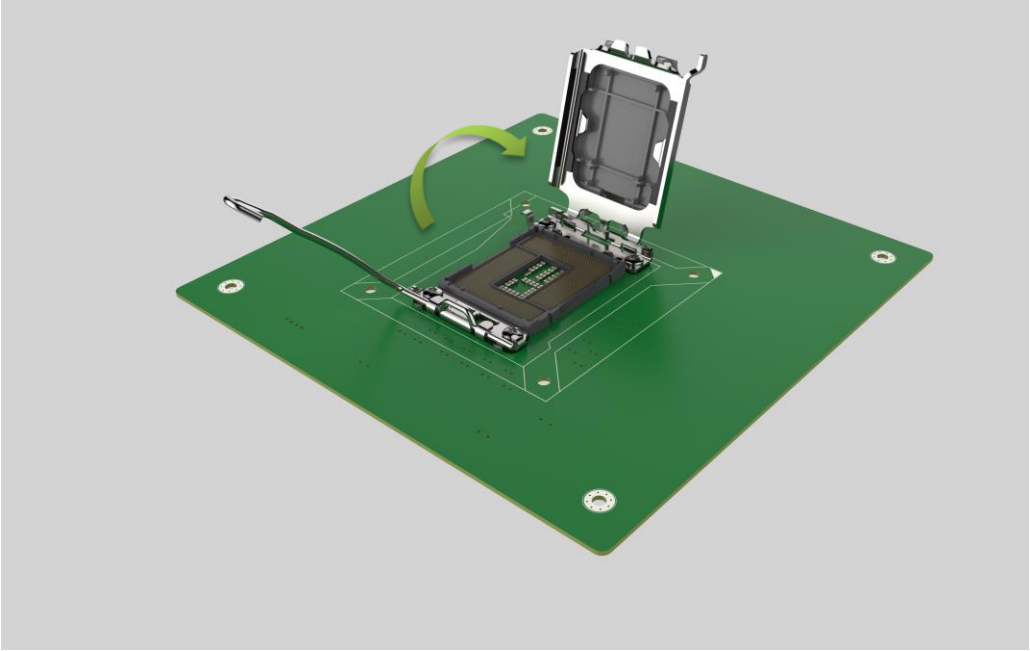


Figure 3-4: Remove Protective Cover

Step 3: **Inspect the CPU socket.** Make sure there are no bent pins and make sure the socket contacts are free of foreign material. If any debris is found, remove it with compressed air.

Step 4: **Orientate the CPU properly.** The contact array should be facing the CPU socket.

WARNING:

DO NOT touch the pins at the bottom of the CPU. When handling the CPU, only hold it on the sides.

Step 5: **Correctly position the CPU.** Match the Pin 1 mark with the cut edge on the CPU socket.

Step 6: **Align the CPU pins.** Locate pin 1 and the two orientation notches on the CPU. Carefully match the two orientation notches on the CPU with the socket alignment keys.

Step 7: **Insert the CPU.** Gently insert the CPU into the socket. If the CPU pins are properly aligned, the CPU should slide into the CPU socket smoothly. See **Figure 3-5.**

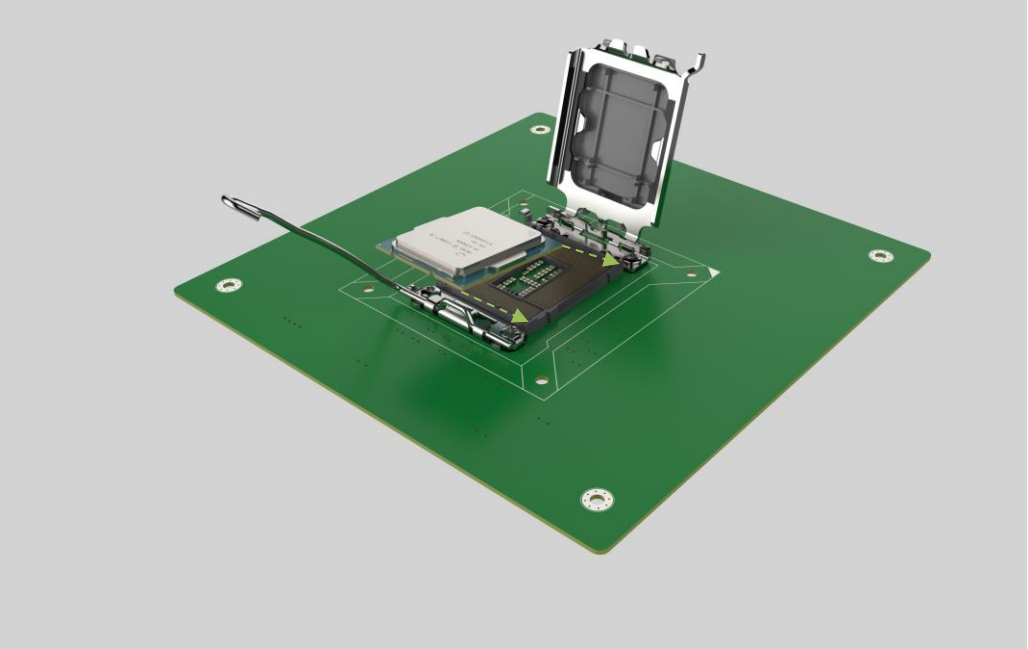


Figure 3-5: Insert the Socket AM5 CPU

Step 8: **Close the CPU socket.** Close the load plate and pull the load lever back a little to have the load plate be able to secure to the knob. Engage the load lever by pushing it back to its original position (**Figure 3-6**). There will be some resistance, but will not require extreme pressure.

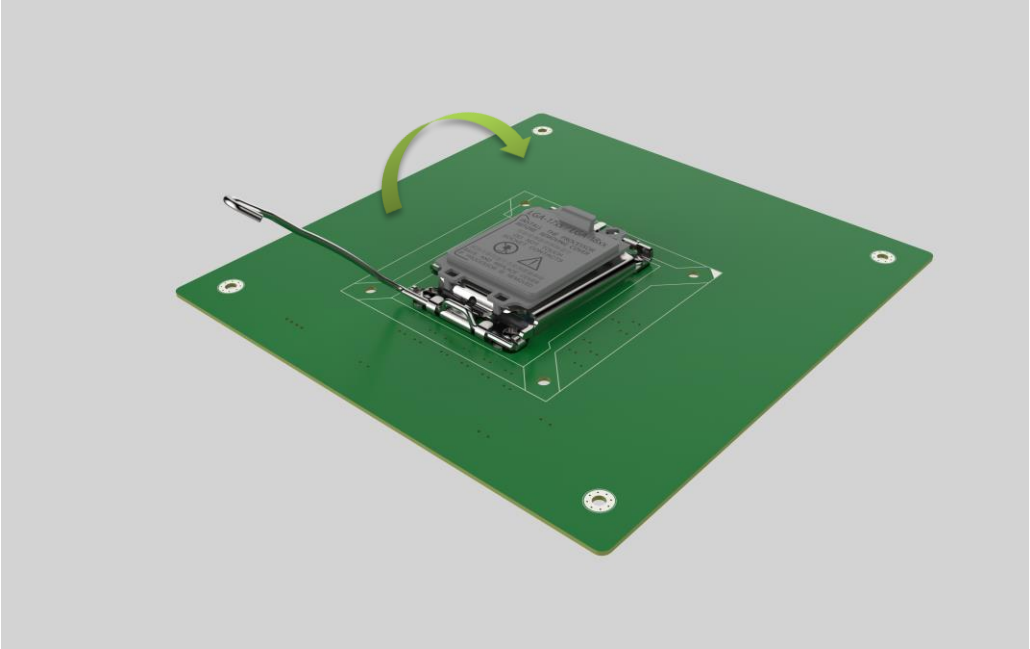


Figure 3-6: Close the Socket AM5

Step 9: **Connect the 12 V power to the board.** Connect the 12 V power from the power supply to the board.

3.5 Socket AM5 Cooling Kit Installation

WARNING:

DO NOT attempt to install a push-pin cooling fan.

The pre-installed support bracket prevents the board from bending and is ONLY compatible with captive screw type cooling fans.

The cooling kit can be bought from IEI. The cooling kit has a heat sink and fan.

WARNING:

Do not wipe off (accidentally or otherwise) the pre-sprayed layer of thermal paste on the bottom of the heat sink. The thermal paste between the CPU and the heat sink is important for optimum heat dissipation.

To install the cooling kit, follow the instructions below.

Step 1: A cooling kit bracket is pre-installed on the rear of the motherboard. See **Figure 3-7.**

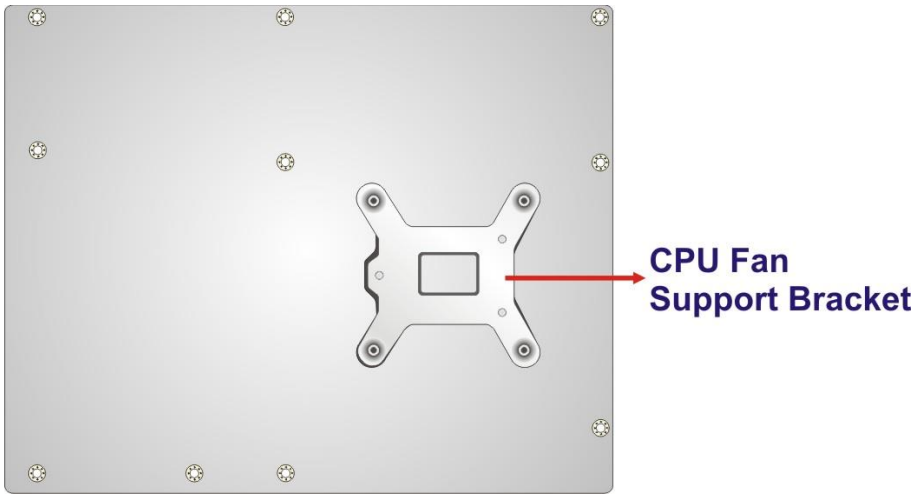


Figure 3-7: Cooling Kit Support Bracket

Step 2: **Place the cooling kit onto the socket AM5 CPU**. Make sure the CPU cable can be properly routed when the cooling kit is installed.

Step 3: **Mount the cooling kit**. Gently place the cooling kit on top of the CPU. Make sure the four threaded screws on the corners of the cooling kit properly pass through the holes of the cooling kit bracket.

Step 4: **Tighten the screws**. Use a screwdriver to tighten the four screws. In a diagonal pattern, tighten each screw a few turns then move to the next one, until they are all secured. Do not overtighten the screws.

Step 5: **Connect the fan cable**. Connect the cooling kit fan cable to the CPU fan connector on the IMBA-AM5MBA-AM5. Carefully route the cable and avoid heat generating chips and fan blades.

3.6 DIMM Installation

To install a DIMM, please follow the steps below and refer to **Figure 3-8**.

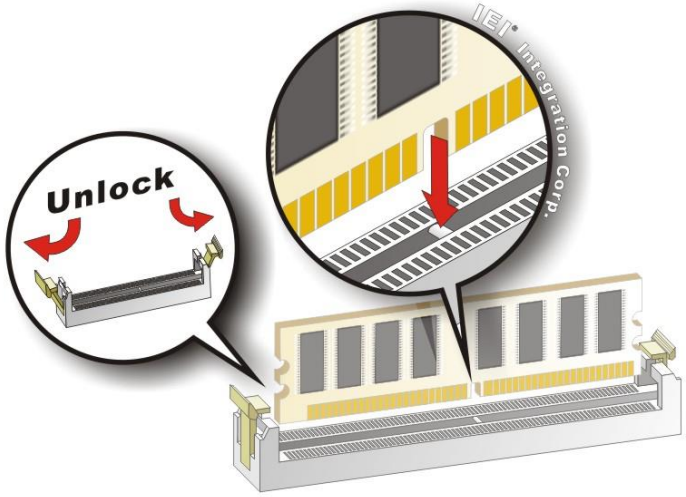


Figure 3-8: DIMM Installation

Step 1: **Open the DIMM socket handles**. Open the two handles outwards as far as they can. See **Figure 3-8**.

Step 2: **Align the DIMM with the socket**. Align the DIMM so the notch on the memory lines up with the notch on the memory socket. See **Figure 3-8**.

Step 3: **Insert the DIMM**. Once aligned, press down until the DIMM is properly seated. Clip the two handles into place. See **Figure 3-8**.

Step 4: **Removing a DIMM**. To remove a DIMM, push both handles outward. The memory module is ejected by a mechanism in the socket.

CAUTION:

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

3.7 M.2 Module Installation

To install the M.2 expansion card, follow the steps below.

Step 1: Locate the M.2 module slot. See **Chapter 3**.

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 3-9)**.

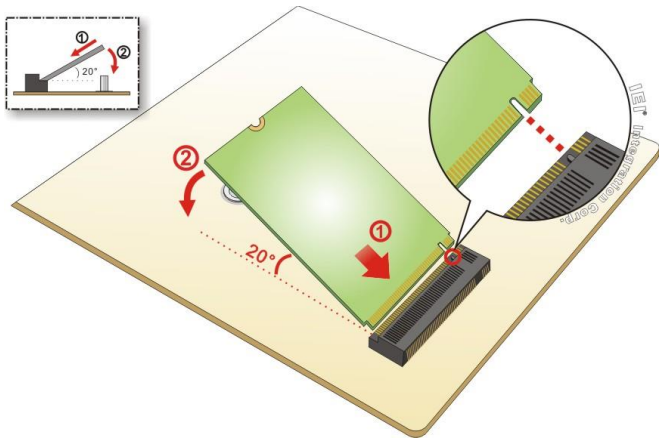


Figure 3-9: Inserting the M.2 Module into the Slot at an Angle

Step 4: Secure the M.2 module with the previously removed retention screw (**Figure 3-10**).

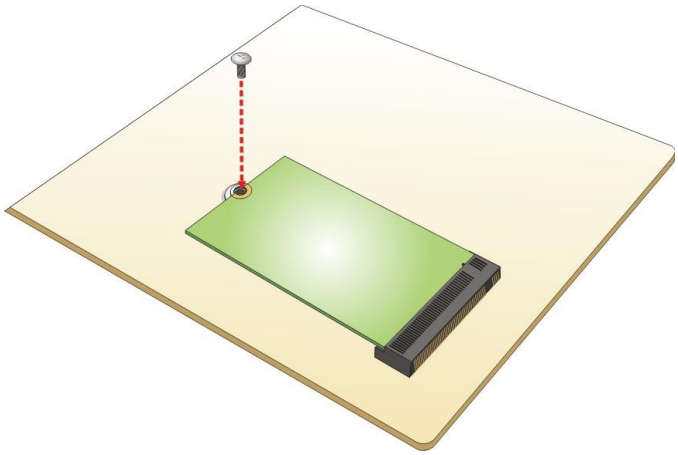


Figure 3-10: Securing the M.2 Module

3.8 Software Installation

All the drivers for the IMBA-AM5MBA-AM5 are available on IEI Resource Download Center (https://download.ieiworld.com). Type IMBA-AM5 and press Enter to find all the relevant software, utilities, and documentation.

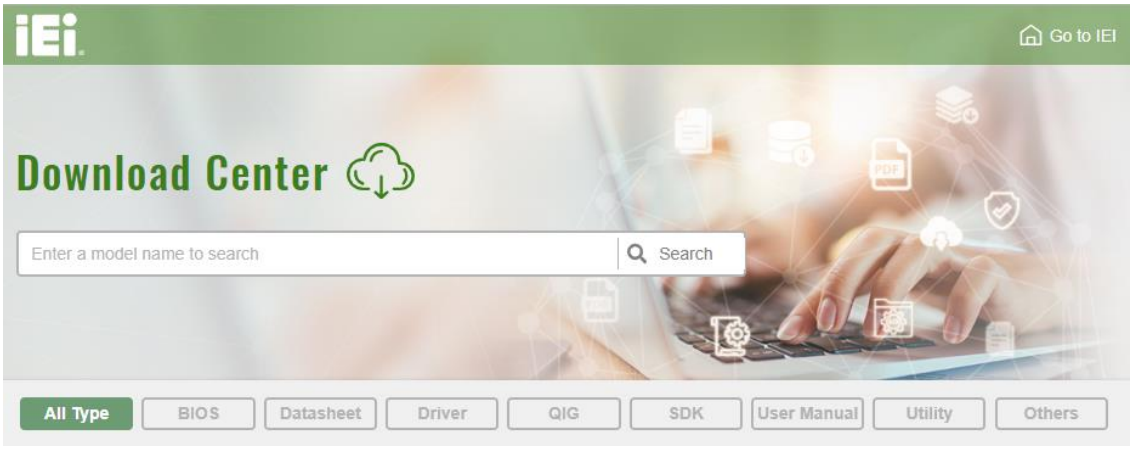
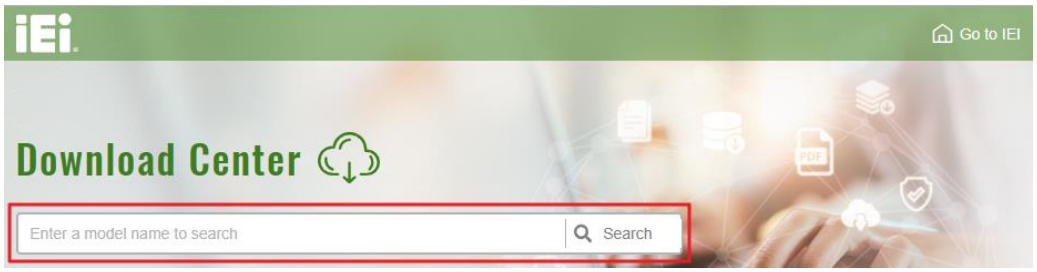


Figure 3-11: IEI Resource Download Center

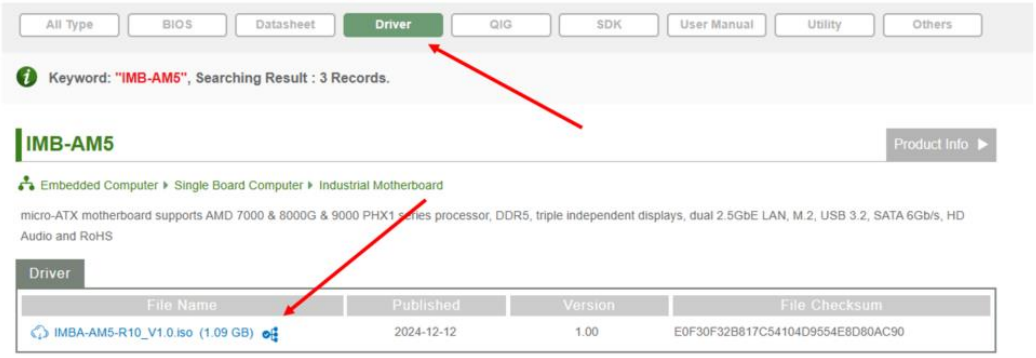
3.9 Driver Download

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

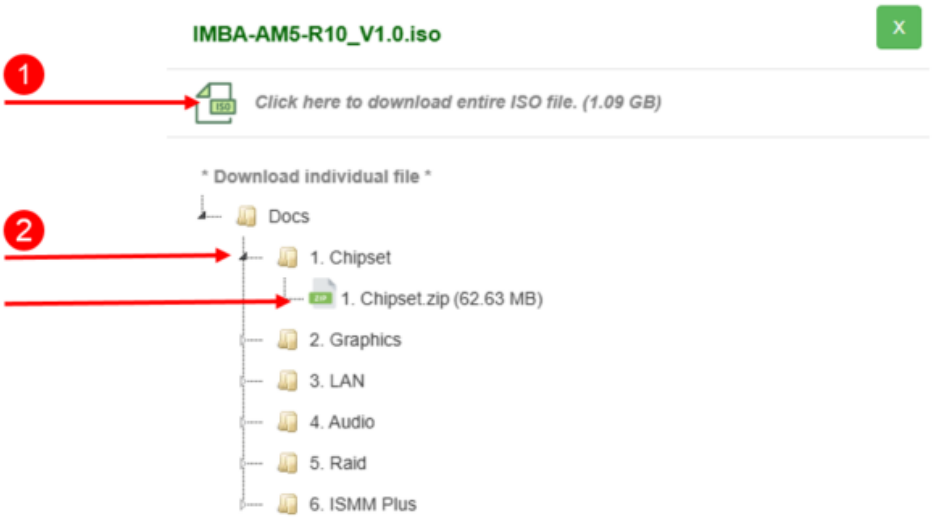
Step 1: Go to https://download.ieiworld.com. Type IMBA-AM5MBA-AM5 and press Enter.



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 (O), or click the small arrow to find an individual driver and click the file name to download (O).



NOTE:

To install software from the downloaded ISO image file in Windows 8, 8.1 or 10, double-click the ISO file to mount it as a virtual drive to view its content. On Windows 7 system, an additional tool (such as Virtual CD-ROM Control Panel from Microsoft) is needed to mount the file.

Chapter

5

Connectors

4.1 Peripheral Interface Connectors

This chapter details all the peripheral interface connectors.

4.1.1 IMBA-AM5 Layout

The figure below show all the peripheral interface connectors.

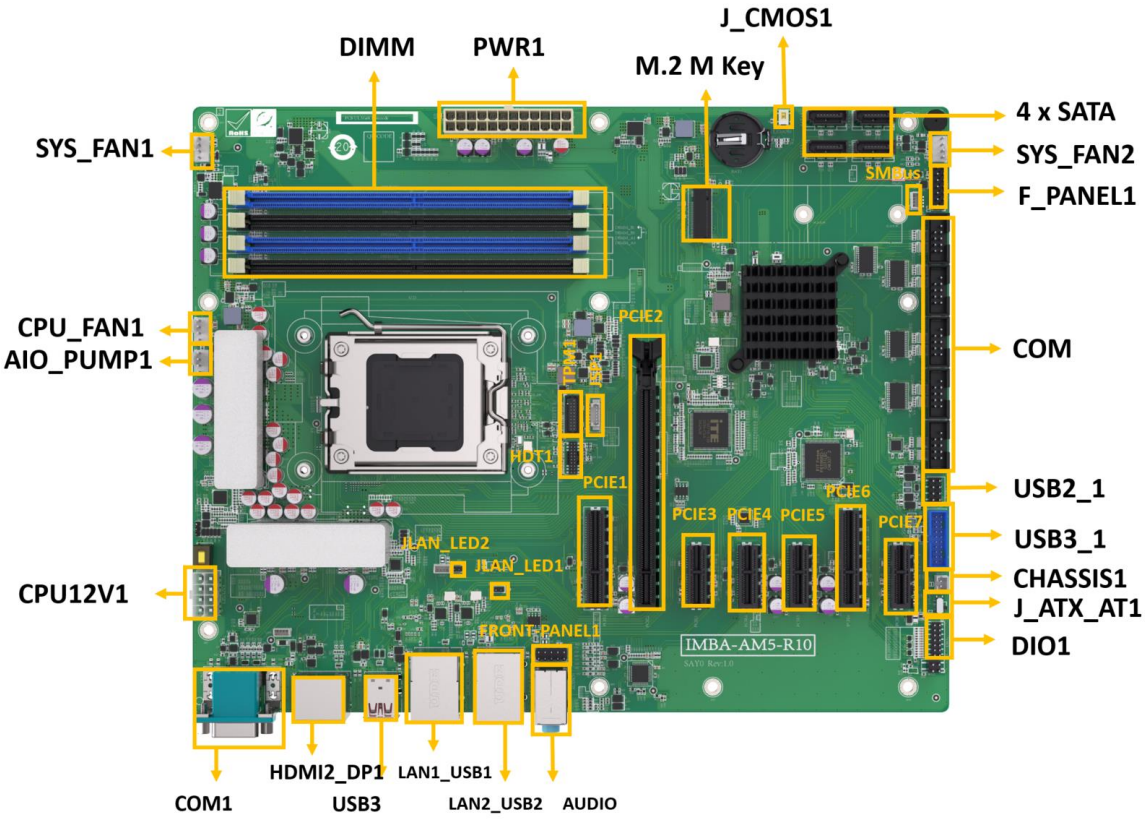


Figure 4-1: Peripheral Interface Connectors

4.1.2 Peripheral Interface Connectors

The table below lists all the connectors on the board.

Connector	Type	Label
AT/ATX power mode setting	3-pin switch	J_ATX_AT1
Clear CMOS jumper	Button	J_CMOS1
Audio connector	10-pin header	FRONT-PANEL1

Connector	Type	Label
ATX power connector	24-pin connector	PWR1
ATX CPU 12V power connector	8-pin Molex power connector	CPU12V1
RTC battery connector	2-pin header	BAT1
Chassis intrusion connector	2-pin header	CHASSIS1
DDR5 DIMM slots	288-pin socket	DIMM_A0, DIMM_A1, DIMM_B0, DIMM_B1
Digital I/O connector	14-pin header	DIO1
Trusted Platform Module Connector	20-pin header	TPM1
HDT CONNECTOR	20-pin header	HDT1
Fan connectors	4-pin header	CPU_FAN1, SYS_FAN1 SYS_FAN2
Front panel connector	14-pin header	F_PANEL1
PUMP connector	4-pin header	AIO_PUMP1
LAN1 link LED connector	2-pin header	JLAN_LED1
LAN2 link LED connector	2-pin header	JLAN_LED2
RS-232 serial port connectors	9-pin header	COM3-6
RS-232/422/485 connectors	9-pin header	COM2
SATA 6Gb/s connectors	8-pin SATA connector	SATA1, SATA2, SATA3, SATA4
SMBus connector	4-pin wafer	J_SMB1
Flash SPI ROM connector	6-pin header	JSPI1
M.2 M key slots	M-key slot	M2_M1
PCIe x1 slots	PCIe Slot	PCIE3, PCIE4 PCIE5,PCIE7
PCIe x4 slots	PCIe Slot	PCIE1, PCIE6

Connector	Type	Label
PCIe x16 slot	PCIe Slot	PCIE2
Onboard power button	Push button	PWR_BTN1
SMBUS Connector	4-pin wafer	SMBUS1

Table 4-1: Peripheral Interface Connectors

4.1.3 External Interface Panel Connectors

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

Connector	Type	Label
External audio jacks	Audio jacks	AUDIO1
External 2.5GbE RJ-45 and dual USB 10Gb/s combo connector	USB 3.2, RJ45	LAN1_USB1, LAN2_USB2
External dual USB 5Gb/s connector	USB 3.2	USB3
External HDMI and DP combo connector	HDMI, DP	HDMI2_DP1
External Serial Port Connector and HDMI connector	COM,HDMI	HDMI1,COM1

Table 4-2: Rear Panel Connectors

4.3 Internal Peripheral Connectors

The section describes all of the connectors on the IMBA-AM5.

4.3.1 Clear CMOS Button

CN Label:	**J_CMOS1**
CN Type:	Button
CN Location:	See **Figure 4-2**
CN Pinouts:	See **Table 4-3**

The J_CMOS1 is used to clear CMOS setup.

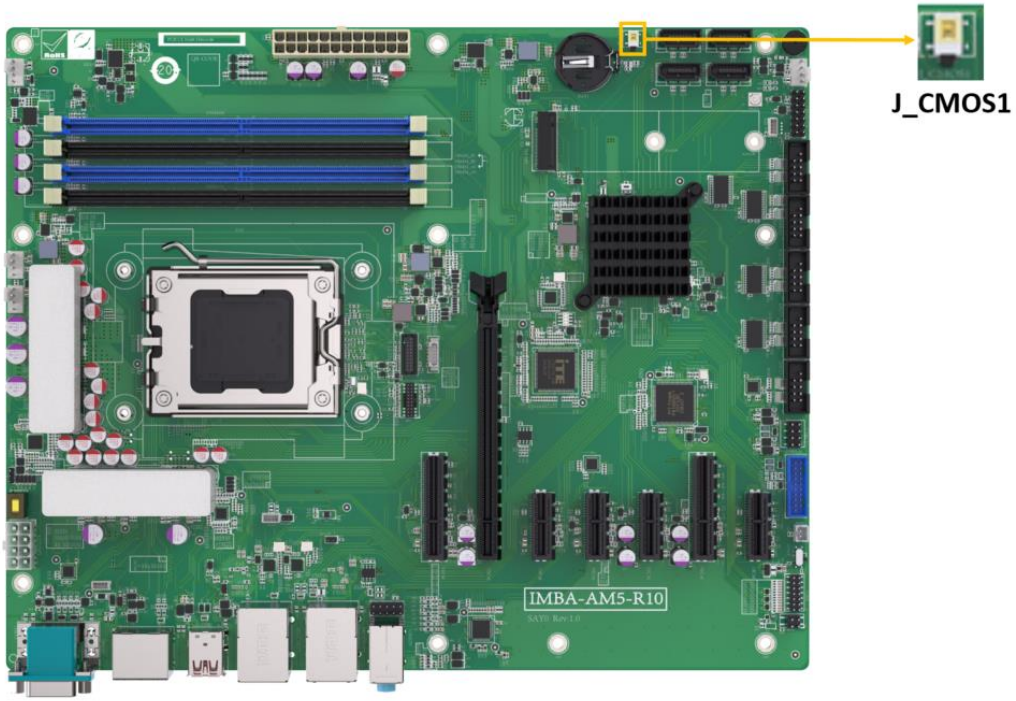


Figure 4-2: Clear CMOS Jumper Location

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

Pin	Description

Table 4-3: Clear CMOS Jumper Pinouts

4.3.2 AT/ATX Power Mode Setting

CN Label: **J_ATX_AT1**

CN Type: 3-pin switch

CN Location: See **Figure 4-3**

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

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

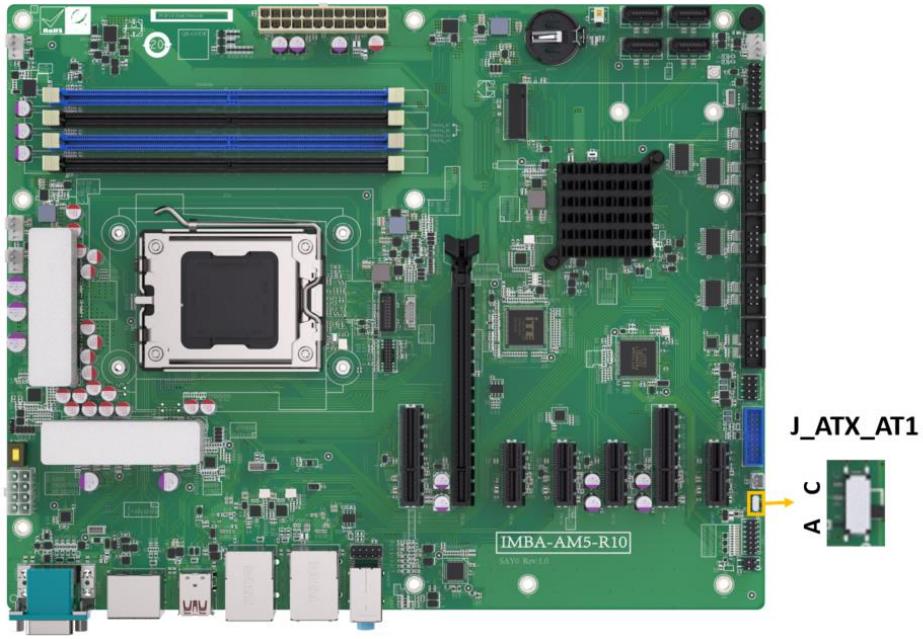


Figure 4-3: AT/ATX Power Mode Switch Locations

Pin	Description	Pin	Description
Short A - B	ATX Power Mode (default)	Short B - C	AT Power Mode

Table 4-4: AT/ATX Power Mode Switch Settings

4.3.3 Front Panel Connector

CN Label: **F_PANEL1**

CN Type: 14-pin header, p=2.54 mm

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

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

The front panel connector connects to the indicator LEDs and buttons on the computer's front panel.

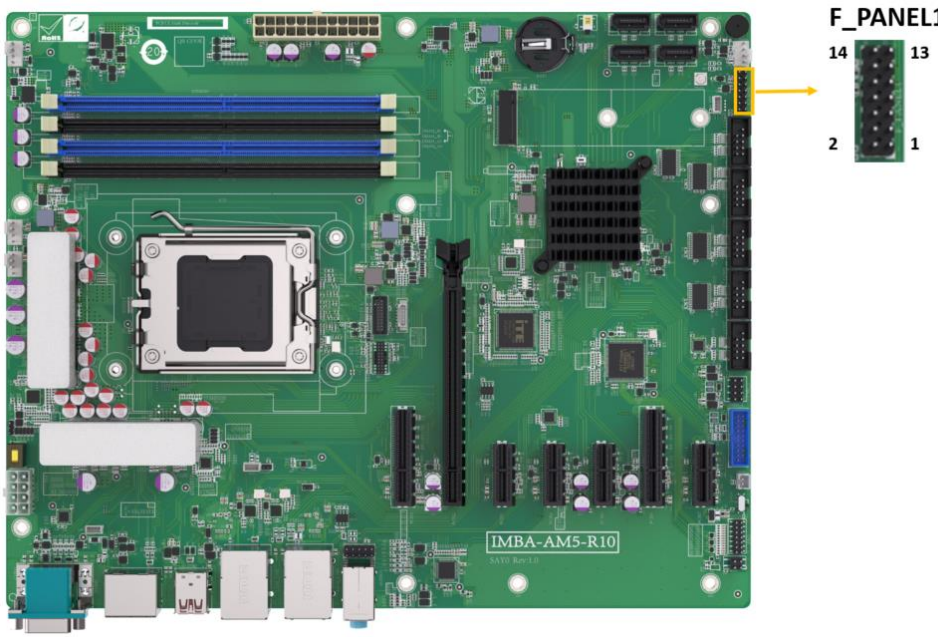


Figure 4-4: Front Panel Connector Location

Pin	Description	Function	Pin	Description
1	PWR_LED+	SPKR	2	SPKR+
3	NC	SPKR	4	NC
5	PWR_LED-		6	NC
7	PWR_BTN+	SPKR	8	SPKR-
9	PWR_BTN-		10	NC
11	HD_LED+	RESET	12	Reset+
13	HD_LED-		14	Reset-

Table 4-5: Front Panel Connector Pinouts

4.3.4 Hardware Debug Tool Connector

CN Label: **HDT1**

CN Type: 20-pin connector

CN Location: See **Figure 4-5**

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

This connector provides hardware functional testing.

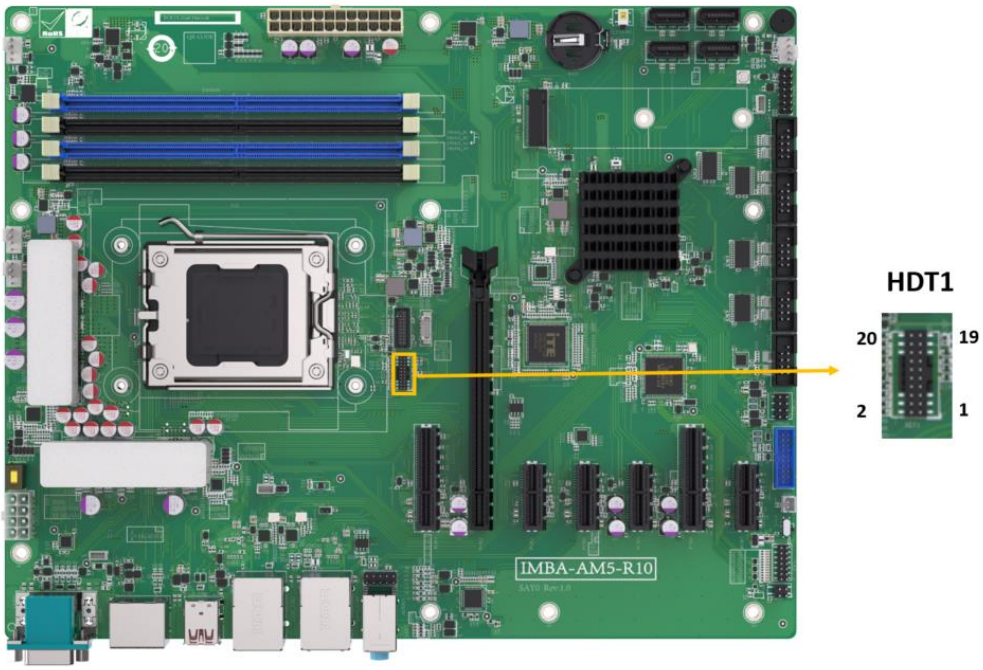


Figure 4-5: CPU 12V Power Connector Location

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	+1.8V	2	APU_TCK
3	GND	4	APU_TMS
5	GND	6	APU_TDI
7	GND	8	APU_TDO
9	APU_TRST#	10	APU_PWROK_BUF
11	Pull down to ground	12	APU_RST_L_BUF
13	Pull down to ground	14	APU_DBRDY

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
15	Pull down to ground	16	HDT_DBREQ_L
17	GND	18	HDT_PLLTEST0
19	+1.8V	20	HDT_PLLTEST1

Table 4-6: Hardware Debug Tool Connector Pinouts

4.3.5 Serial ATA 3.0 Connectors

CN Label: **SATA1, SATA2, SATA3, SATA4**

CN Type: 8-pin SATA connector

CN Location: See **Figure 4-6**

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

The SATA drive connectors can be connected to SATA drives and support up to 6Gb/s data transfer rate.

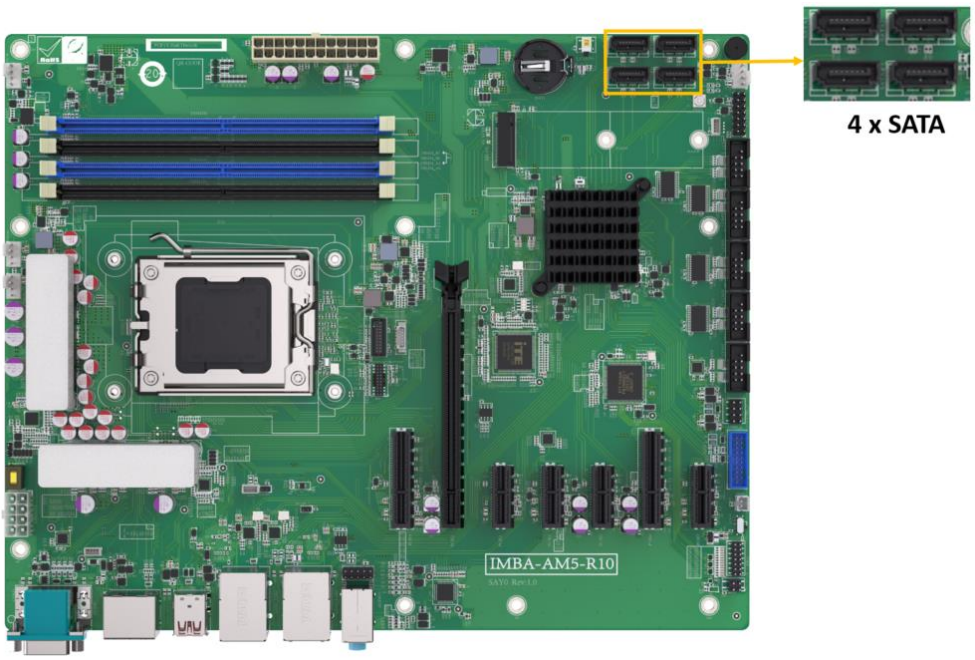


Figure 4-6: SATA 6Gb/s Connector Locations

Pin	Description
1	GND
2	SATA_TX+

Pin	Description
3	SATA_TX-
4	GND
5	SATA_RX-
6	SATA_RX+
7	GND
8	N/C

Table 4-7: SATA 6Gb/s Connector Pinouts

4.3.6 Front Panel Audio Connector

CN Label: **F_PANEL1**

CN Type: 10-pin header, p=2.54 mm

CN Location: See **Figure 4-7**

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

This connector provides a complete integrated audio solution for system.

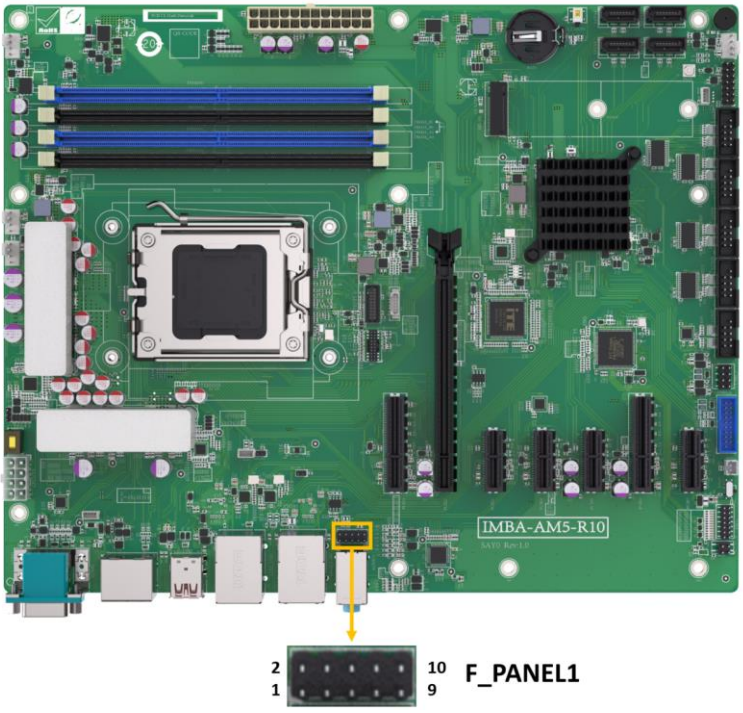


Figure 4-7: Audio Connector Location

Pin	Description	Pin	Description
1	MIC2-L	2	AUD_GND
3	MIC2-R	4	Presence#
5	LINE2-R	6	MIC2-JD
7	FRONT-IO	8	NC
9	LINE2-L	10	LINE2-JD

Table 4-8: Audio Connector Pinouts

4.3.7 Fan Connector (CPU)

CN Label: **CPU_FAN1**

CN Type: 4-pin header, p=2.54 mm

CN Location: See **Figure 4-8**

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

The fan connector attaches to a CPU cooling fan.

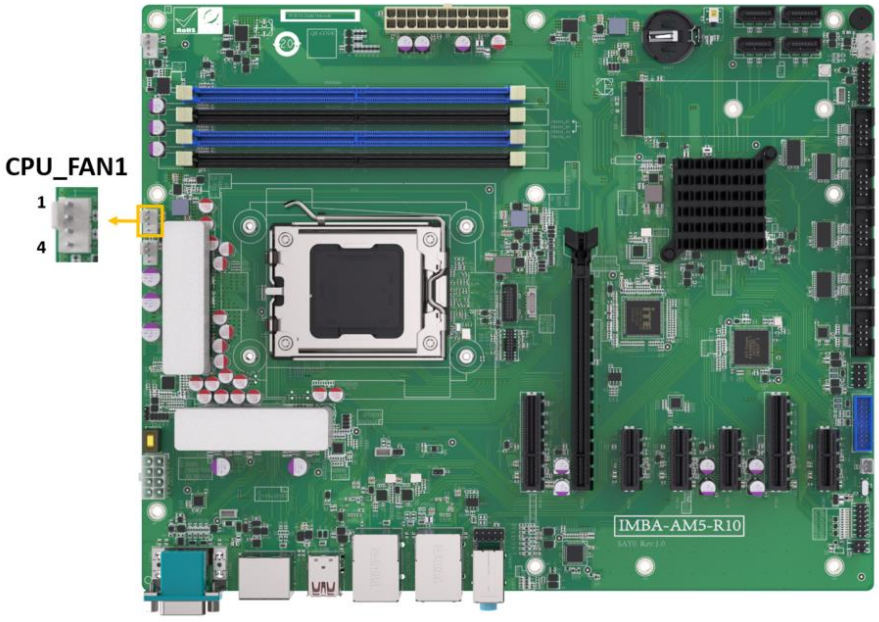


Figure 4-8: CPU Fan Connector Location

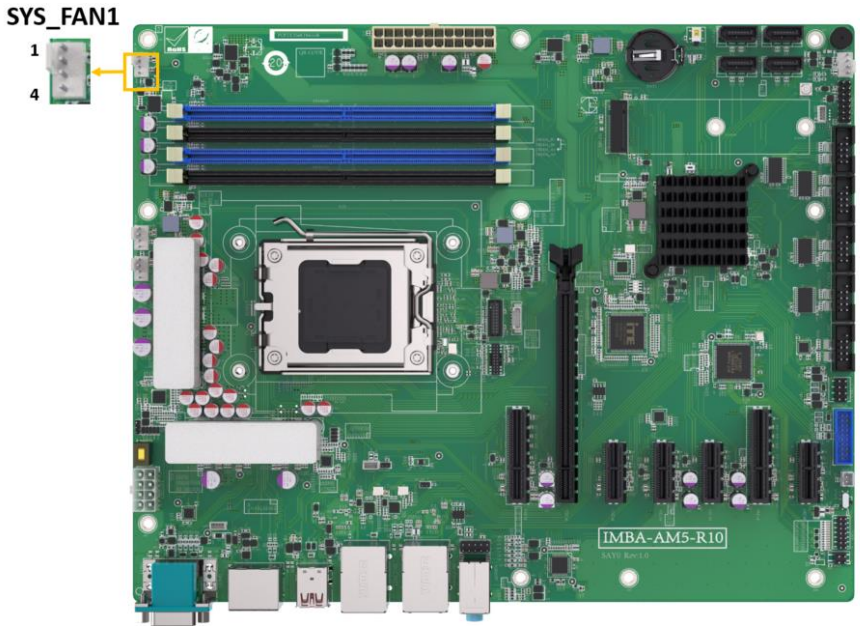
Pin	Description	Pin	Description
1	GND	2	+12V
3	FANIN	4	PWM (+5V)

Table 4-9: CPU Fan Connector Pinouts

4.3.8 Fan Connectors (System)

CN Label:	**SYS_FAN1, SYS_FAN2**
CN Type:	4-pin header, p=2.54 mm
CN Location:	See **Figure 4-9**
CN Pinouts:	See **Table 4-10**

The fan connector attaches to a system cooling fan.



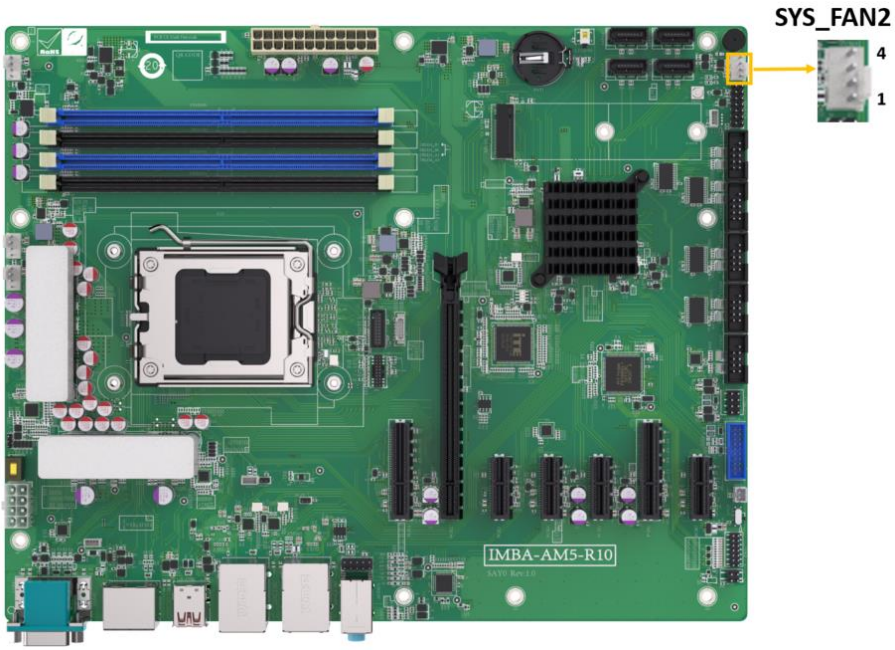


Figure 4-9: System Fan Connector Locations

Pin	Description	Pin	Description
1	GND	2	+12V
3	FANIO	4	PWM (+5V)

Table 4-10: System Fan Connector Pinouts

4.3.9 Pump Connector

CN Label: **AIO_PUMP1**

CN Type: 4-pin header, p=2.54 mm

CN Location: See **Figure 4-10**

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

The pump connector attaches to a water cooling fan.

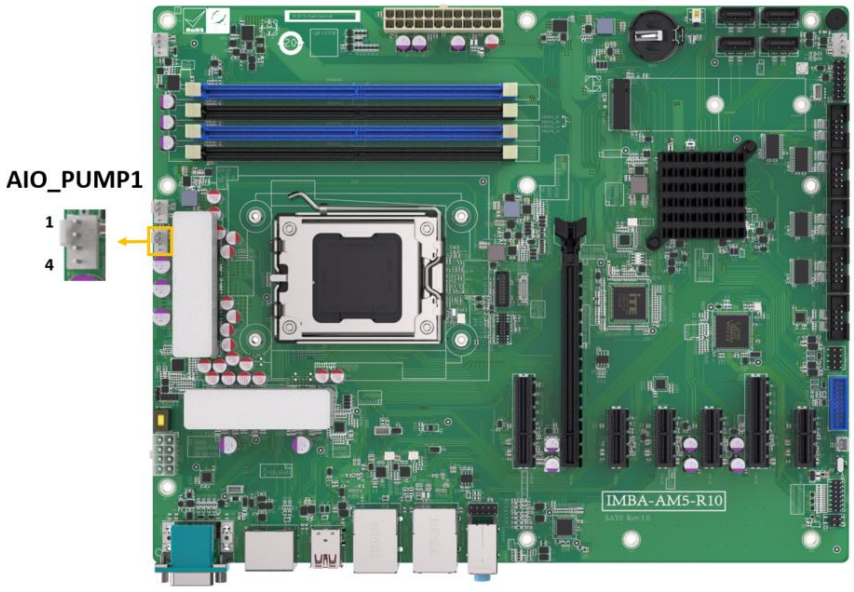


Figure 4-10: Pump Connector Location

Pin	Description	Pin	Description
1	GND	3	FANIO
2	+12V	4	PWM(+5V)

Table 4-11: Pump Connector Pinouts

4.3.10 CPU 12V Power Connector

CN Label: **CPU12V1**

CN Type: 8-pin Molex power connector, p=4.2mm

CN Location: See **Figure 4-11**

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

This connector provides power to the CPU.

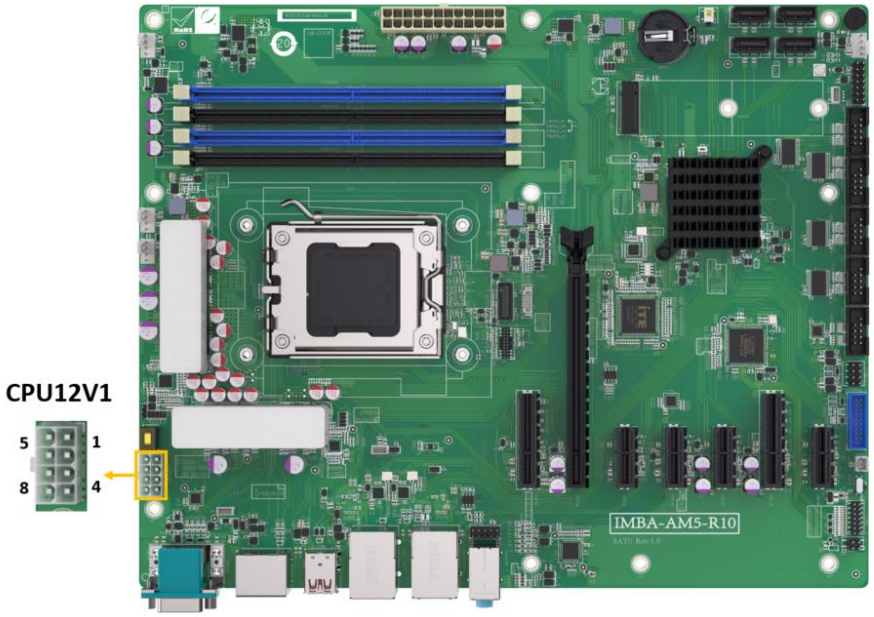


Figure 4-11: CPU 12V Power Connector Location

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	GND	5	+12V
2	GND	6	+12V
3	GND	7	+12V
4	GND	8	+12V

Table 4-12: CPU 12V Power Connector Pinouts

4.3.11 ATX Power Connector

CN Label: **PWR1**

CN Type: 24-pin connector, p=4.2 mm

CN Location: See **Figure 4-12**

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

The ATX power connector connects to an ATX power supply.

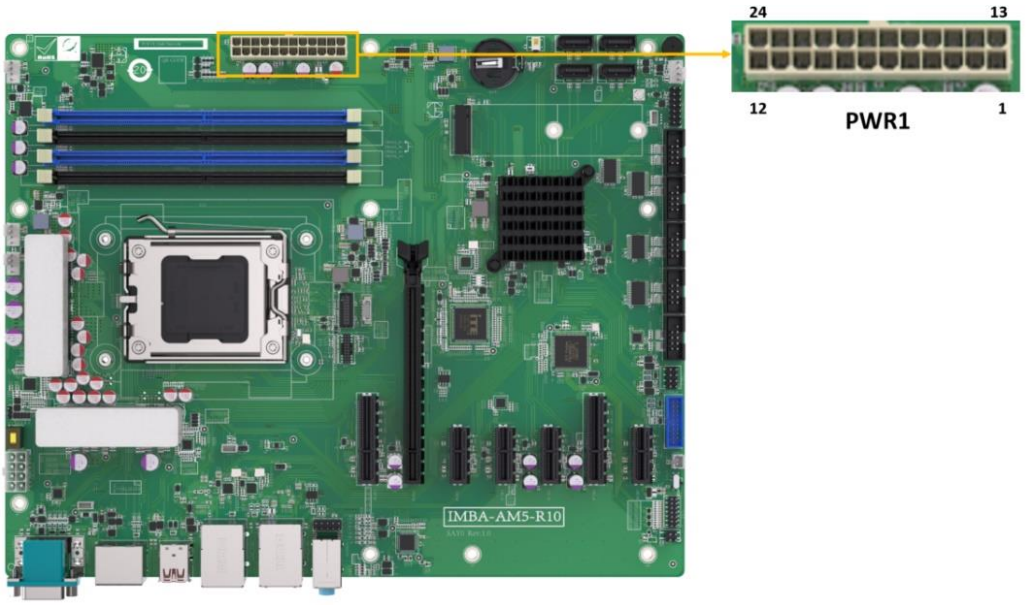


Figure 4-12: ATX Power Connector Location

Pin	Description	Pin	Description
1	+3.3V	13	+3.3V
2	+3.3V	14	-12V
3	GND	15	GND
4	+5V	16	PS_ON
5	GND	17	GND
6	+5V	18	GND
7	GND	19	GND
8	PWRGD_PS	20	-5V
9	5VSB	21	+5V
10	+12V	22	+5V
11	+12V	23	+5V
12	+3.3V	24	GND

Table 4-13: ATX Power Connector Pinouts

4.3.12 SMBus Connector

CN Label: **J_SMB1**

CN Type: 4-pin wafer, p=1.25 mm

CN Location: See **Figure 4-13**

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

The SMBus (System Management Bus) connector provides low-speed system management communications.

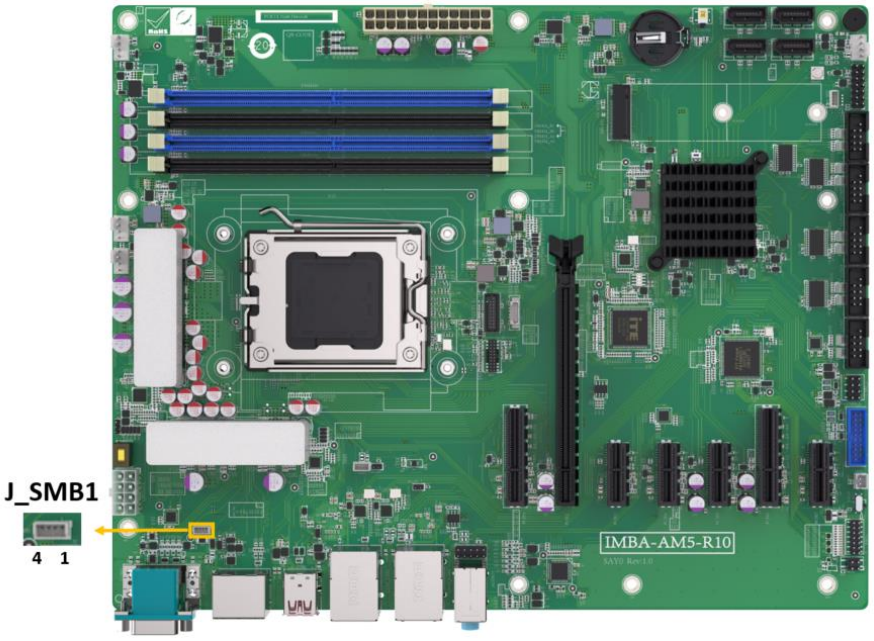


Figure 4-13: SMBus Connector Location

Pin	Description
1	GND
2	SMBUS0_3.3VS0_BUFF_SDA
3	SMBUS0_3.3VS0_BUFF_SCL
4	+5V

Table 4-14: SMBus Connector Pinouts

4.3.13 Chassis Intrusion Connector

CN Label: **CHASSIS1**

CN Type: 2-pin header, p=2.54 mm

CN Location: See **Figure 4-14**

CN Pinouts: See **Table 4-15**

The chassis intrusion connector is for a chassis intrusion detection sensor or switch that detects if a chassis component is removed or replaced.

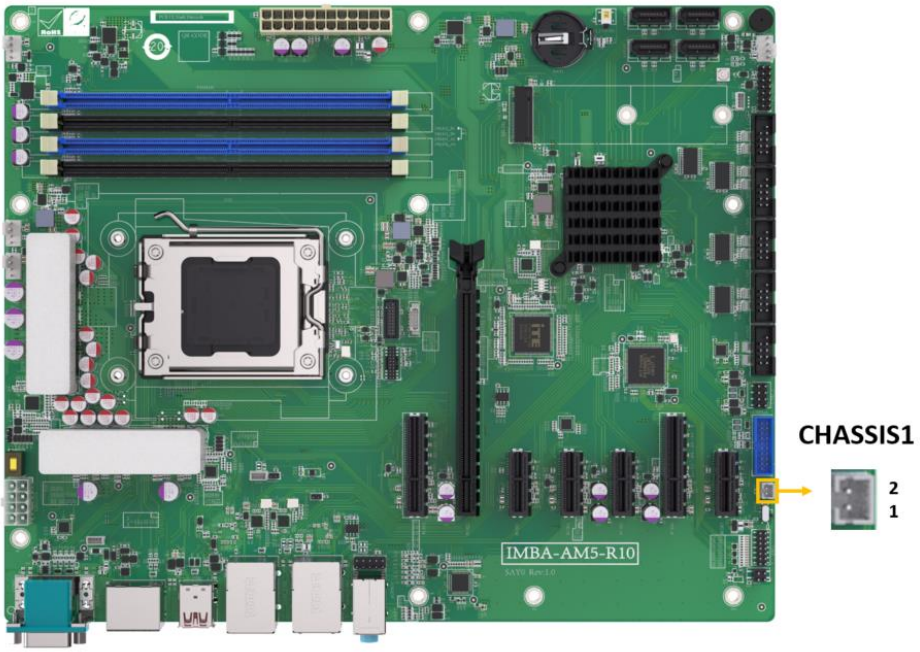


Figure 4-14: Chassis Intrusion Connector Location

Pin	Description	Pin	Description
1	CASEOPEN_N	2	GND

Table 4-15: Chassis Intrusion Connector Pinouts

4.3.14 M.2 M-key Slot

CN Label: **M2_M1**

CN Type: M-key slot

CN Location: See **Figure 4-15**

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

The M.2 2242/2280 slot is keyed in the M position.

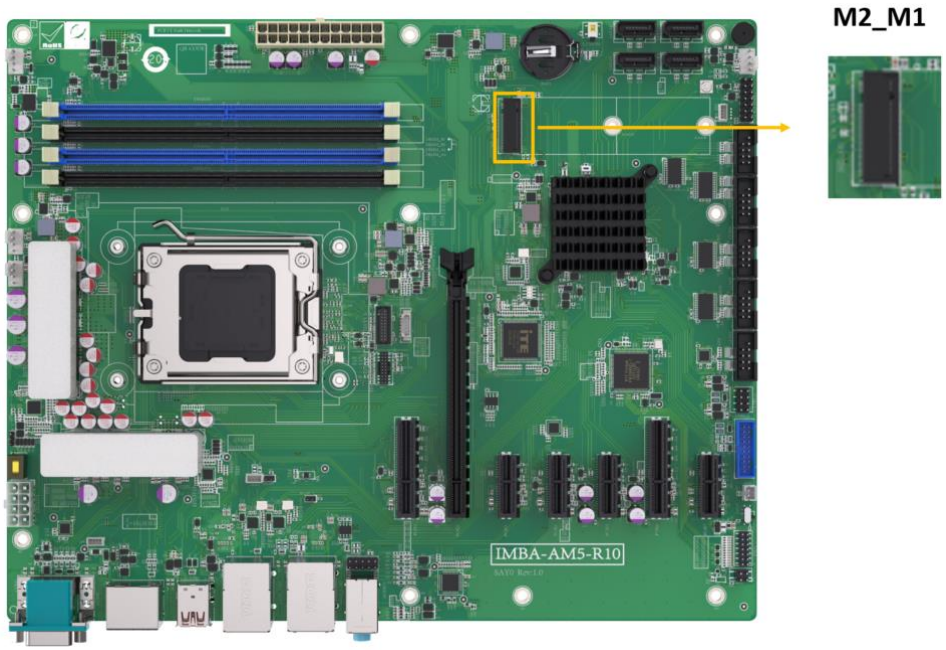


Figure 4-15: M.2 M-key Slot Location

Pin	Description	Pin	Description
1	GND	2	+3.3V
3	GND	4	+3.3V
5	NC	6	NC
7	NC	8	NC
9	GND	10	M2_LED #
11	NC	12	+3.3V
13	NC	14	+3.3V

Pin	Description	Pin	Description
15	GND	16	+3.3V
17	NC	18	+3.3V
19	NC	20	NC
21	GND	22	NC
23	PCIE_AM5_C_TX22N	24	NC
25	PCIE_AM5_C_TX22P	26	NC
27	GND	28	NC
29	NC	30	NC
31	NC	32	NC
33	GND	34	NC
35	PT21_GPP_C_TXN9	36	NC
37	PT21_GPP_C_TXP9	38	NC
39	GND	40	NC
41	PCIE_PT21_RXN8	42	NC
43	PCIE_PT21_RXP8	44	NC
45	GND	46	NC
47	PT21_GPP_C_TXN8	48	NC
49	PT21_GPP_C_TXP8	50	PCIE_M2_RST_L
51	GND	52	PT21_GPP_CLK_REQ #1
53	PT21_SLOT_REFCLK_N1	54	NC
55	PT21_SLOT_REFCLK_P1	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	TP1
69	NC	70	+3.3V
71	GND	72	+3.3V

Pin	Description	Pin	Description
73	GND	74	+3.3V
75	GND		
N1	NC		
N2	NC		

Table 4-16: M.2 M-key Connector Pinouts

4.3.15 Digital I/O Connector

CN Label: **DIO1**

CN Type: 14-pin header, p=2.0 mm

CN Location: See **Figure 4-16**

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

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

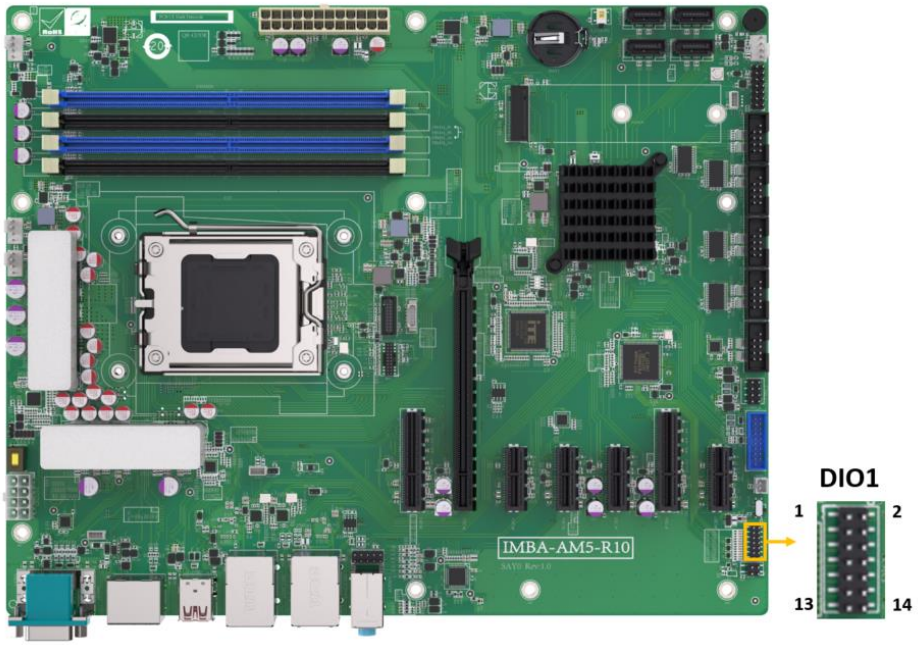


Figure 4-16: Digital I/O Connector Location

Pin	Description	Pin	Description
1	GND	2	VCC
3	Output 5	4	Output 4

Pin	Description	Pin	Description
5	Output 3	6	Output 2
7	Output 1	8	Output 0
9	Input 5	10	Input 4
11	Input 3	12	Input 2
13	Input 1	14	Input 0

Table 4-17: Digital I/O Connector Pinouts

4.3.16 Trusted Platform Module Connector

CN Label: **TPM1**

CN Type: 20-pin header, p=1.27 mm

CN Location: See **Figure 4-17**

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

The TPM1 connector is used to the trusted platform module.

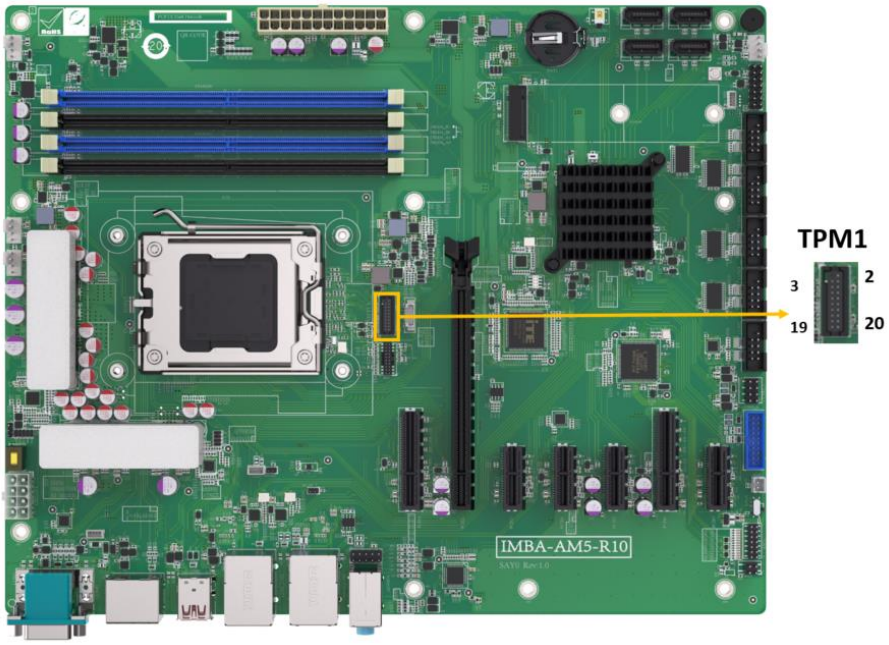


Figure 4-17: Trusted Platform Module Connector Location

Pin	Description	Pin	Description
		2	NC

3	TPM_GPIO	4	NC
5	GND	6	+1.8V
7	SPI_CLK_TPM_R	8	NC
9	NC	10	SPI_MISO_TPM_R
11	NC	12	SPI_MOSI_TPM_R
13	TPM_SPI_CS2_N	14	GND
15	NC	16	NC
17	TPM_IRQ#	18	+1.8V
19	RST_PLTRST_TPM_R_N	20	+1.8V

Table 4-18: Trusted Platform Module Connector Pinouts

4.3.17 Battery Connector

CAUTION:

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

Dispose of used batteries according to instructions and local regulations.

NOTE:

It is recommended to attach the RTC battery onto the system chassis in which the IMBA-AM5 is installed.

CN Label: **BAT1**

CN Type: 2-pin header

CN Location: See **Figure 4-18**

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

A system battery is placed in the battery holder. The battery provides power to the system clock to retain the time when power is turned off.

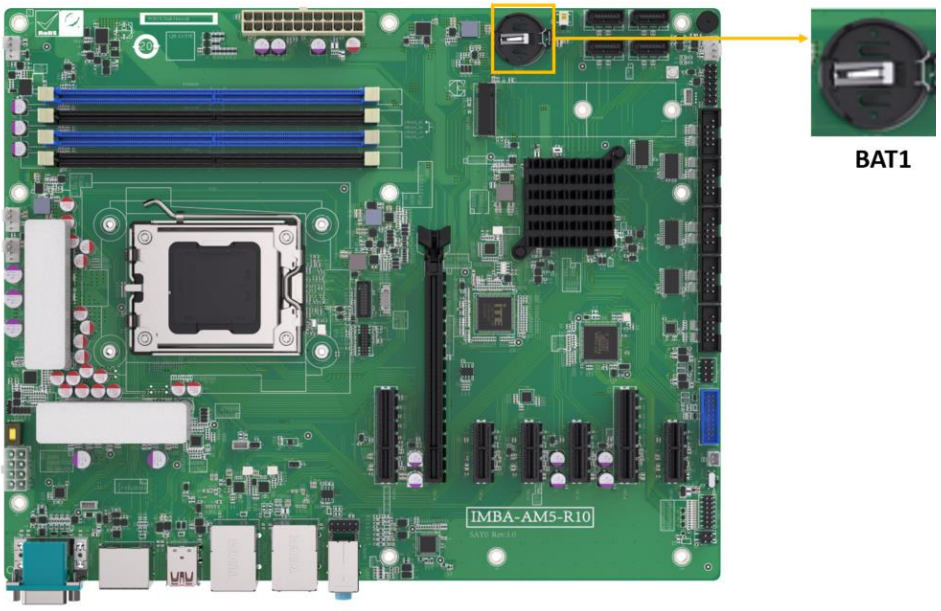


Figure 4-18: Battery Connector Location

Pin	Description	Pin	Description
1	VBATT(+3V)	2	GND

Table 4-19: Battery Connector Pinouts

4.3.18 LAN Link LED connector

CN Label: **JLAN_LED1, JLAN_LED2**

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

CN Location: See **Figure 4-19**

CN Pinouts: See **Table 4-20** and **Table 4-21**

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

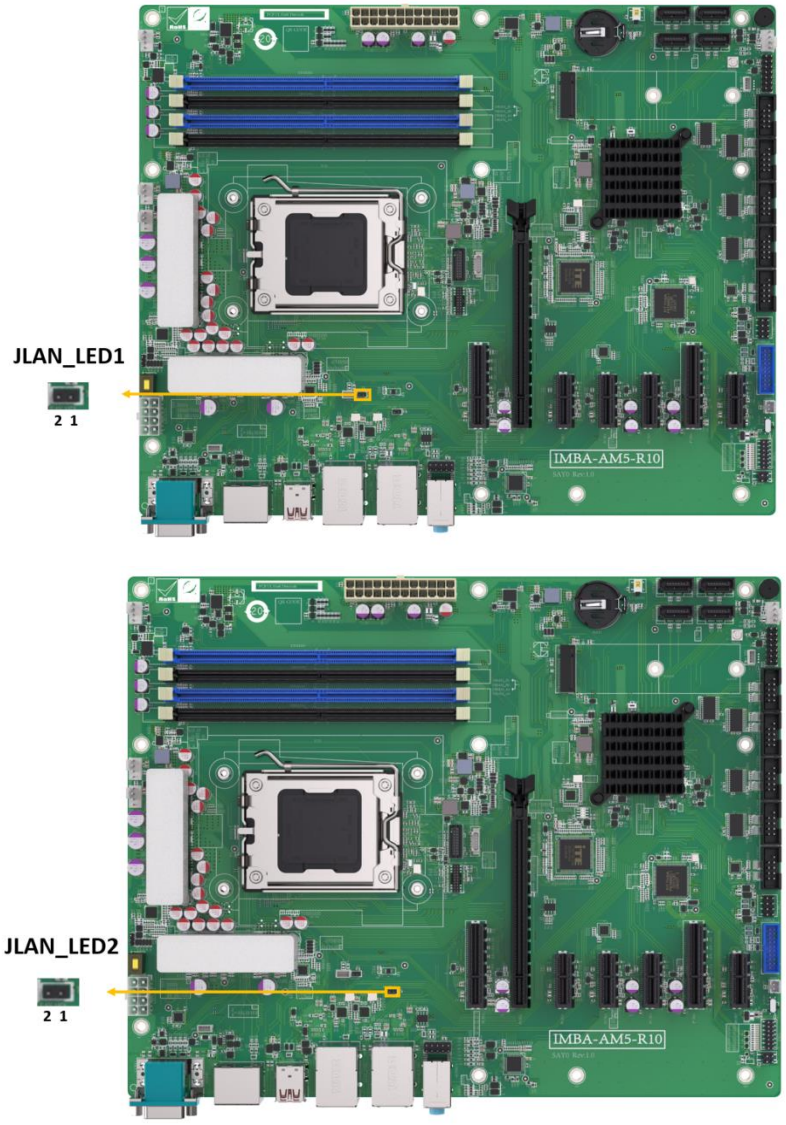


Figure 4-19: LAN LED Connector Locations

Pin	Description
1	+3.3V
2	I226_LINK_ACT_N

Table 4-20: LAN1 LED Connector (JLAN_LED1) Pinouts

Pin	Description
1	+3.3V
2	I226_LINK_ACT_N

Table 4-21: LAN2 LED Connector (JLAN_LED 2) Pinouts

4.3.19 Flash SPI ROM Connector

CN Label: **JSPI1**

CN Type: 6-pin header, p=1.25 mm

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

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

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

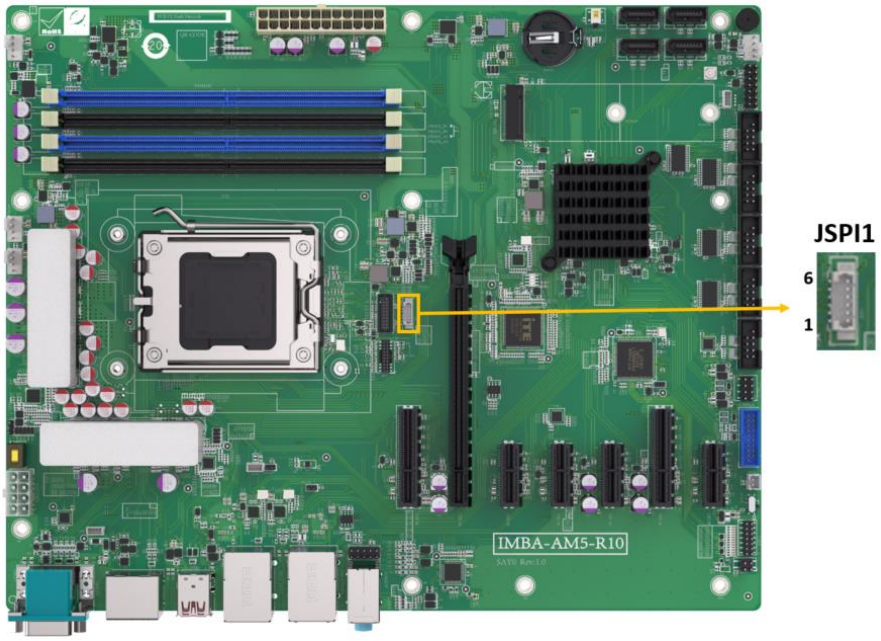


Figure 4-20: Flash SPI ROM Connector Location

Pin	Description	Pin	Description
1	+3.3V	4	SPI_CLK
2	SPI_CS#	5	SPI_SI
3	SPI_SO	6	GND

Table 4-22: Flash SPI ROM Connector Pinouts

4.3.20 PCIe x1 Slots

CN Label: **PCIE3, PCIE4, PCIE5, PCIE7**

CN Type: PCIe x1 Slot

CN Location: See **Figure 4-21**

The PCIe x1 slot enables a PCIe x1 expansion module to be connected to the board.

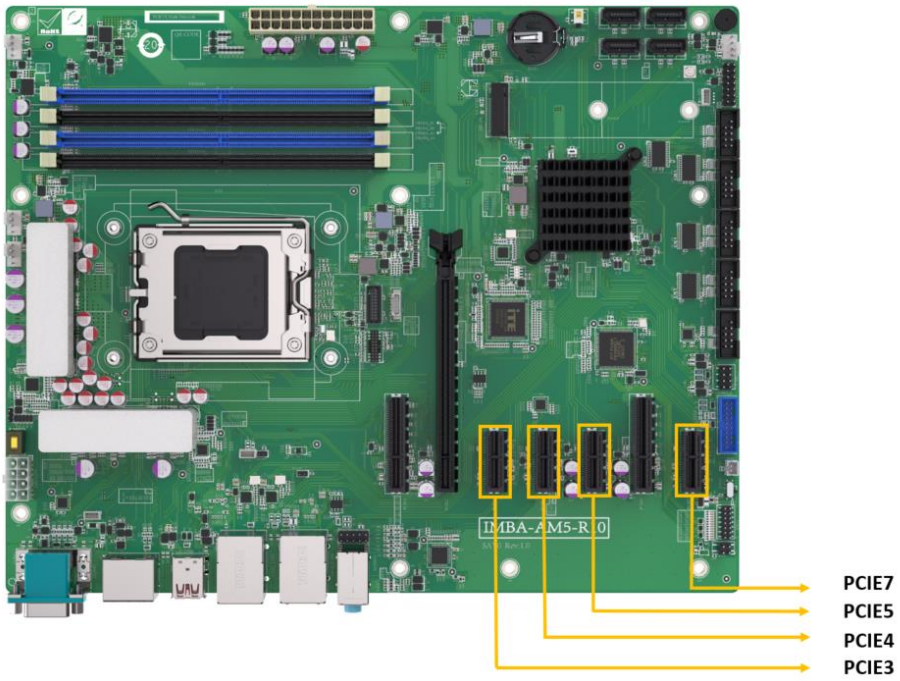


Figure 4-21: PCIe x1 Slot Locations

4.3.22 PCIe x4 Slots

CN Label: **PCIE1, PCIE6**

CN Type: PCIe x4 slot

CN Location: See **Figure 4-22**

The PCIe x4 expansion card slots are for PCIe x4 expansion cards.

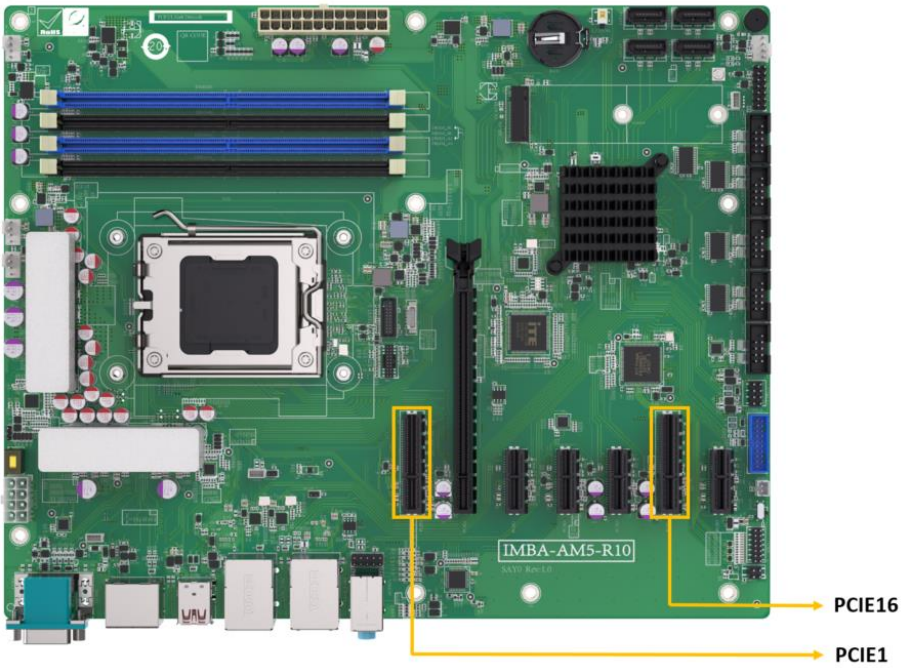


Figure 4-22: PCIe x4 Slot Locations

4.3.23 PCIe x16 slots

CN Label: **PCIE2**

CN Type: PCIe x16 slot

CN Location: See **Figure 4-23**

The PCIe x16 expansion card slots are for PCIe x16 expansion cards.

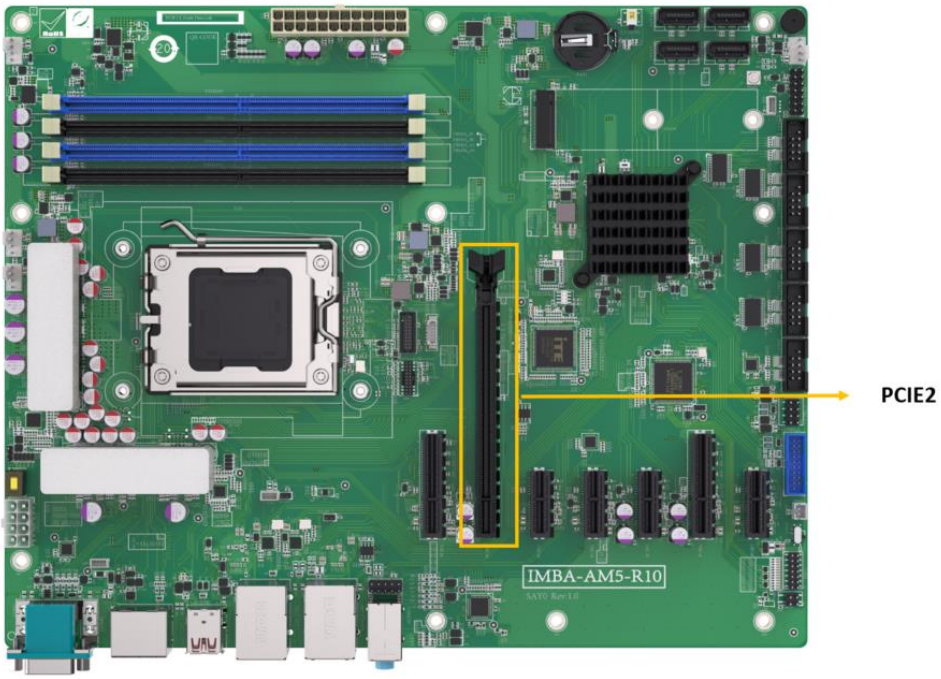


Figure 4-23: PCIe x16 Slot Locations

4.3.25 Onboard Power Button

CN Label: **PWR_BTN1**

CN Type: Push button

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

The on-board power button controls system power.

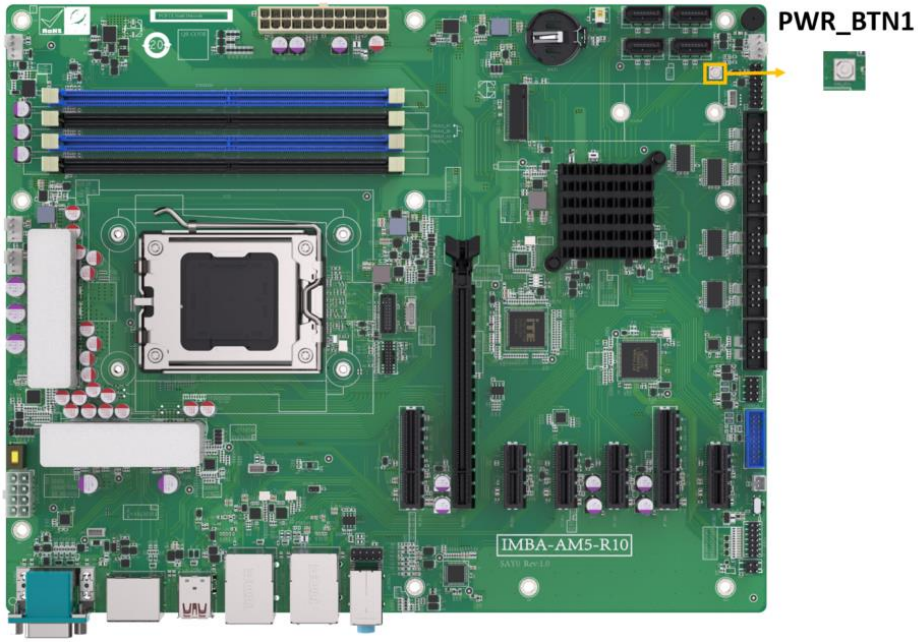


Figure 4-24: Power Button Location

4.3.26 DDR5 DIMM sockets

CN Label: **DIMMA0, DIMMA1, DIMMB0, DIMMB1**

CN Type: 288-pin socket

CN Location: See **Figure 4-25**

The DIMM slots are for DDR5 DIMM memory modules

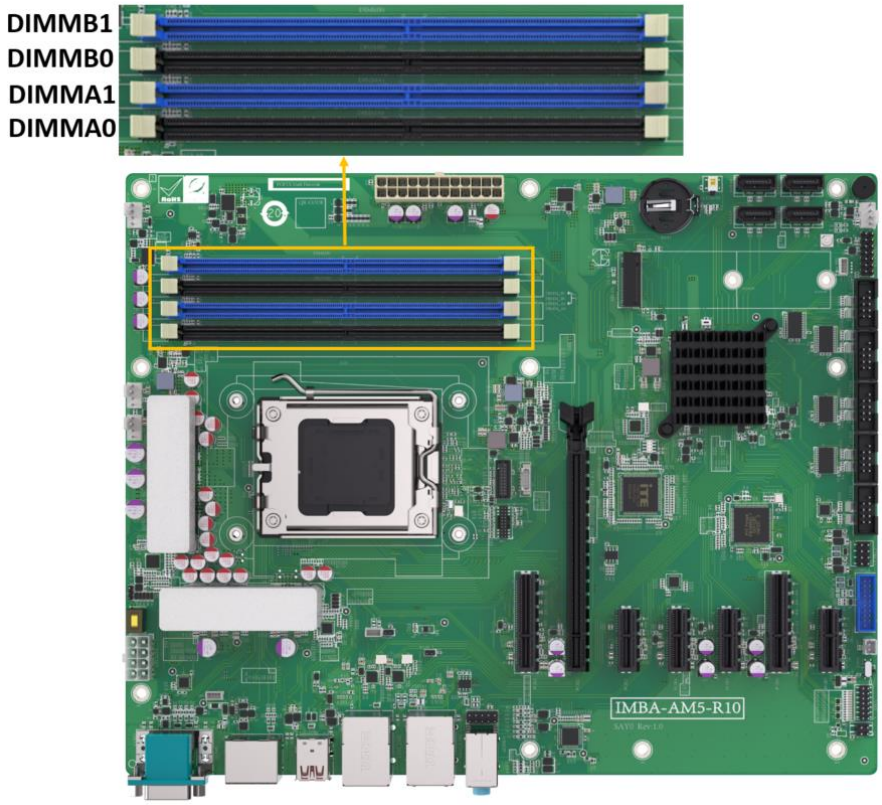


Figure 4-25: DDR5 DIMM Sockets Location

4.3.27 RS-232 Serial Port Connectors

CN Label:	**COM3-6**
CN Type:	9-pin box header, p=2.54 mm
CN Location:	See **Figure 4-26**
CN Pinouts:	See **Table 4-23**

Each of these connectors provides RS-232 communications.

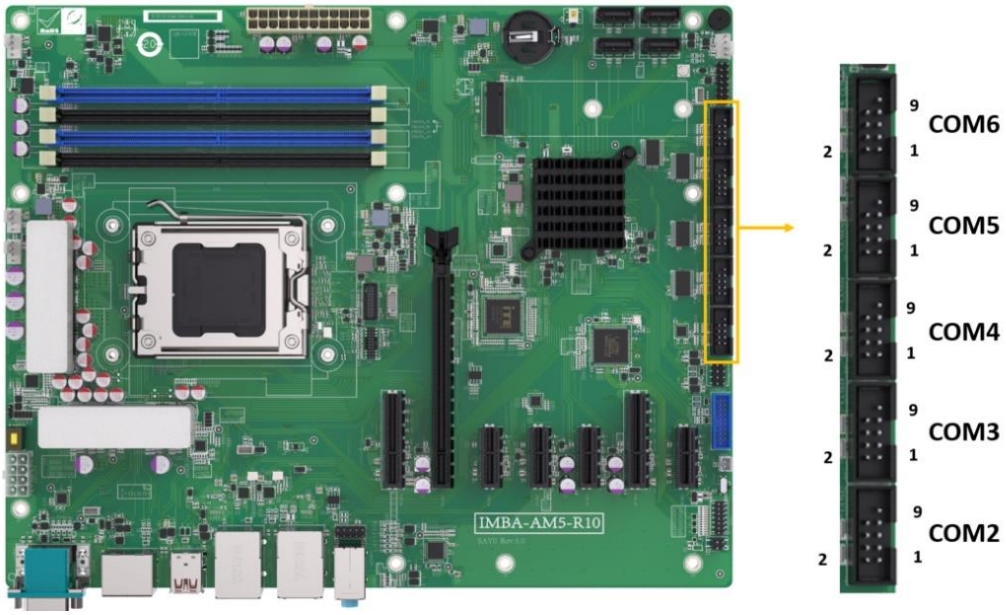


Figure 4-26: RS-232 Connector Location

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

Table 4-23: RS-232 Connector Pinouts

4.3.29 Internal USB 2.0 Connectors

CN Label:	**USB2_1**
CN Type:	8-pin box header, p=2.0 mm
CN Location:	See **Figure 4-27**
CN Pinouts:	See **Table 4-24**

The product provide 2 USB 2.0 ports for the future new I/O bus expansion.

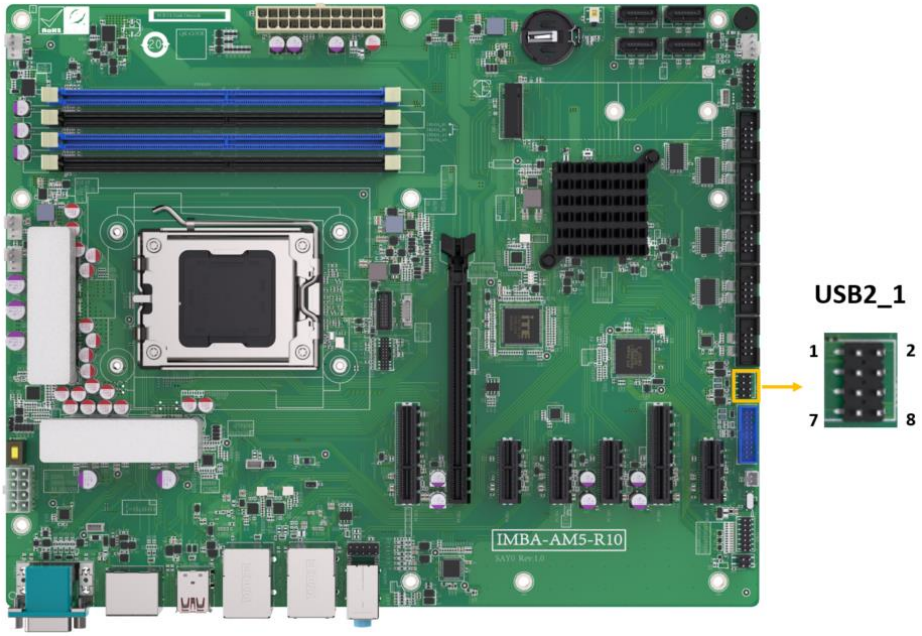


Figure 4-27: Internal USB 2.0 Connector Location

Pin	Description	Pin	Description
1	VCC	2	GND
3	USB_DN	4	USB_DP
5	USB_DP	6	USB_DN-
7	GND	8	VCC

Table 4-24: Internal USB 2.0 Connector Pinouts

4.3.30 Internal USB 3.0 Connectors

CN Label: **USB3_1**

CN Type: 19-pin header, p=2.54 mm

CN Location: See **Figure 4-28**

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

The product provides USB 3.0 ports.

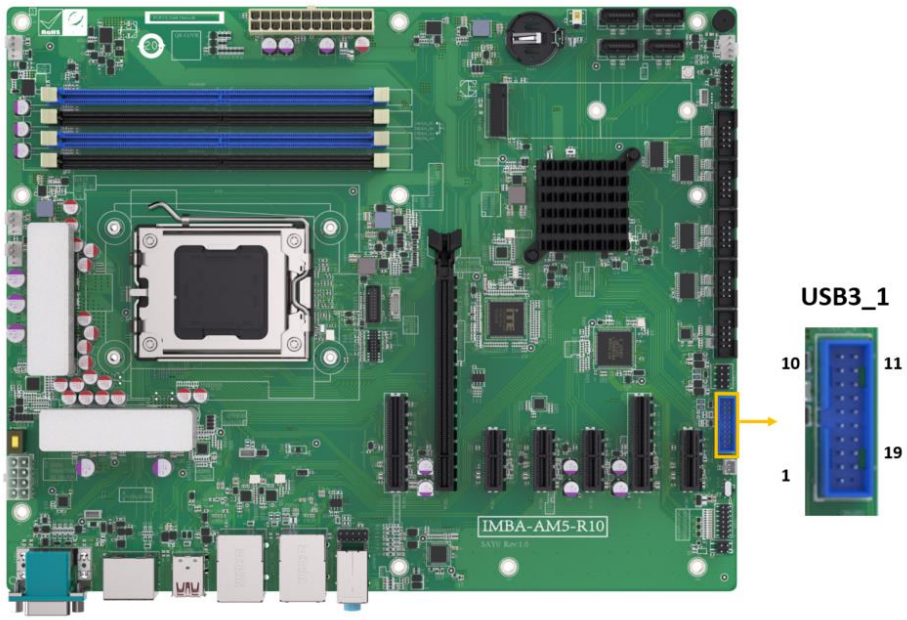


Figure 4-28: Internal USB 3.0 Connector Location

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	VCC	11	USB_DATA+
2	USB3_RX-	12	USB_DATA-
3	USB3_RX+	13	GND
4	GND	14	USB3_TX+
5	USB3_TX-	15	USB3_TX-
6	USB3_TX+	16	GND
7	GND	17	USB3_RX+
8	USB_DATA-	18	USB3_RX-

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
9	USB_DATA+	19	VCC
10	NC		

Table 4-25: Internal USB 3.0 Connector Pinouts

4.4 External Peripheral Interface Connector Panel

The figure below shows the external peripheral interface connector (EPIC) panel. The EPIC panel consists of the following:

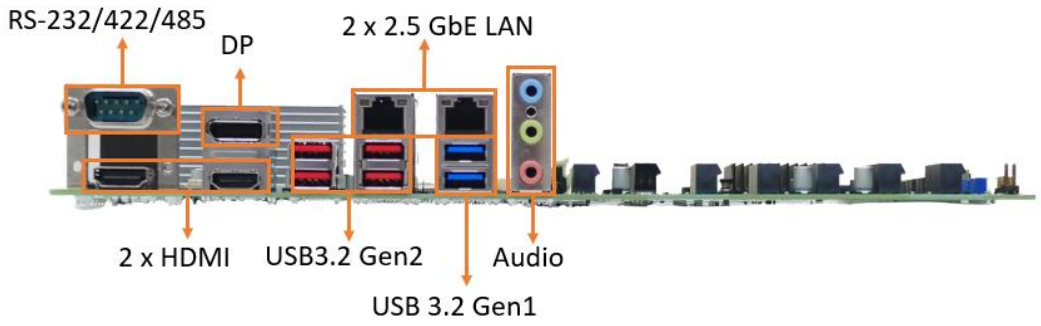


Figure 4-29: External Peripheral Interface Connector

4.4.1 Audio jack

CN Label: **AUDIO1**

CN Type: Audio jacks

CN Location: See **Figure 4-30**

CN Pinouts: See **Table 4-26**

The audio jacks connect to external audio devices.

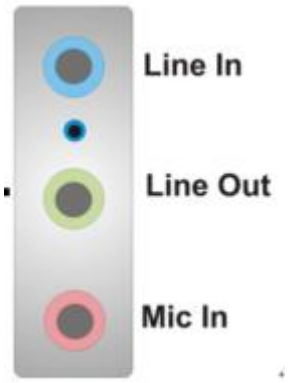


Figure 4-30: Audio jack Connector Location

Pin	Description
FRONT-OUT (Green)	Connect this port to headphone or speaker
FRONT-IN (Blue)	Connect this port to electric guitar's audio out
MIC-IN (Pink)	Connect this port to microphone

Table 4-26: Audio jack Connector Pinouts

4.4.2 External HDMI and DP Combo Connector

CN Label: **HDMI2_DP1**

CN Type: HDMI, DisplayPort

CN Location: See **Figure 4-31** and **Figure 4-32**

CN Pinouts: See **Table 4-27** and **Table 4-28**

The HDMI connector can connect to an HDMI device.

Pin	Description	Pin	Description
21	HDMI1_L_TX2_P	31	GND
22	GND	32	HDMI1_L_CLK_N
23	HDMI1_L_TX2_N	33	N/C
24	HDMI1_L_TX1_P	34	N/C
25	GND	35	HDMI1_SCL
26	HDMI1_L_TX1_N	36	HDMI1_SDA
27	HDMI1_L_TX0_P	37	GND
28	GND	38	+5V

Pin	Description	Pin	Description
29	HDMI1_L_TX0_N	39	HDMI1_HPD
30	HDMI1_L_CLK_P		

Table 4-27: HDMI Connector Pinouts

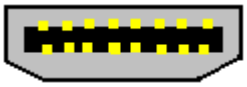


Figure 4-31: HDMI Connector

The DP++ connector connects to a display device with DisplayPort interface.

Pin	Description	Pin	Description
1	DP0_L_TX0P	11	GND
2	GND	12	DP0_L_TX3N
3	DP0_L_TX0N	13	AUX_CTRL_DET
4	DP0_L_TX1P	14	CONFIG2
5	GND	15	DP0_C_AUXP
6	DP0_L_TX1N	16	GND
7	DP0_L_TX2P	17	DP0_C_AUXN
8	GND	18	DP_HPD
9	DP0_L_TX2N	19	GND
10	DP0_L_TX3P	20	+3.3V

Table 4-28: DP++ Connector Pinouts

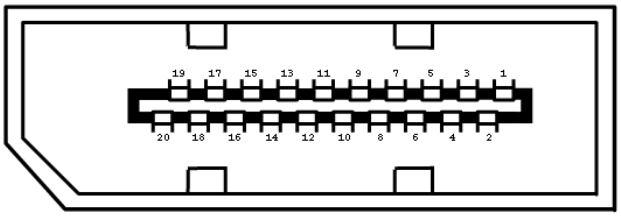


Figure 4-32: DP++ Connector

4.4.3 External 2.5GbE RJ-45 and dual USB 3.2 Gen 2 combo connector

CN Label: **LAN1_USB1, LAN2_USB2**

CN Type: USB 3.2, RJ45

CN Location: See **Figure 4-33**

CN Pinouts: See **Table 4-29**

The LAN1_USB1 and LAN2_USB2 include dual USB 3.2 Gen 1 (5Gb/s) and one 2.5GbE RJ-45.

Figure 4-33: USB 3.2 and RJ45 Connector

Pin	Description	Pin	Description
1	+5V	21	i225_MDI0_N_1
2	USB2_EJ188_L_D0N	22	i225_MDI1_P_1
3	USB2_EJ188_L_D0P	23	i225_MDI1_N_1
4	GND	24	i225_MDI2_P_1
5	USB3_EJ188_L_RX0N	25	i225_MDI2_N_1
6	USB3_EJ188_L_RX0P	26	i225_MDI3_P_1
7	GND	27	i225_MDI3_N_1
8	USB3_EJ188_L_TX0N	28	GND
9	USB3_EJ188_L_TX0P	29	+3.3V
10	+5V	30	I225_LINK_ACT_N_1
11	USB2_EJ188_L_D1N	31	I225_SPEED_2500_N_1
12	USB2_EJ188_L_D1P	32	I225_SPEED_1000_N_1
13	GND	G1	GND
14	USB3_EJ188_L_RX1N	G2	GND
15	USB3_EJ188_L_RX1P	G3	GND

Pin	Description	Pin	Description
16	GND	G4	GND
17	USB3_EJ188_L_TX1N	G5	GND
18	USB3_EJ188_L_TX1P	G6	GND
19	CT1	G7	GND
20	i225_MDI0_P_1	G8	GND

Table 4-29: USB 3.2 and RJ45 Pinouts

4.4.4 External Dual USB 3.2 Gen 2 Connector

CN Label: **USB3**

CN Type: USB 3.2 Gen 2

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

CN Pinouts: See **Table 4-30**

The USB3_1 connector includes dual USB 3.2 Gen 2 (10Gb/s).

Figure 4-34: USB 3.2 Connector

Pin	Description	Pin	Description
1	+5V	10	+5V
2	USB2_L_D2N	11	USB2_L_D3N
3	USB2_L_D2P	12	USB2_L_D3P
4	GND	13	GND
5	USB3_RD_L_RX2N	14	USB3_RD_L_RX3N
6	USB3_RD_L_RX2P	15	USB3_RD_L_RX3P
7	GND	16	GND
8	USB3_RD_L_TX2N	17	USB3_RD_L_TX3N
9	USB3_RD_L_TX2P	18	USB3_RD_L_TX3P

Table 4-30: USB 3.2 Connector Pinouts

4.4.5 External HDMI Connector

CN Label: **HDMI1**

CN Type: HDMI

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

CN Pinouts: See **Table 4-31**

The HDMI connector can connect to the HDMI device.

Figure 4-35: HDMI Connector

Pin	Description	Pin	Description
1	HDMI2_L_TX2_P	10	HDMI2_L_CLK_P
2	GND	11	GND
3	HDMI2_L_TX2_N	12	HDMI2_L_CLK_N
4	HDMI2_L_TX1_P	13	N/C
5	GND	14	N/C
6	HDMI2_L_TX1_N	15	HDMI2_SCL
7	HDMI2_L_TX0_P	16	HDMI2_SDA
8	GND	17	GND
9	HDMI2_L_TX0_N	18	+5V
		19	HDMI2_HPD

Table 4-31: HDMI Connector Pinouts

4.4.6 External Serial Port Connector

CN Label: **COM1**

CN Type: COM

CN Location: See **Figure 4-36**

CN Pinouts: See **Table 4-32**

The COM connector (COM1) connects to a serial device that supports RS-232 communication.

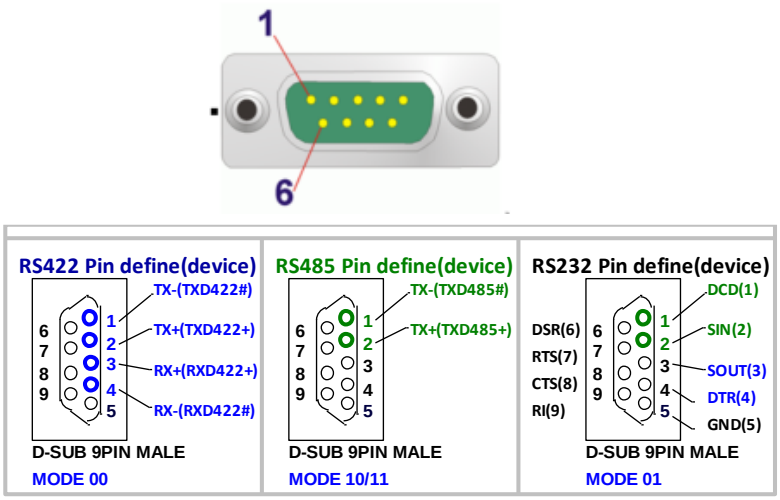


Figure 4-36: External Serial Port Pinout Locations

PIN	RS-232	RS-422	RS-485
1	DCD	TXD422-	TXD485-
2	RXD	TXD422+	TXD485+
3	TXD	RXD422+	--
4	DTR	RXD422-	--
5	GND	--	--
6	DSR	--	--
7	RTS	--	--
8	CTS	--	--
9	RI	--	--

Table 4-32: External Serial Port Pinouts

Chapter

4

BIOS

5.1 In troduction

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.

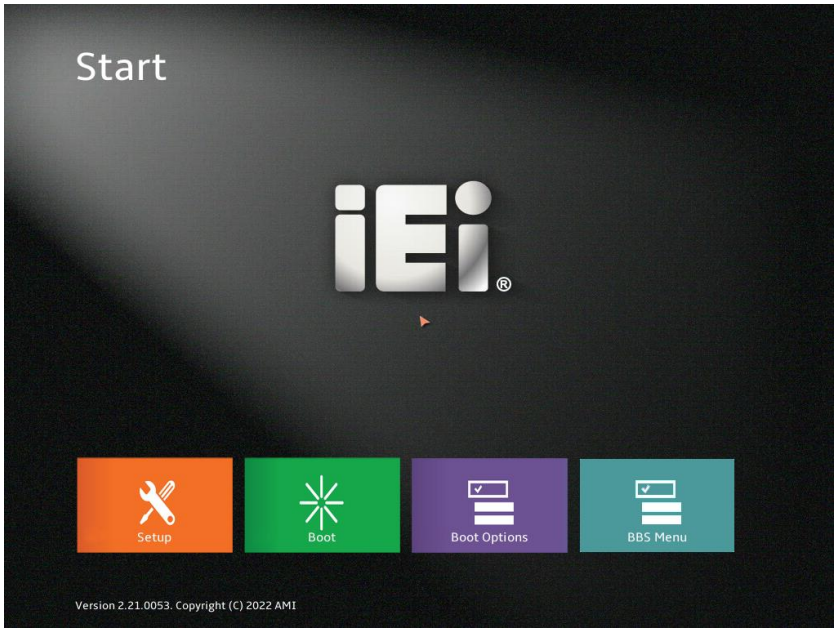


Figure 5-1: BIOS Starting Menu

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

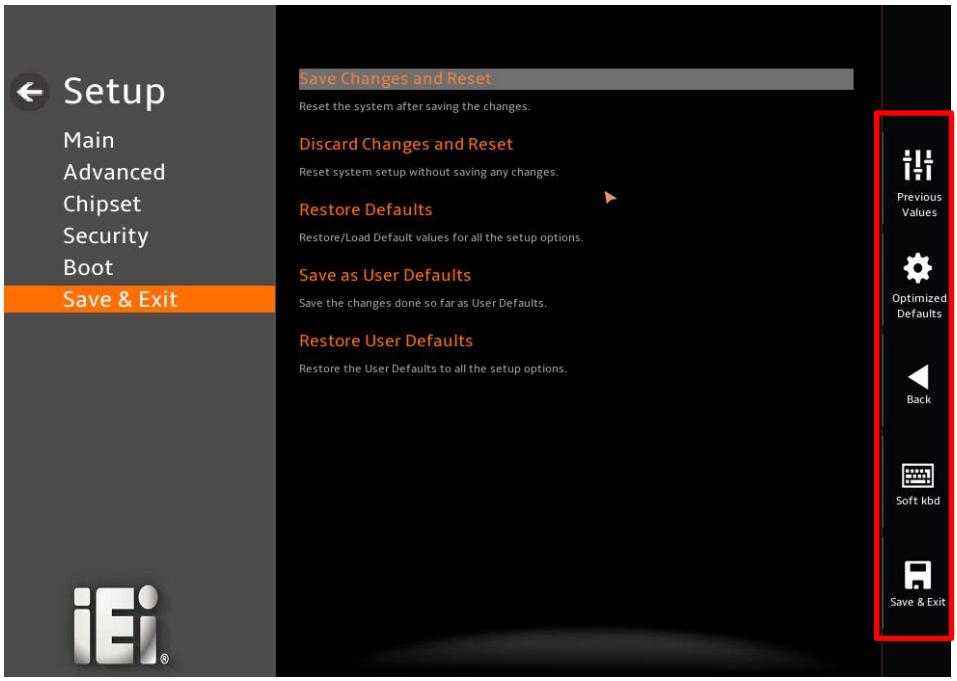
For keyboard navigation, use the navigation keys shown in **Table 5-1**.

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.



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

Table 5-2: BIOS On-screen Navigation Keys

5.1.3 Getting Help

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

5.1.4 Unable to Reboot after Configuration Changes

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

5.1.5 BIOS Menu Bar

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

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

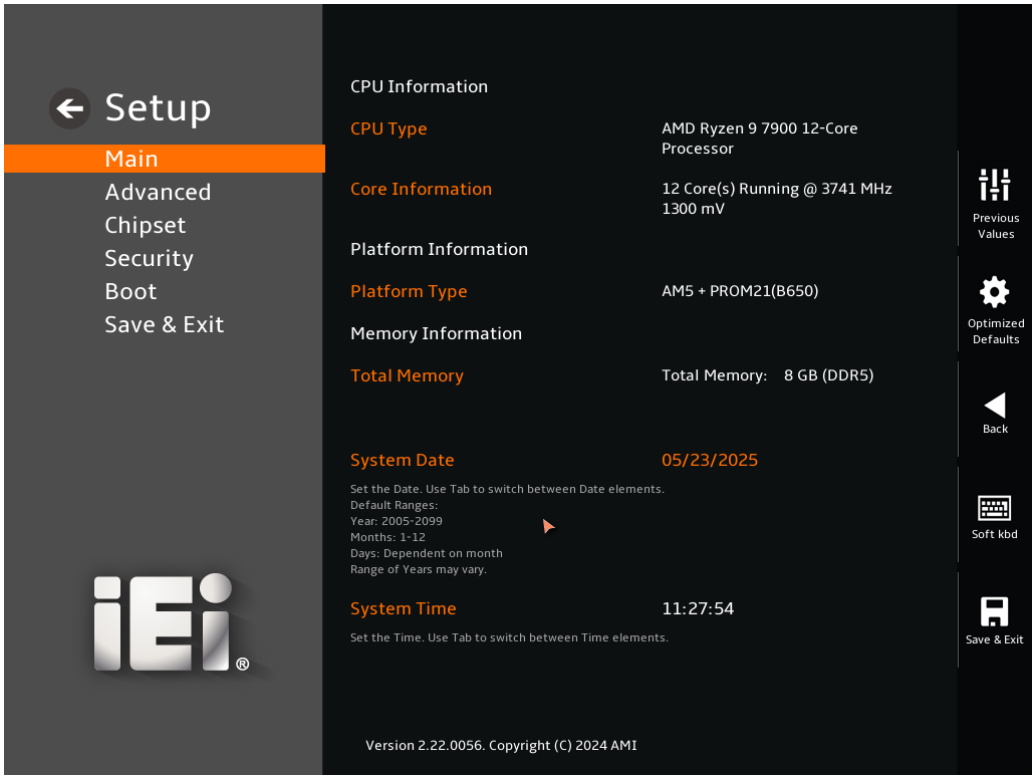
The following sections completely describe the configuration options found in the menu items at the top of the BIOS screen and listed above.

5.2 Main

The **Main** BIOS menu (**BIOS Menu 1**) appears when the **BIOS Setup** program is entered.

The **Main** menu gives an overview of the basic system information.

BIOS Menu 1: Main (1/2)



BIOS Menu 2: Main (2/2)

➔ **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 made
- **EC Version:** Current EC version

➔ **CPU Information**

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

- **CPU Type:** Displays the CPU Type

- **Core Information:** Displays the CPU Core Information

➔ **Platform Information**

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

- **Platform Type:** Displays the PCH Name
- **PCH SKU:** Displays the PCH SKU

➔ **Memory Information**

- **Total Memory:** Displays the Total Memory

➔ **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 (**BIOS Menu 3**) to configure the CPU and peripheral devices through the following sub-menus:

WARNING!

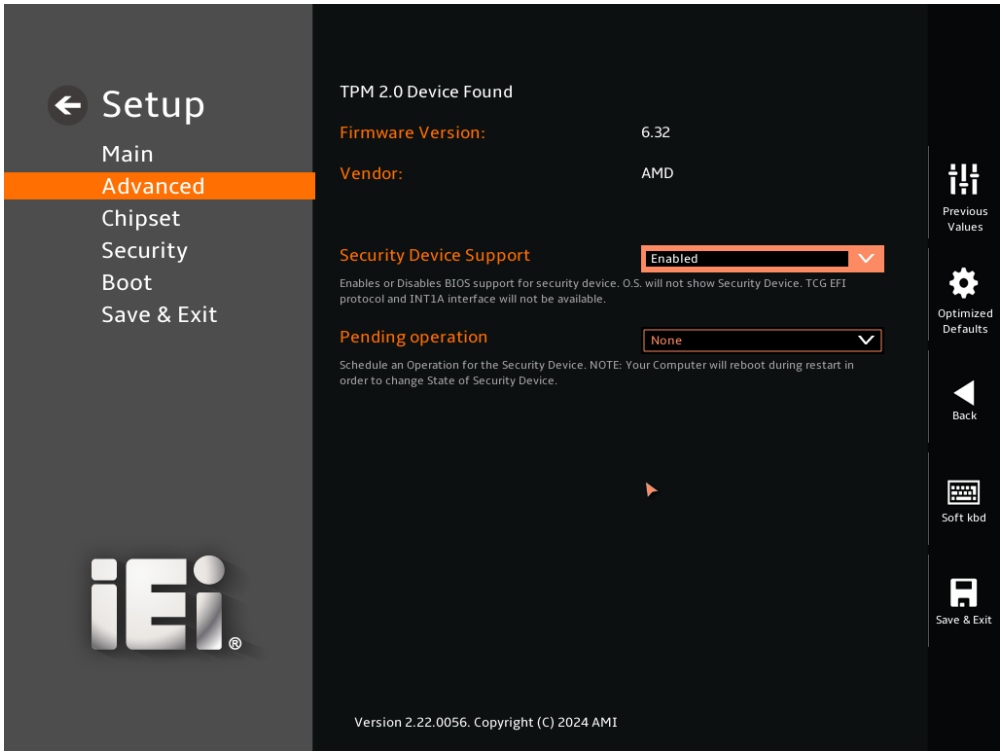
Setting the wrong values in the sections below may cause the system to malfunction. Make sure that the settings made are compatible with the hardware.

BIOS Menu 3: Advanced (1/2)

BIOS Menu 4: Advanced (2/2)

5.3.1 Trusted Computing

Use the **Trusted Computing** menu (**BIOS Menu 5**) to configure settings related to the Trusted Computing Group (TCG) Trusted Platform Module (TPM).



BIOS Menu 5: Trusted Computing Configuration

➔ **Security Device Support [Enable]**

Use the **Security Device Support** option to enable or disable BIOS support for security device.

➔ **Disable** TPM support is disabled.

➔ **Enable** **DEFAULT** TPM support is enabled.

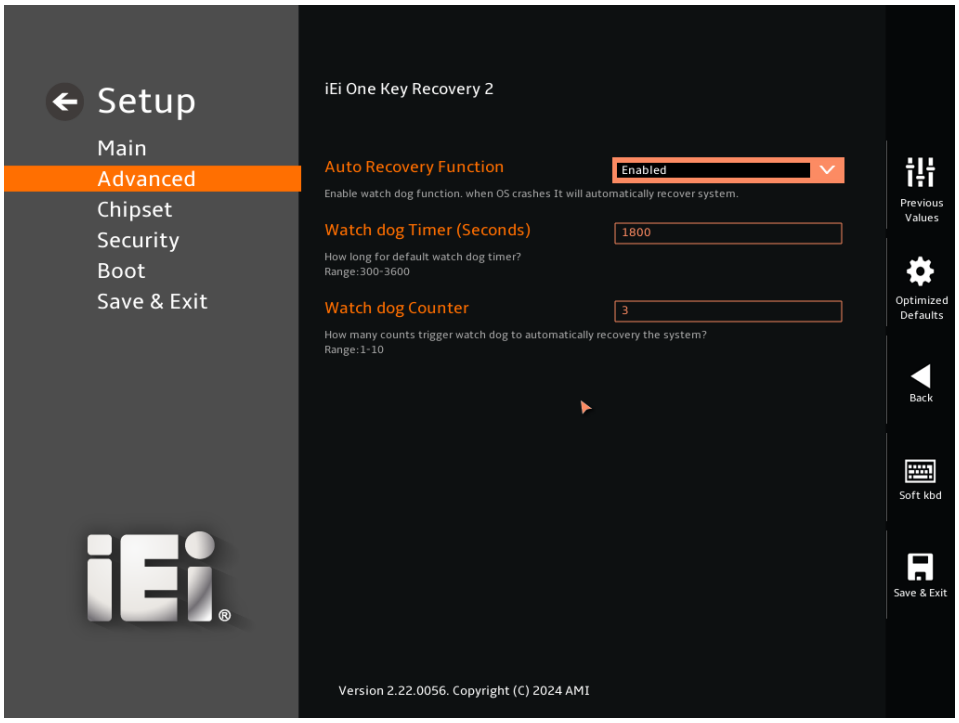
➔ **Pending Operation [None]**

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

5.3.2 iEi One Key Recovery2



BIOS Menu 6: iEi One Key Recovery2

➔ **Auto Recovery Function [Enabled]**

Use the **Auto Recovery Function** option to enable or disable watch dog function, when OS crashes, it will automatically recover system.

➔ **Disabled** Watch dog function is disabled.

➔ **Enabled** **DEFAULT** Watch dog function t is enabled.

➔ **Watch dog Timer (Seconds) [1800]**

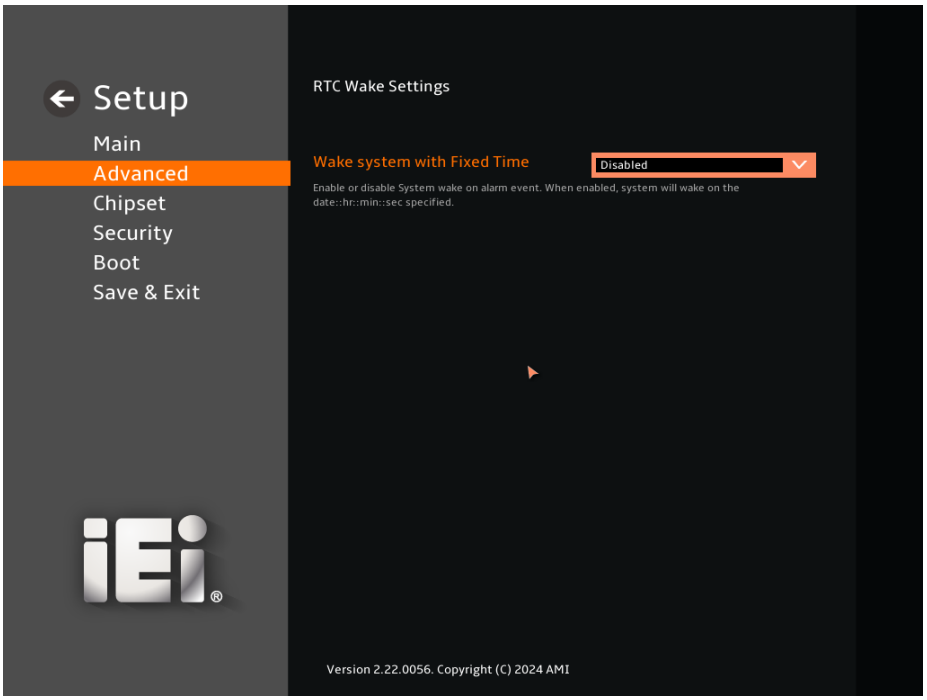
Use the **Watch dog Timer (Seconds)** option to set value. Use the + or – key to change the value or enter a decimal number between 300 and 3600.

➔ **Watch dog Counter [3]**

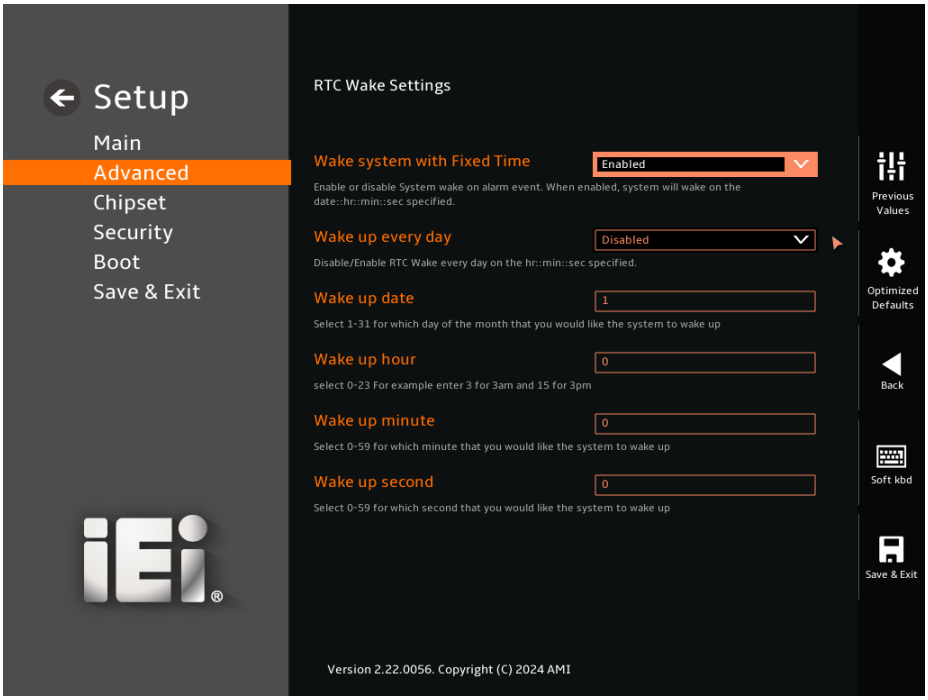
Use the **Watch dog Counter** option to set the number of counts that trigger watch dog to automatically recovery the system. Use the + or – key to change the value or enter a decimal number between1 and 10.

5.3.3 RTC Wake Settings

The **RTC Wake Settings** menu (**BIOS Menu 7**) configures RTC wake event.



BIOS Menu 7: RTC Wake Settings (1/2)



BIOS Menu 8: RTC Wake Settings (2/2)

➔ **Wake system with Fixed Time [Enabled]**

Use the **Wake system with Fixed Time** option to enable or disable the system wake on alarm event.

➔ **Disabled** The real time clock (RTC) cannot generate a wake event

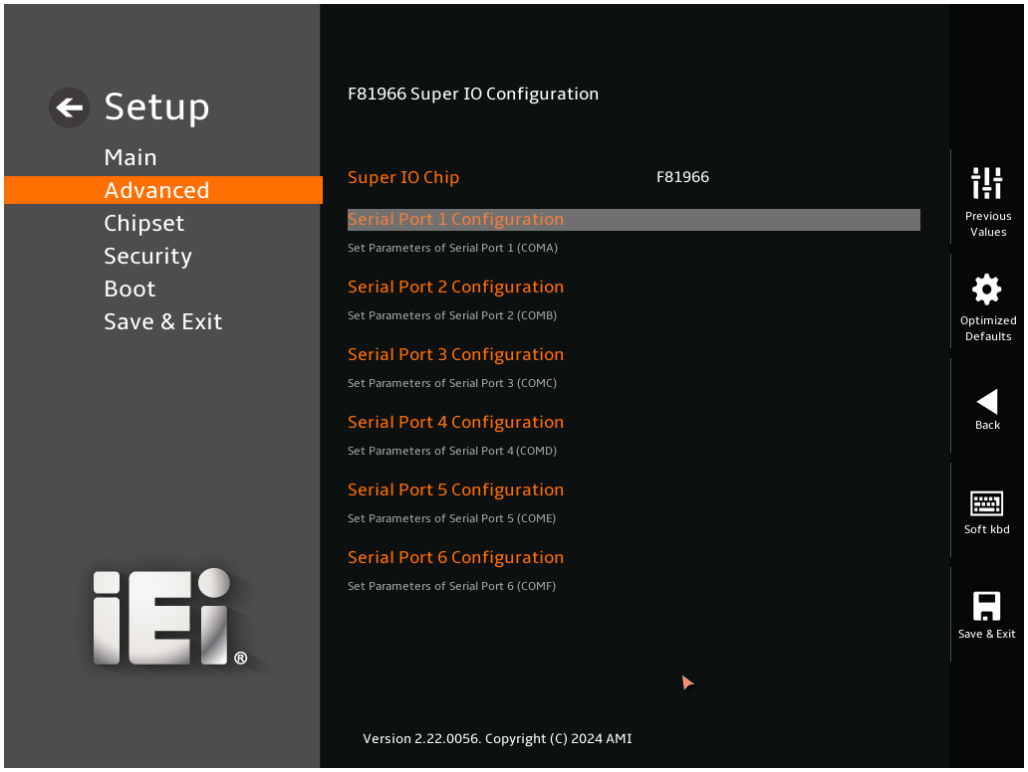
➔ **Enabled** **DEFAULT** If selected, the **Wake up every day** option appears allowing you to enable to disable the system to wake every day at the specified time. Besides, the following options appear with values that can be selected:

- Wake up date
- Wake up hour
- Wake up minute
- Wake up second

After setting the alarm, the computer turns itself on from a suspend state when the alarm goes off.

5.3.4 F81966 Super IO Configuration

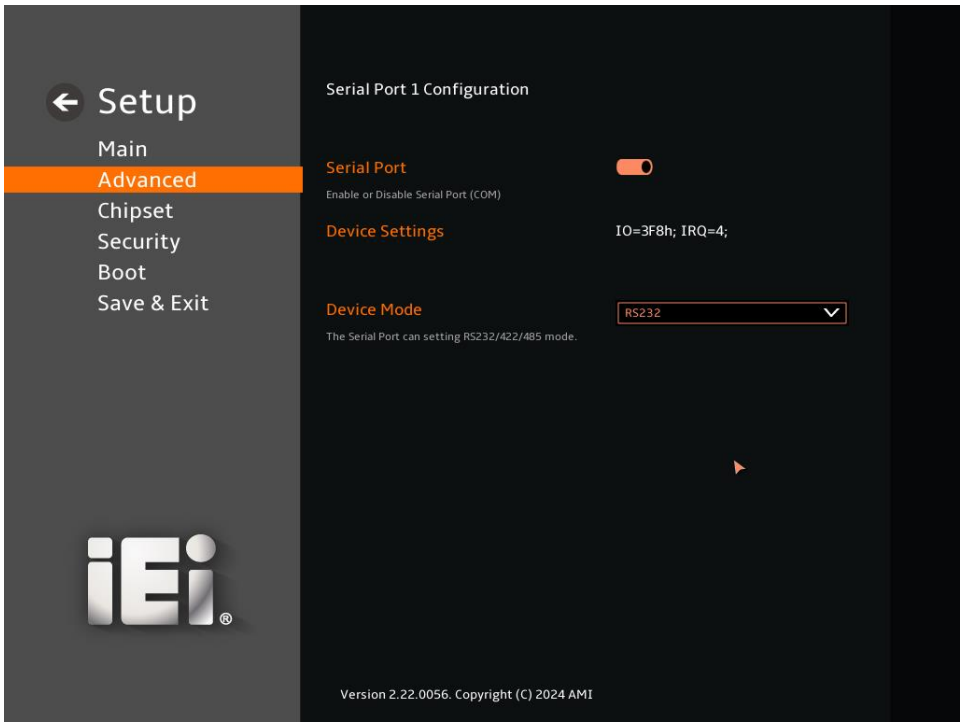
Use the **F81966 Super IO Configuration** menu (**BIOS Menu 9**) to set or change the configurations for serial ports.



BIOS Menu 9: F81966 Super IO Configuration

5.3.4.1 Serial Port 1 Configuration

Use the **Serial Port 1 Configuration** menu (**BIOS Menu 10**) to configure the serial port.



BIOS Menu 10: Serial Port 1 Configuration Menu

➔ **Serial Port [Enabled]**

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

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

➔ **Device Settings**

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

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

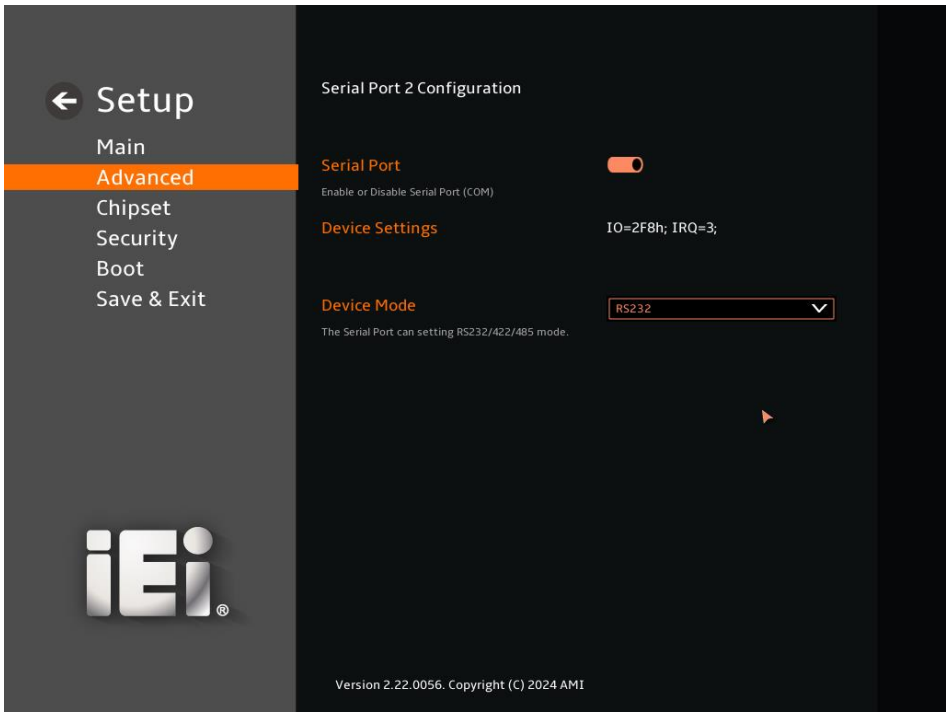
➔ **Device Mode [RS232]**

Use the **Device Mode** option to change the serial port mode.

➔ **RS232**	**DEFAULT**	The serial port mode is RS-232
RS422 with Register		The serial port mode is RS-422
RS485 with Register		The serial port mode is RS-485

5.3.4.2 Serial Port 2 Configuration

Use the **Serial Port 2 Configuration** menu (**BIOS Menu 11**) to configure the serial port.



BIOS Menu 11: Serial Port 2 Configuration Menu

➔ **Serial Port [Enabled]**

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

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

➔ **Device Settings**

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

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

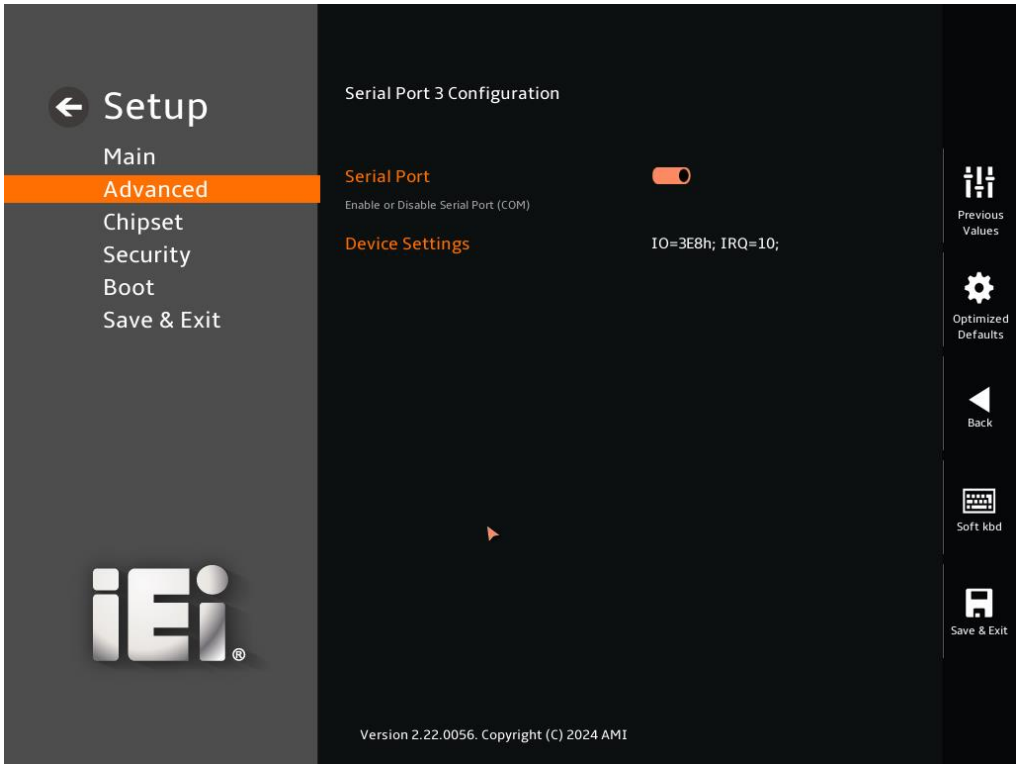
➔ **Device Mode [RS232]**

Use the **Device Mode** option to change the serial port mode.

➔ **RS232**	**DEFAULT**	The serial port mode is RS-232
RS422 with Register		The serial port mode is RS-422
RS485 with Register		The serial port mode is RS-485

5.3.4.3 Serial Port 3 Configuration

Use the **Serial Port 3 Configuration** menu (**BIOS Menu 12**) to configure the serial port.



BIOS Menu 12: Serial Port 3 Configuration Menu

➔ **Serial Port [Enabled]**

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

➔ **Disabled** Disable the serial port

➔ **Enabled** **DEFAULT** Enable the serial port

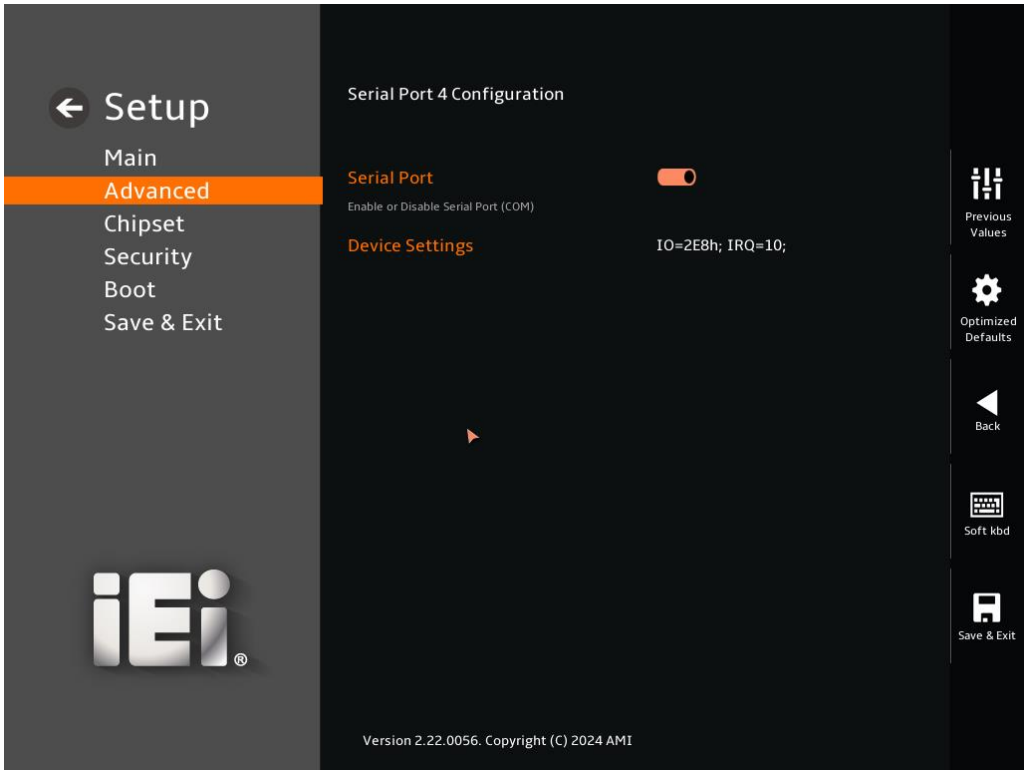
➔ **Device Settings**

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

➔ **IO=3E8h; IRQ=10** Serial Port I/O port address is 2F8h and the interrupt address is IRQ3

5.3.4.4 Serial Port 4 Configuration

Use the **Serial Port 4 Configuration** menu (**BIOS Menu 13**) to configure the serial port.



BIOS Menu 13: Serial Port 4 Configuration Menu

➔ **Serial Port [Enabled]**

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

➔ **Disabled** Disable the serial port

➔ **Enabled** **DEFAULT** Enable the serial port

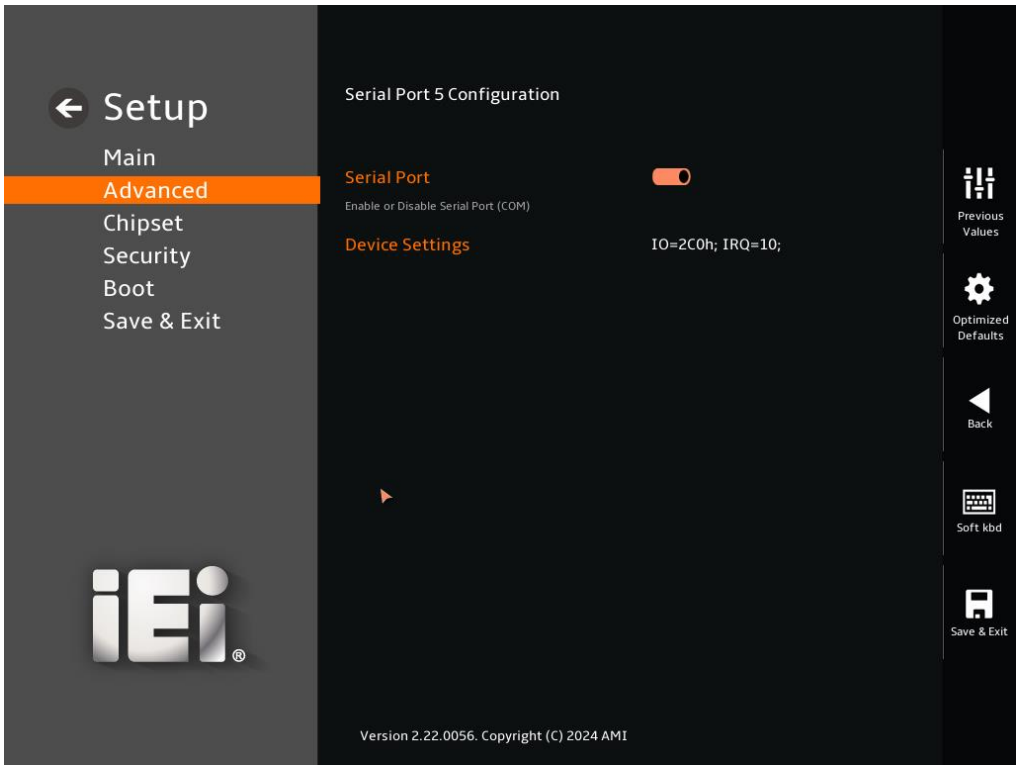
➔ **Device Settings**

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

➔ **IO=2E8h; IRQ=10** Serial Port I/O port address is 2F8h and the interrupt address is IRQ3

5.3.4.5 Serial Port 5 Configuration

Use the **Serial Port 5 Configuration** menu (**BIOS Menu 14**) to configure the serial port.



BIOS Menu 14: Serial Port 5 Configuration Menu

➔ **Serial Port [Enabled]**

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

➔ **Disabled** Disable the serial port

➔ **Enabled** **DEFAULT** Enable the serial port

➔ **Device Settings**

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

➔	**IO=2C0h;** **IRQ=10**	Serial Port I/O port address is 2F8h and the interrupt address is IRQ3

5.3.4.6 Serial Port 6 Configuration

Use the **Serial Port 6 Configuration** menu (**BIOS Menu 15**) to configure the serial port.

BIOS Menu 15: Serial Port 6 Configuration Menu

➔ **Serial Port [Enabled]**

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

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

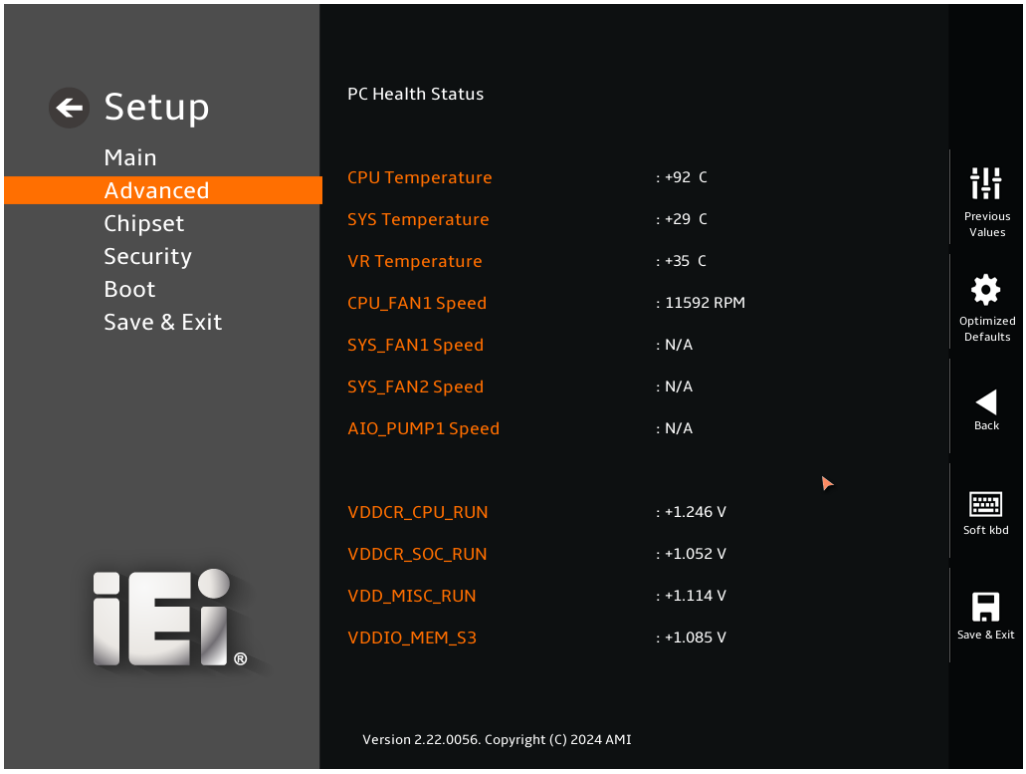
➔ **Device Settings**

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

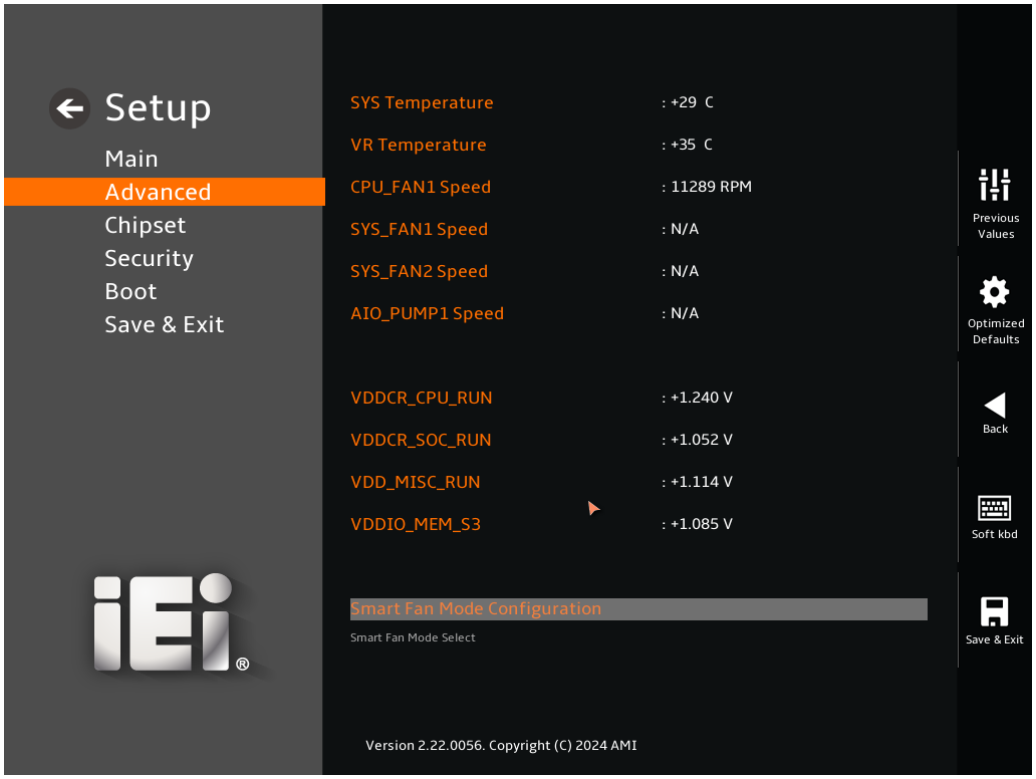
➔ **IO=2C8h;** **IRQ=10**	Serial Port I/O port address is 2C8h and the interrupt address is IRQ10

5.3.5 ITE55571 H/W Monitor

The **ITE55571 H/W Monitor** menu (**BIOS Menu 16**) contains the smart fan mode configuration submenu and shows the state of H/W real-time operating temperature, fan speeds and system voltages.



BIOS Menu 16: ITE55571 H/W Monitor (1/2)



BIOS Menu 17: ITE55571 H/W Monitor (2/2)

➔ PC Health Status

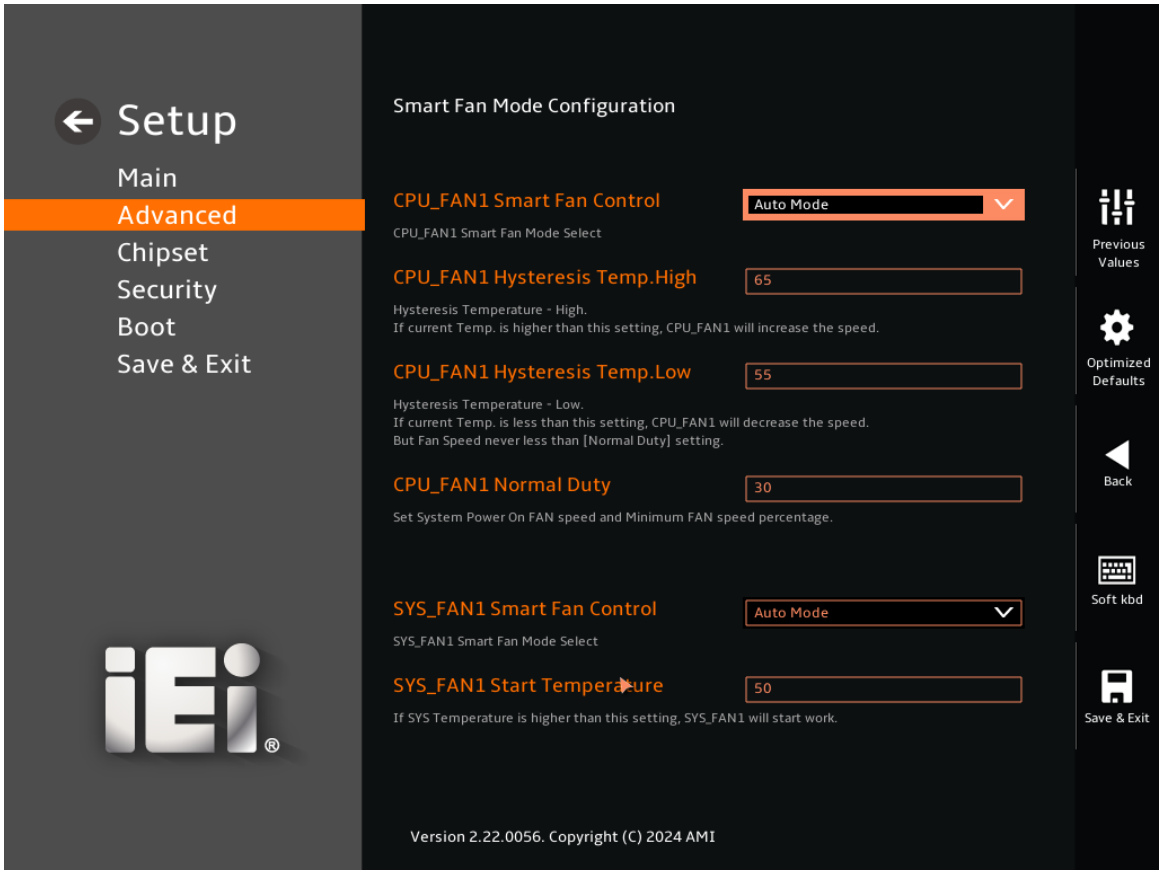
The following system parameters and values are shown. The system parameters that are monitored are:

- System Temperatures:
  - CPU Temperature
  - System Temperature
  - VR Temperature
- Fan Speeds:
  - CPU_Fan1 Speed
  - SYS_Fan1 Speed
  - SYS_Fan2 Speed
  - AIO_PUMP1 Speed
- Voltages:
  - VDDCR_CPU_RUN

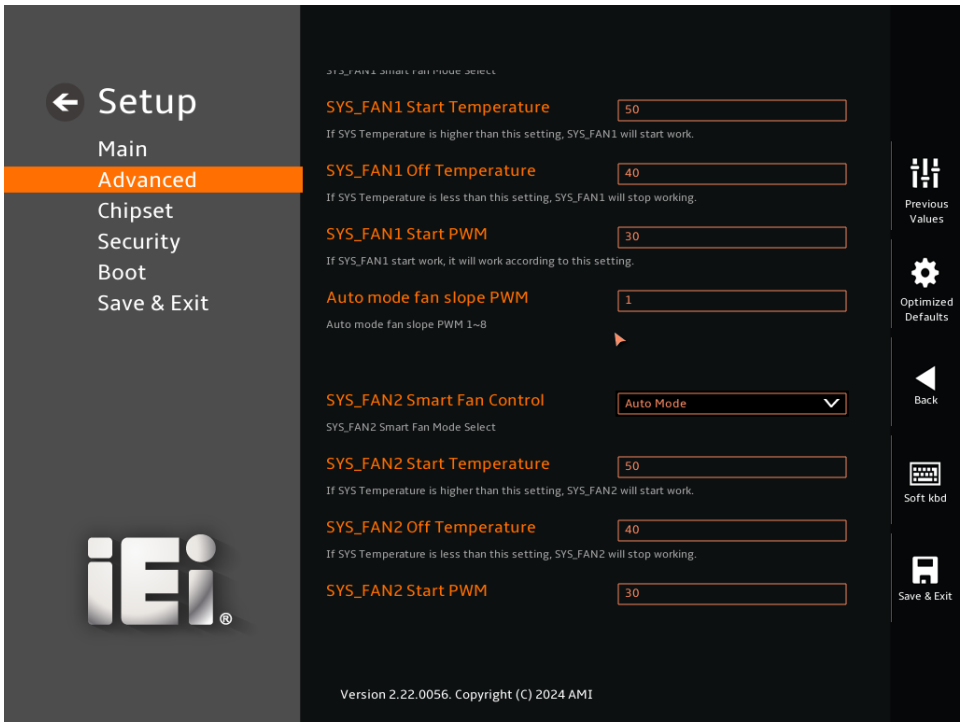
- VDDCR_SOC_RUN
- VDD_MISC_RUN
- VDDIO_MEM_S3

5.3.5.1 Smart Fan Mode Configuration

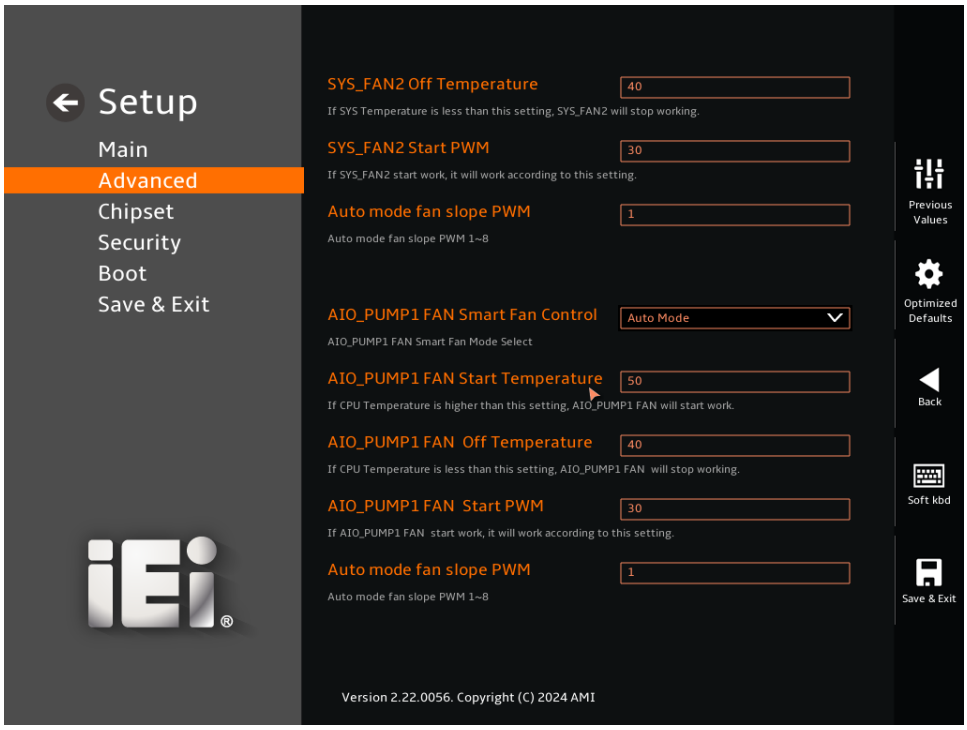
Use the **Smart Fan Mode Configuration** submenu (**BIOS Menu 18**) to configure the CPU/system fan start/off temperature and control mode.



BIOS Menu 18: Smart Fan Mode Configuration (1/3)



BIOS Menu 19: Smart Fan Mode Configuration (2/3)



BIOS Menu 20: Smart Fan Mode Configuration (3/3)

➔ **CPU_FAN1 Smart Fan Control [Auto Mode]**

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

➔ **Manual Mode**		The fan spins at the speed set in Manual Mode settings.
➔ **Auto Mode**	**DEFAULT**	The fan adjusts its speed using Auto Mode settings.

➔ **CPU_FAN1 Hysteresis Temp.High [65]**

Use the **CPU_FAN1 Hysteresis Temp.High** option to set value. If current temperature is higher than this setting, CPU_FAN1 will increase the speed.

➔ **CPU_FAN1 Hysteresis Temp.Low [55]**

Use the **CPU_FAN1 Hysteresis Temp. Low** option to set value. If current temperature is lower than this setting, CPU_FAN1 will decrease the speed.

➔ **CPU_FAN1 Normal Duty [30]**

Use the **CPU_FAN1 Normal Duty** option to set system power on fan speed and minimum fan speed percentage.

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

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

➔ **SYS_FAN1 Start Temperature [50]**

If the SYS temperature is high than the value, the SYS_FAN1will start working. To set a value, Use the + or – key to change the value or enter a decimal number between 1 and 100.

➔ **SYS_FAN1 Off Temperature [40]**

If the SYS temperature is lower than the value, the SYS_FAN1will 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 set the PWM start value. Use the + or – key to change the value or enter a decimal number between 1 and 100.

➔ **SYS_FAN2 Smart Fan Control [Auto Mode]**

Use the **SYS_FAN2 Smart Fan Control** option to configure the System 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.

➔ **SYS_FAN2 Start Temperature [50]**

If the System temperature is higher than this value, SYS_FAN2 will start working. To set a value, Use the + or – key to change the value or enter a decimal number between 1 and 100.

➔ **SYS_FAN2 Off Temperature**

If the System temperature is lower than the value, SYS_FAN2 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_FAN2 Start PWM [30]**

Use the **SYS_Fan2 Start PWM** option to set the PWM start value. Use the + or – key to change the value or enter a decimal number between 1 and 100.

5.3.6 Serial Port Console Redirection

The **Serial Port Console Redirection** menu (**BIOS Menu 21**) allows the console redirection options to be configured. Console Redirection allows users to maintain a system remotely by re-directing keyboard input and text output through the serial port.

BIOS Menu 21: Serial Port Console Redirection (1/3)

BIOS Menu 22: Serial Port Console Redirection (2/3)

BIOS Menu 23: Serial Port Console Redirection (3/3)

➔ **Console Redirection [Disabled]**

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

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

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

5.3.6.1 Console Redirection Settings

The following options are available in the **Console Redirection Settings** submenu (**BIOS Menu 24**) when the **COM Console Redirection** (for COM1 to COM6) option is enabled.

BIOS Menu 24: COM Console Redirection Settings

➔ **Terminal Type [ANSI]**

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

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

➔ **Bits per second [115200]**

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

➔ **9600**		Sets the serial port transmission speed at 9600.
➔ **19200**		Sets the serial port transmission speed at 19200.
➔ **38400**		Sets the serial port transmission speed at 38400.
➔ **57600**		Sets the serial port transmission speed at 57600.
➔ **115200**	**DEFAULT**	Sets the serial port transmission speed at 115200.

➔ **Data Bits [8]**

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

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

➔ **Parity [None]**

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

➔ **None**	**DEFAULT**	No parity bit is sent with the data bits.
➔ **Even**		The parity bit is 0 if the number of ones in the data bits is even.
➔ **Odd**		The parity bit is 0 if the number of ones in the data bits is odd.

➔ **Mark** The parity bit is always 1. This option does not allow for error detection.

➔ **Space** The parity bit is always 0. T This option does not allow for error detection.

➔ **Stop Bits [1]**

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

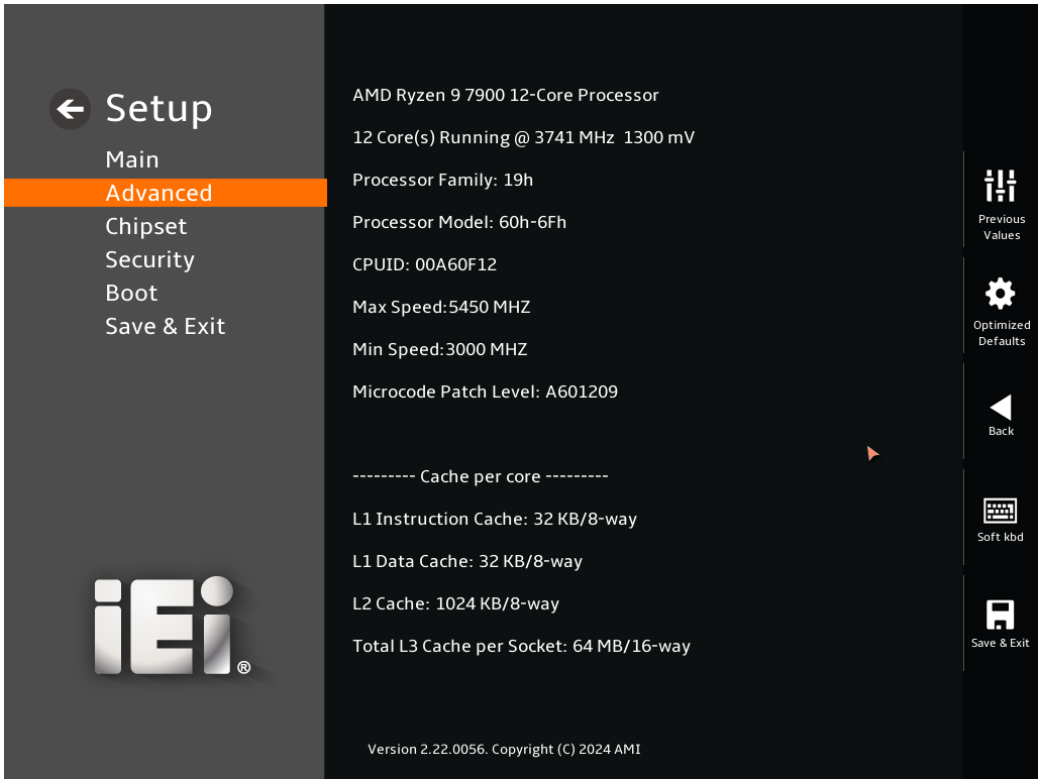
➔ **1** **DEFAULT** Sets the number of stop bits at 1.

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

5.3.7 CPU Configuration

Use the **CPU Configuration** menu (**BIOS Menu 26**) to view detailed CPU specifications.

BIOS Menu 25: CPU Configuration (1/2)



BIOS Menu 26: CPU Configuration (2/2)

5.3.8 NVMe Configuration

Use the **NVMe Configuration** (**BIOS Menu 27**) menu to display the NVMe controller and device information.

BIOS Menu 27: NVMe Configuration

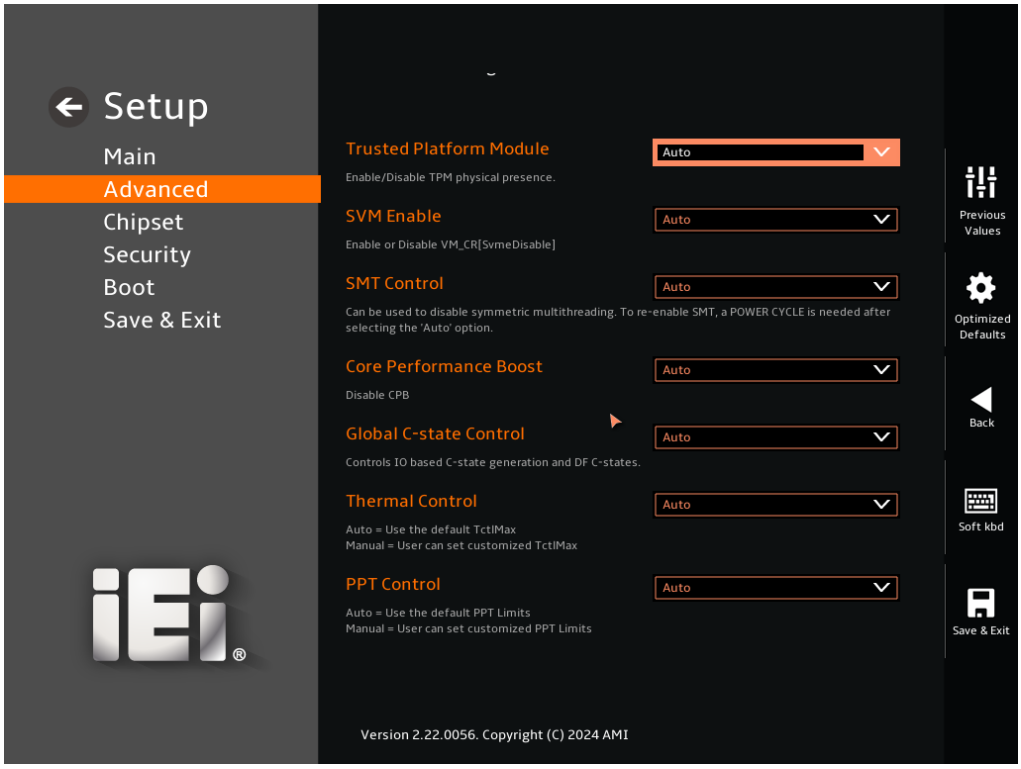
5.3.9 AMD CBS

Use the **AMD CBS** (**BIOS Menu 28**) menu to display the AMD Common BIOS Settings.

BIOS Menu 28: AMD CBS

5.3.9.1 CPU Power Settings

Use the **CPU Power Settings** (**BIOS Menu 29**) menu to display the CPU Power Settings.



BIOS Menu 29: CPU Power Settings

➔ **Trusted Platform Module [Auto]**

Use the **Trusted Platform Module** option to enable or disable the TPM physical presence.

➔ **Auto** **DEFAULT** Enable the TPM.

➔ **Disable** Disable the TPM.

➔ **SVM Enable [Auto]**

Use the **SVM Enable** option to enable or disable the SVM.

➔ **Auto** **DEFAULT** Enable the SVM.

➔ **Disable** Disable the SVM.

➔ **SMT Control [Auto]**

Use the **SMT Control** option to enable or disable the symmetric multithreading.

➔ **Auto**	**DEFAULT**	Enable the symmetric multithreading.
➔ **Disable**		Disable the symmetric multithreading.

➔ **Core Performance Boost [Auto]**

Use the **Core Performance Boost** option to enable or disable the CPB.

➔ **Auto**	**DEFAULT**	Enable the CPB.
➔ **Disable**		Disable the CPB.

➔ **Global C-state Control [Auto]**

Use the **Global C-state Control** option to enable or disable the IO based C-state generation and DF C-states.

➔ **Auto**	**DEFAULT**	Enable the IO based C-state generation and DF C-states.
➔ **Disable**		Disable the IO based C-state generation and DF C-states.

➔ **Thermal Control [Auto]**

Use the **Thermal Control** option to use the TctlMax.

➔ **Auto**	**DEFAULT**	Use the default TctlMax.
➔ **Manual**		Customized the TctlMax.

➔ **PPT Control [Auto]**

Use the **PPT Control** option to use the PPT Limits.

➔ **Auto**	**DEFAULT**	Use the default PPT Limits.
➔ **Manual**		Customized the PPT Limits.

5.3.9.2 NBIO Common Options

Use the **NBIO Common Options** (**BIOS Menu 29**) menu to display the NBIO Common Options.

BIOS Menu 30: NBIO Common Options

➔ **IOMMU [Enabled]**

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

➔ **Disable**		The IOMMU is disabled.
➔ **Enabled**	**DEFAULT**	The IOMMU is enabled.
➔ **Auto**		The IOMMU is auto.

➔ **Kernel DMA Protection Indicator [Auto]**

Use the **Kernel DMA Protection Indicator** option to enable or disable the DMA remap support in IVRS IVinfo Field.

➔	**Disable**		The IOMMU is disabled.
➔	**Enabled**	**DEFAULT**	The IOMMU is enabled.
➔	**Auto**		The IOMMU is auto.

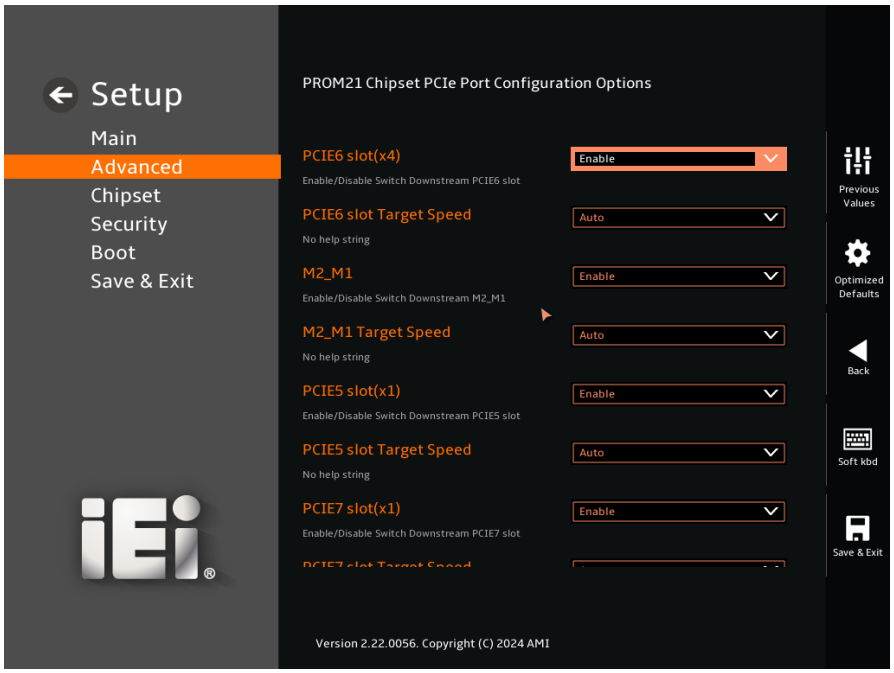
5.3.9.3 PROM21 Chipset Common Options

Use the **PROM21 Chipset Common Options** (**BIOS Menu 29**) menu to display the Chipset Common Options.

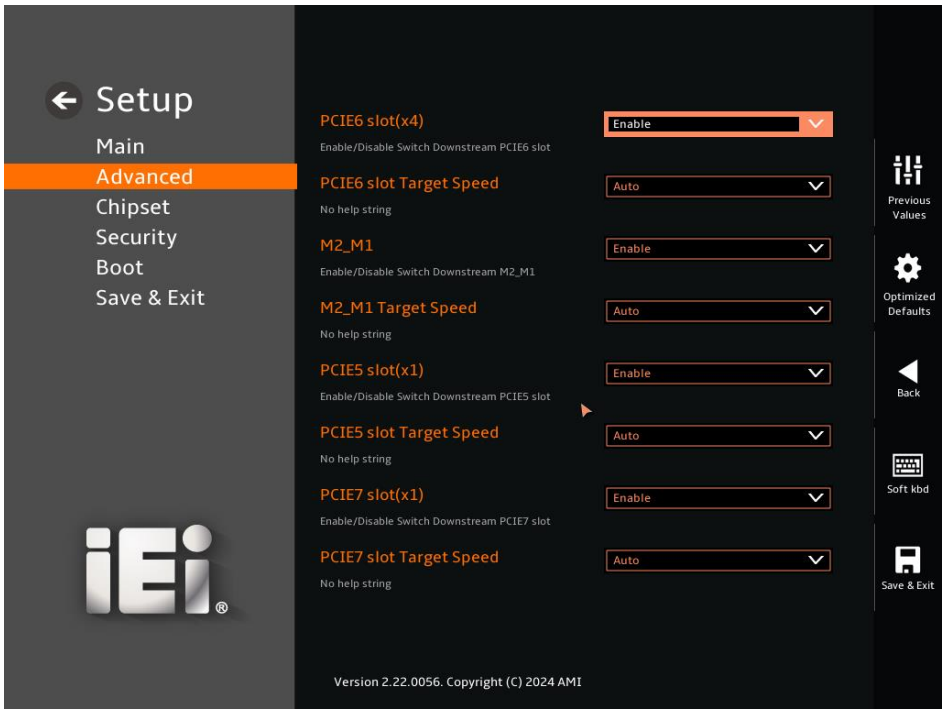
BIOS Menu 31: PROM21 Chipset Common Options

5.3.9.3.1 PROM21 Chipset PCIe Port Configuration Options

Use the **PROM21 Chipset PCIe Port Configuration Options** (**BIOS Menu 29**) menu to display the PCIe Port Configuration.



BIOS Menu 32: PROM21 Chipset PCIe Port Configuration Options (1/2)



BIOS Menu 33: PROM21 Chipset PCIe Port Configuration Options (2/2)

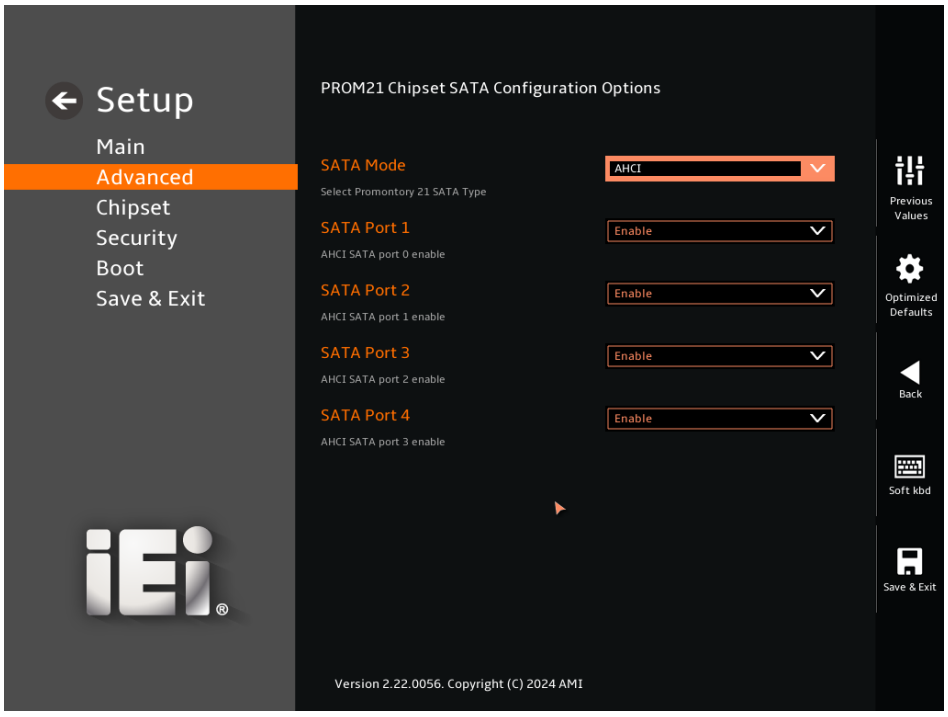
➔ **PCIe slot**

Use the **PCIe slot** option to enable or disable the PCIe slot.

➔	**Auto**	Enable the PCIe slot.
➔	**Disable**	Disable the PCIe slot.

5.3.9.3.2 PROM21 Chipset SATA Configuration Options

Use the **PROM21 Chipset SATA Configuration Options** (**BIOS Menu 29**) menu to display the PCIe Port Configuration.



BIOS Menu 34: PROM21 Chipset PCIe Port Configuration Options

➔ **SATA Mode [AHCI]**

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

➔	**AHCI**	**DEFAULT**	Configures SATA devices as AHCI device.
➔	**RAID**		Configures SATA devices as RAID device.

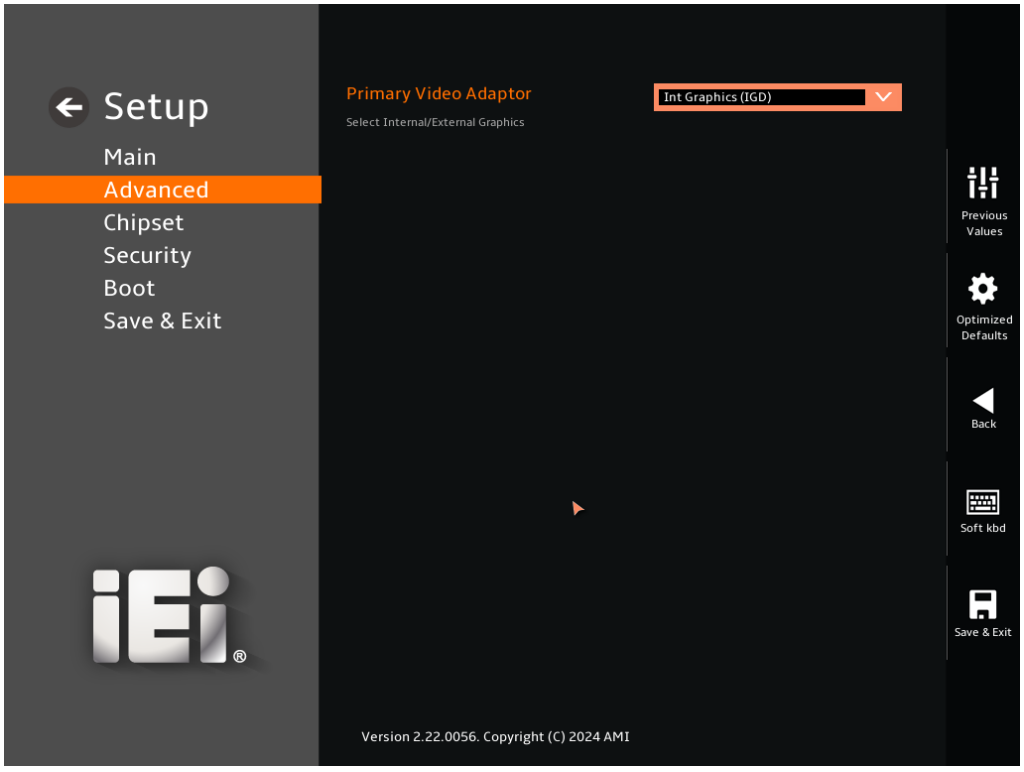
➔ **SATA Port [Auto]**

Use the **SATA Port** option to enable or disable SATA port.

➔ **Enable**	**DEFAULT**	Enable the SATA port.
➔ **Disable**		Disable the SATA port.

5.3.10 AMD PBS

Use the **AMD PBS (BIOS Menu 35**) menu to set AMD PBS.



BIOS Menu 35: AMD PBS

➔ **Primary Video Adaptor [Int Graphics (IGD)]**

Use the **Primary Video Adaptor** option to select the Primary Video Adaptor.

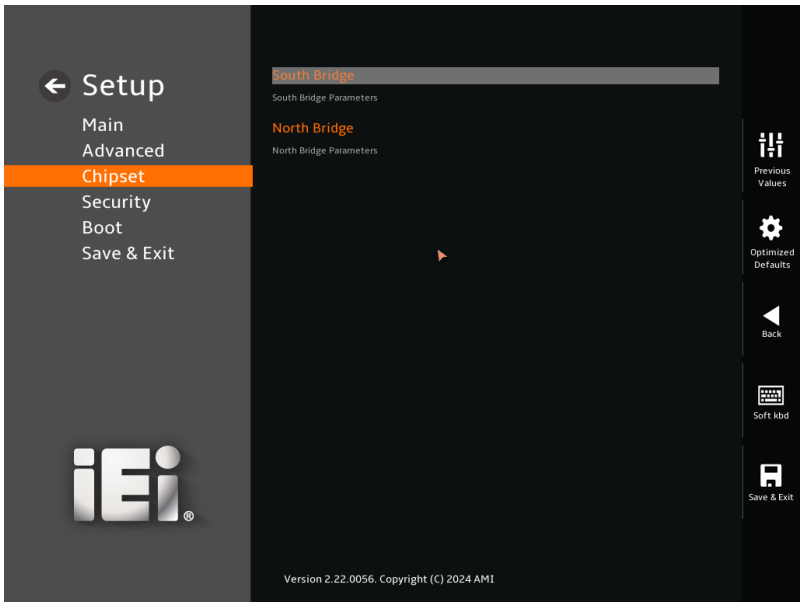
➔ **Int Graphics (IGD)**	**DEFAULT**	The Primary Video Adaptor is Int Graphics (IGD).
➔ **Ext Graphics (PEG)**		Disable the NVMe RAID is Ext Graphics (PEG).

5.4 Chipset

Use the **Chipset** menu (**BIOS Menu 36**) to access the South Bridge and North Bridge configuration menus.

WARNING!

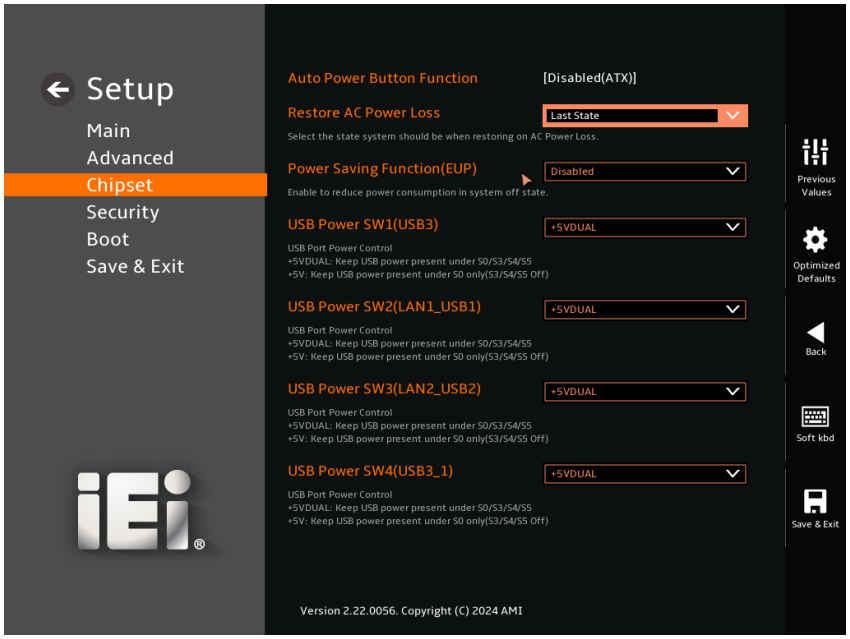
Setting the wrong values for the Chipset BIOS selections in the Chipset BIOS menu may cause the system to malfunction.



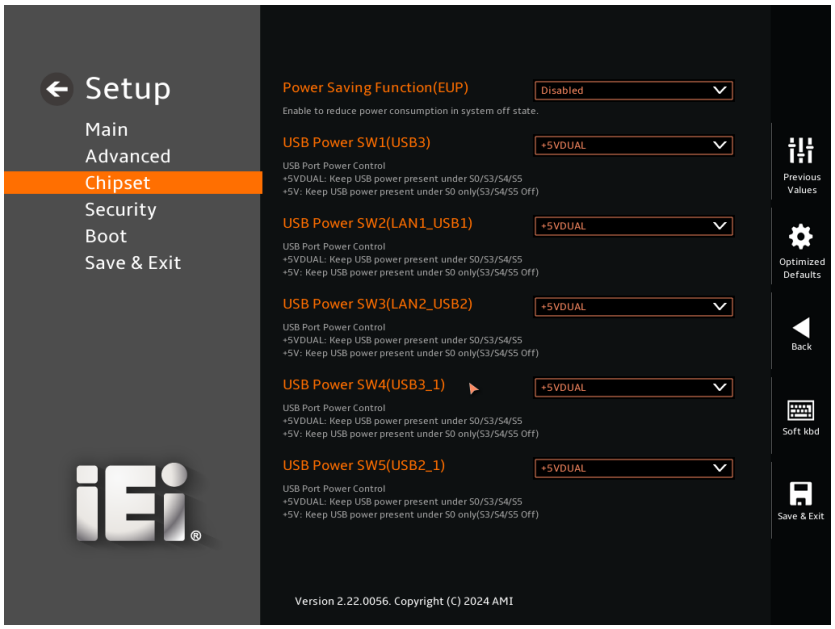
BIOS Menu 36: Chipset

5.4.1 South Bridge

Use the **South Bridge** menu (**BIOS Menu 37**) to configure the parameters.



BIOS Menu 37: South Bridge Configuration (1/2)



BIOS Menu 38: South Bridge Configuration (2/2)

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

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

➔ **Disabled (ATX)**	**DEFAULT**	The system power mode is ATX.

➔ **Restore AC Power Loss [Last State]**

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

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

➔ **Power Saving Function (EUP) [Disabled]**

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

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

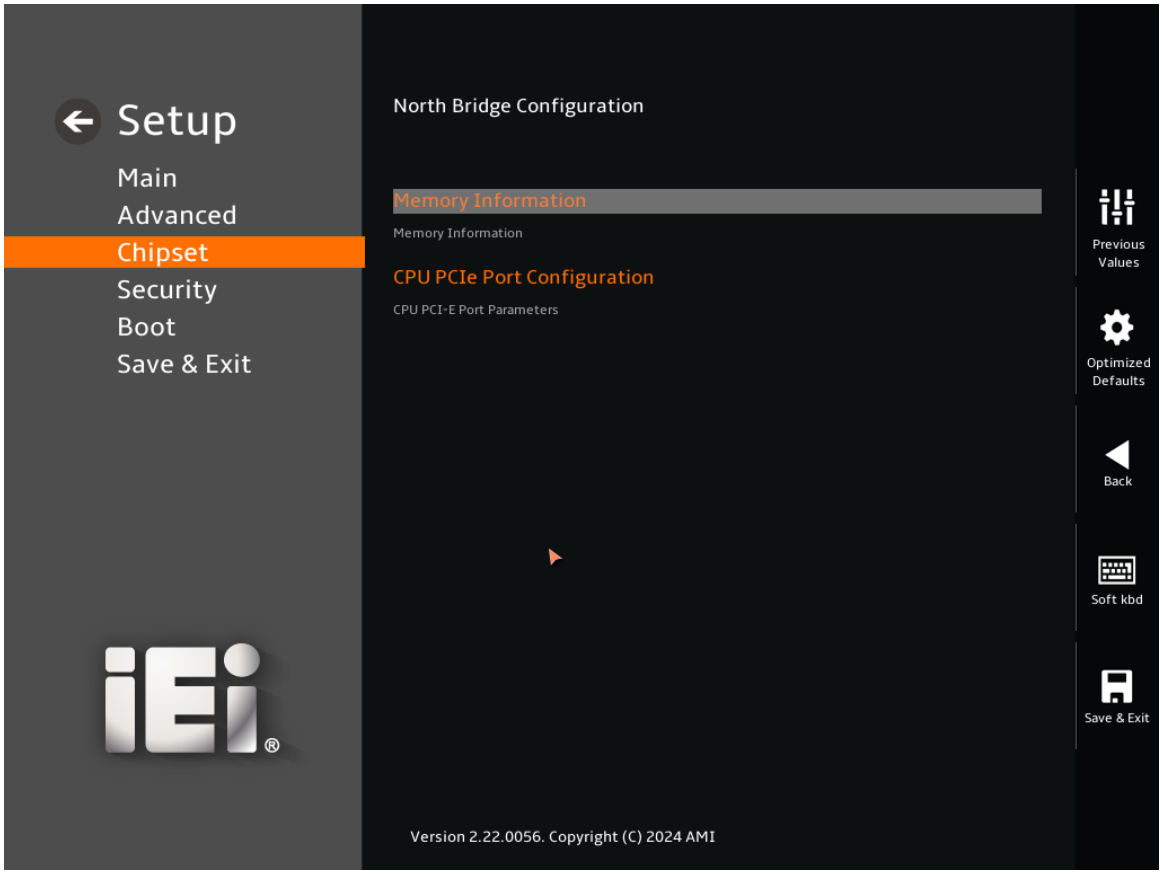
➔ **USB Power [+5VDUAL]**

Use the **USB Power** option to enable or disable the USB Power.

➔ **+5VDUAL**	**DEFAULT**	USB Power is on.
➔ **+5V**		USB Power is off.

5.4.2 Nouth Bridge

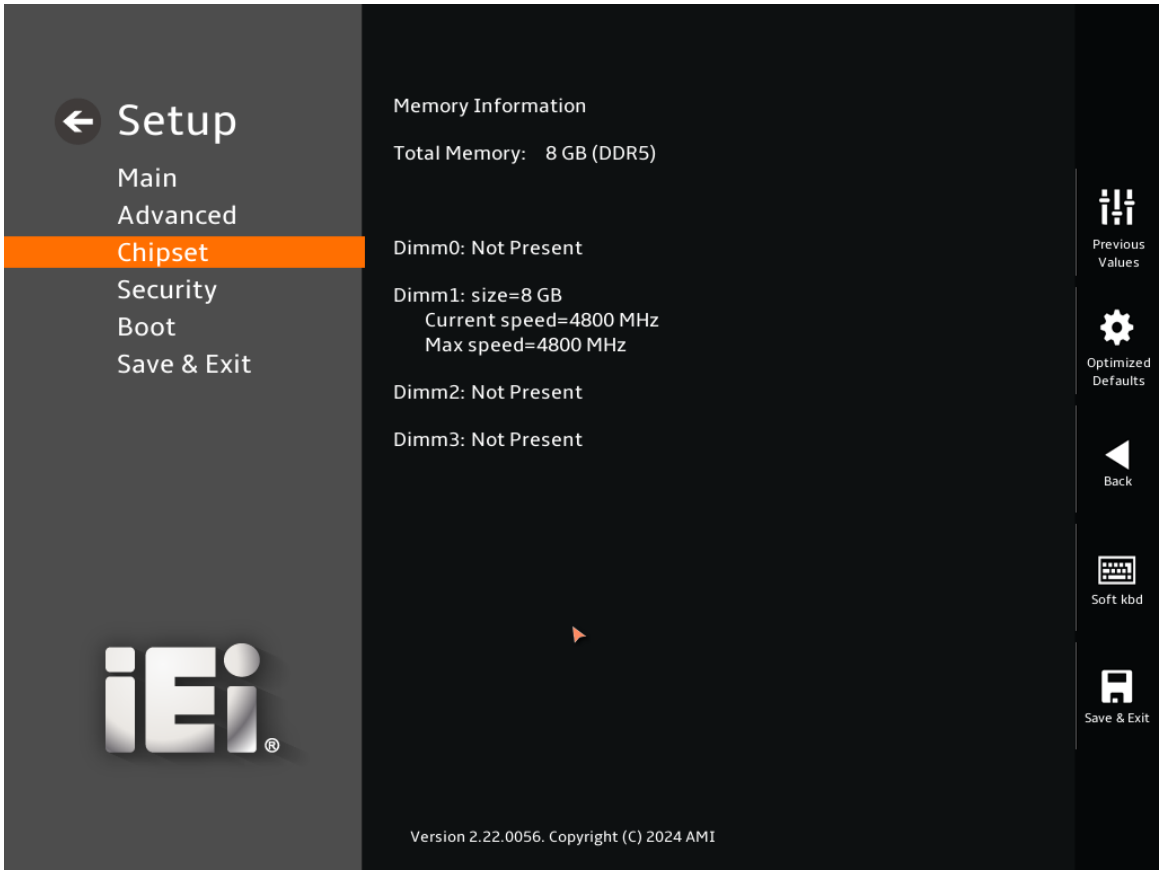
Use the **Nouth Bridge** menu (**BIOS Menu 39**) to configure the parameters.



BIOS Menu 39: Nouth Bridge

5.4.2.1 Memory Information

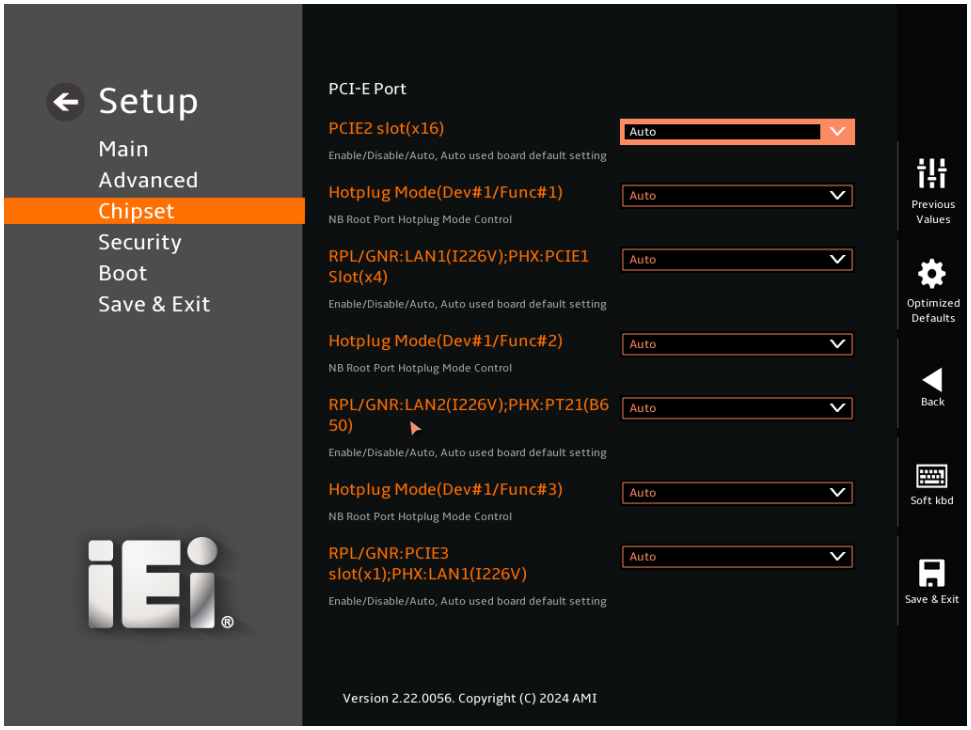
Use the **Memory Configuration** submenu (**BIOS Menu 40**) to view memory information.



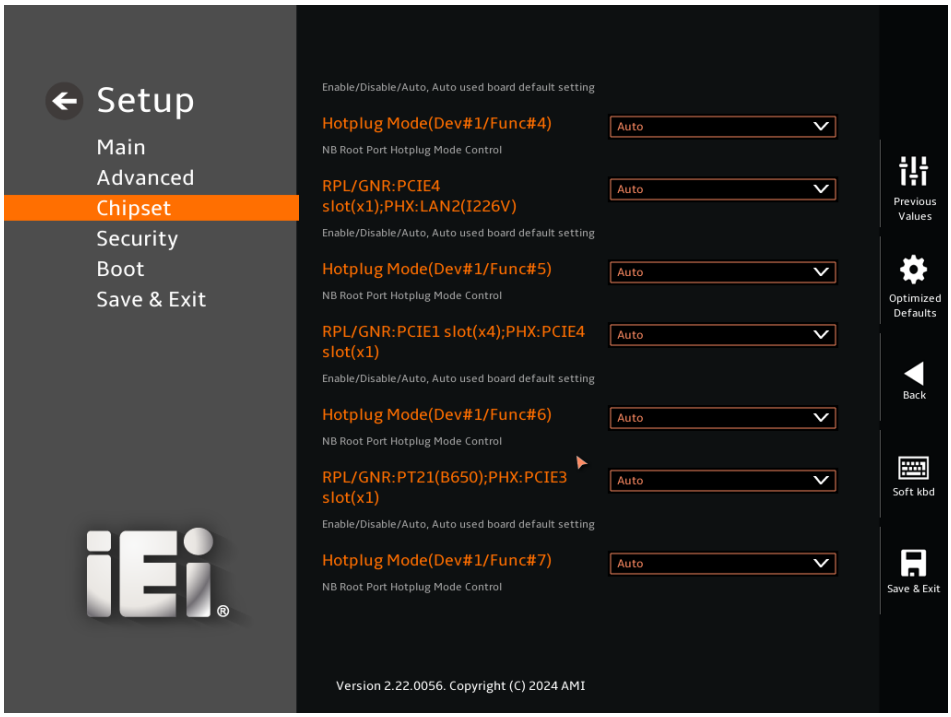
BIOS Menu 40: Memory Configuration

5.5.1.1 CPU PCIe Port Configuration

Use the **CPU PCIe Port Configuration** (**BIOS Menu 42**) menu to configure the PCIe Port.



BIOS Menu 41: CPU PCIe Port Configuration (1/2)



BIOS Menu 42: CPU PCIe Port Configuration (2/2)

➔ **PCIe Port [Auto]**

Use the **PCIe Port** option to configure the PCIe Port.

➔ **Auto** **DEFAULT** PCIe Port function is auto.

➔ **Disabled** PCIe Port function is disabled.

➔ **Enable** PCIe Port function is enabled.

➔ **Hotplug Mode [Dev#1/Func#1]**

Use the **Hotplug Mode** option to configure the Hotplug Mode Control.

➔ **Disabled** The Hotplug Mode is disabled.

➔ **Hotplug Basic** The Hotplug Mode is hotplug basic.

➔ **Hotplug Server** The Hotplug Mode is hotplug server.

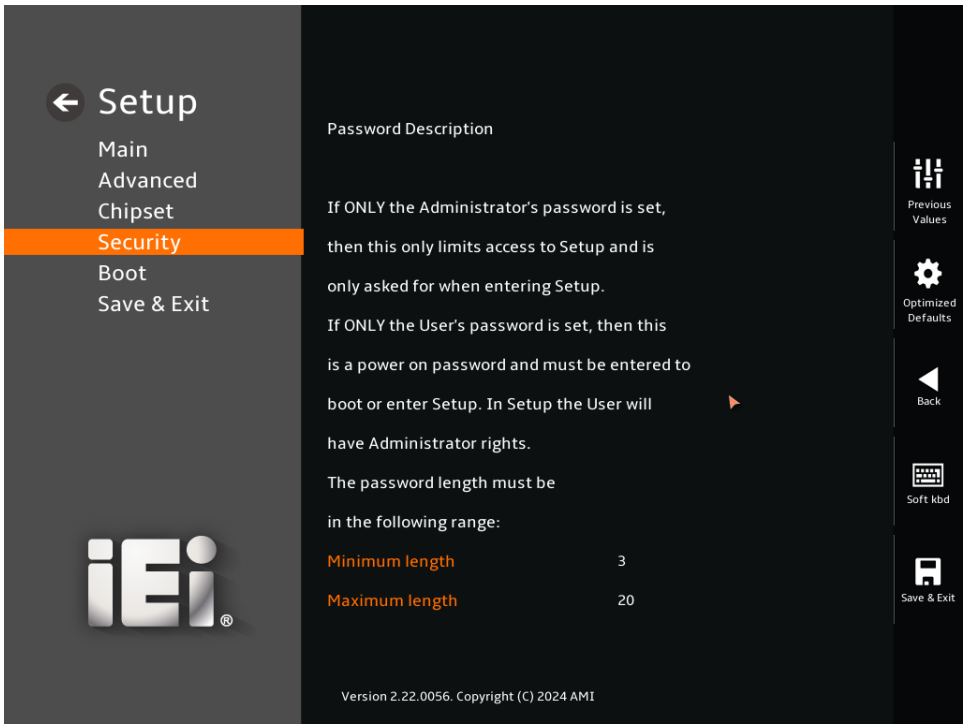
➔ **Hotplug Enhanced** The Hotplug Mode is hotplug enhanced.

➔ **Hotplug Inboard** The Hotplug Mode is hotplug inboard.

➔ **Auto** **DEFAULT** The Hotplug Mode is auto.

5.6 Security

Use the **Security** menu (**BIOS Menu 43**) to set system and user passwords.



BIOS Menu 43: Security (1/2)

BIOS Menu 44: Security (2/2)

➔ **Administrator Password**

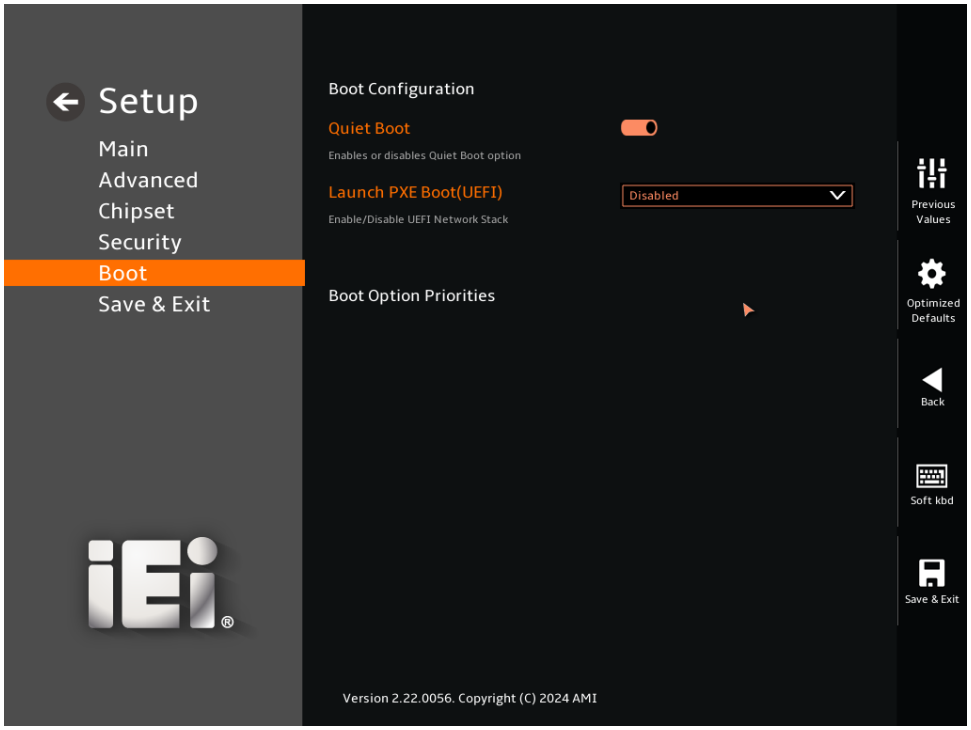
Use the **Administrator Password** to set or change an administrator password.

➔ **User Password**

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

5.7 Boot

Use the **Boot** menu (**BIOS Menu 45**) to configure system boot options.



BIOS Menu 45: Boot

5.7.1 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

➔ **Launch PXE OpROM [Disabled]**

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

➔ **Disabled** **DEFAULT** Ignore all PXE Option ROMs

➔ **Enabled** Load PXE Option ROMs.

➔ **Option ROM Messages [Force BIOS]**

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

➔ **Force BIOS** **DEFAULT** Sets display mode to force BIOS.

➔ **Keep Current** Sets display mode to current.

5.7.2 Boot Option Priorities

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

➔ **Boot Option #1**

Sets the system boot order **ADATA SP580** as the first priority.

➔ **Windows Boot Manager (P1: ADATA SSD SP580 240GB)**

➔ **Disabled**

➔ **Boot Option #2**

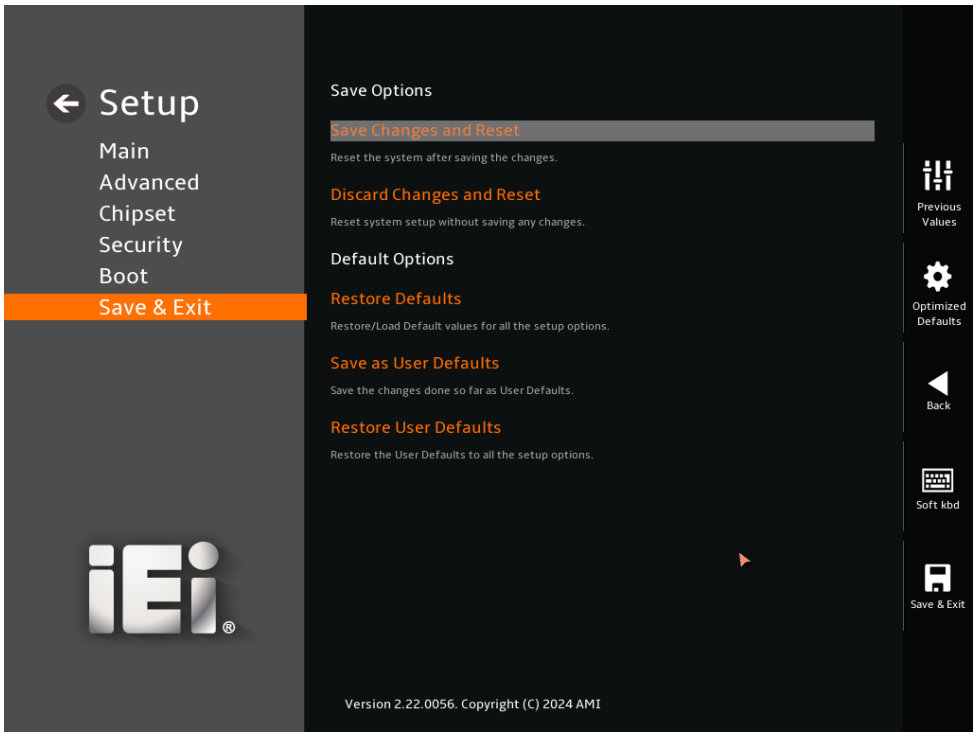
Sets the system boot order **USB Partition 1** as the second priority.

➔ **UEFI: USB, Partition 1**

➔ **Disabled**

5.8 Save & Exit

Use the **Save & Exit** menu (**BIOS Menu 46**) to load default BIOS values, optimal failsafe values and to save configuration changes.



BIOS Menu 46: 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.

Appendix

A

Regulatory Compliance

DECLARATION OF CONFORMITY

This equipment has been tested and found to comply with specifications for CE marking. If the user modifies and/or installs other devices in the equipment, the CE conformity declaration may no longer apply.

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.

Appendix

B

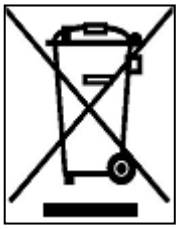
Product Disposal

CAUTION:

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

Dispose of used batteries according to instructions and local regulations.

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



EU-wide legislation, as implemented in each Member State, requires that waste electrical and electronic products carrying the mark (left) must be disposed of separately from normal household waste. This includes monitors and electrical accessories, such as signal cables or power cords. When you need to dispose of your device, 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.

Appendix

C

BIOS Options

Below is a list of BIOS configuration options in the BIOS chapter.

Appendix

D

Watchdog Timer

NOTE:

The following discussion applies to DOS environment. Contact IEI support or visit the IEI website for specific drivers for other operating systems.

The Watchdog Timer is provided to ensure that standalone systems can always recover from catastrophic conditions that cause the CPU to crash. This condition may have occurred by external EMIs or a software bug. When the CPU stops working correctly, Watchdog Timer either performs a hardware reset (cold boot) or a Non-Maskable Interrupt (NMI) to bring the system back to a known state.

A BIOS function call (INT 15H) is used to control the Watchdog Timer.

INT 15H:

AH – 6FH Sub-function:	
AL – 2:	Sets the Watchdog Timer's period.
BL:	Time-out value (Its unit-second is dependent on the item "Watchdog Timer unit select" in CMOS setup).

Table D-1: AH-6FH Sub-function

Call sub-function 2 to set the time-out period of Watchdog Timer first. If the time-out value is not zero, the Watchdog Timer starts counting down. When the timer value reaches zero, the system resets. To ensure that this reset condition does not occur, calling sub-function 2 must periodically refresh the Watchdog Timer. However, the watchdog timer is disabled if the time-out value is set to zero.

A tolerance of at least 10% must be maintained to avoid unknown routines within the operating system (DOS), such as disk I/O that can be very time-consuming.

NOTE:

When exiting a program it is necessary to disable the Watchdog Timer, otherwise the system resets.

EXAMPLE PROGRAM:

```
; INITIAL TIMER PERIOD COUNTER

;
W_LOOP:
;

        MOV     AX, 6F02H       ;setting the time-out value
        MOV     BL, 30          ;time-out value is 48 seconds
        INT     15H

;
; ADD THE APPLICATION PROGRAM HERE
;

        CMP     EXIT_AP, 1      ;is the application over?
        JNE     W_LOOP          ;No, restart the application

        MOV     AX, 6F02H       ;disable Watchdog Timer
        MOV     BL, 0           ;
        INT     15H

;
; EXIT ;
```

Appendix

E

Error Beep Code

E.1 PEI Beep Codes

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

E.2 DXE Beep Codes

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

NOTE:

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

Appendix

F

Hazardous Materials Disclosure

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

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

Please refer to the following table.

Part Name	Toxic or Hazardous Substances and Elements									
	Lead (Pb)	Mercury (Hg)	Cadmium (Cd)	Hexavalent Chromium (CR(VI))	Polybrominated Biphenyls (PBB)	Polybrominated Diphenyl Ethers (PBDE)	Bis(2-ethylhexyl) phthalate (DEHP)	Butyl benzyl phthalate (BBP)	Dibutyl phthalate (DBP)	Diisobutyl phthalate (DIBP)
Housing	O	O	O	O	O	O	O	O	O	O
Printed Circuit Board	O	O	O	O	O	O	O	O	O	O
Metal Fasteners	O	O	O	O	O	O	O	O	O	O
Cable Assembly	O	O	O	O	O	O	O	O	O	O
Fan Assembly	O	O	O	O	O	O	O	O	O	O
Power Supply Assemblies	O	O	O	O	O	O	O	O	O	O
Battery	O	O	O	O	O	O	O	O	O	O

O: This toxic or hazardous substance is contained in all of the homogeneous materials for the part is below the limit requirement in Directive (EU) 2015/863.

X: This toxic or hazardous substance is contained in at least one of the homogeneous materials for this part is above the limit requirement in Directive (EU) 2015/863.

F.2 China RoHS

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

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

部件名称	有毒有害物质或元素					
	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (CR(VI))	多溴联苯 (PBB)	多溴二苯醚 (PBDE)
壳体	O	O	O	O	O	O
印刷电路板	O	O	O	O	O	O
金属螺帽	O	O	O	O	O	O
电缆组装	O	O	O	O	O	O
风扇组装	O	O	O	O	O	O
电力供应组装	O	O	O	O	O	O
电池	O	O	O	O	O	O

O: 表示该有毒有害物质在该部件所有物质材料中的含量均在 SJ/T11364-2014 與 GB/T26572-2011 标准规定的限量要求以下。

X: 表示该有毒有害物质至少在该部件的某一均质材料中的含量超出 SJ/T11364-2014 與 GB/T26572-2011 标准规定的限量要求。