



MODEL:
IMBA-ADL-H610

ATX motherboard supports LGA1700 Intel® 12th/13th Generation Core™ i9/i7/i5/i3, Pentium® and Celeron® processor, DDR4, Triple independent displays, Dual LAN, USB 3.2, SATA 6Gb/s and RoHS

User Manual

Revision

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Manual Conventions



WARNING

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



CAUTION

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



NOTE

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

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Chapter

1

Introduction

IMBA-ADL-H610 ATX Motherboard

1.1 Introduction



Figure 1-1: IMBA-ADL-H610

The IMBA-ADL-H610 is an ATX motherboard. It accepts a Socket LGA1700 Intel® 12/13th Generation Core™ i9/i7/i5/i3, Pentium® or Celeron® processor and supports four 288-pin 3200MHz dual-channel DDR4 SDRAM DIMM modules up to 64 GB. The integrated Intel® H610/H610E chipset supports four SATA 6Gb/s drives. Moreover, the IMBA-ADL-H610 includes DP, HDMI and iDPM interfaces for triple independent display.

The IMBA-ADL-H610 provides one 2.5GbE interfaces through the Intel® I225V controller, one 1GbE interface through the Intel® I219LM controller. Expansion and I/O include two PCI slots, one PCIe x16 slot, one PCIe x4 slots, two PCIe x 1 slots, two COM ports, two USB 3.2 Gen 1, two USB 3.2 Gen 2 and four USB 2.0 on the rear panel, two USB 2.0 via internal pin headers and four COM ports via internal pin headers.

1.2 Features

Some of the IMBA-ADL-H610 motherboard features are listed below:

- ATX form factor
- 12th/13th generation LGA1700 Intel® Core™ i9/i7/i5/i3, Pentium® or Celeron® processor supported
- Intel® H610/H610E chipset
- Two 288-pin 3200MHz dual-channel DDR4 DIMMs support up to 64 GB
- One Intel® I225V 2.5GbE controller
- One Intel® I219LM 1GbE controller
- Supports PCI Express Generation 4.0
- Triple independent display by DP, HDMI and iDPM interfaces
- Four SATA 6Gb/s connectors
- Two USB 3.2 Gen 2 ports and two USB 3.2 Gen 1 ports on the rear panel
- One PCIe x16 slots
- One PCIe x4 slots
- Two PCIe x1 slots
- Two PCI slots
- Six serial ports (two on rear panel, the others via internal pin header)
- The optional expansion cards provide more choices to meet user's demand
- TPM 2.0 security function supported by PTT (Platform Trust Technology), based on BIOS setting
- One iAUDIO, support IEI AC-KIT-888S Audio Module.
- RoHS compliant

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1.3 Connectors

The connectors on the IMBA-ADL-H610 are shown in the figure below.

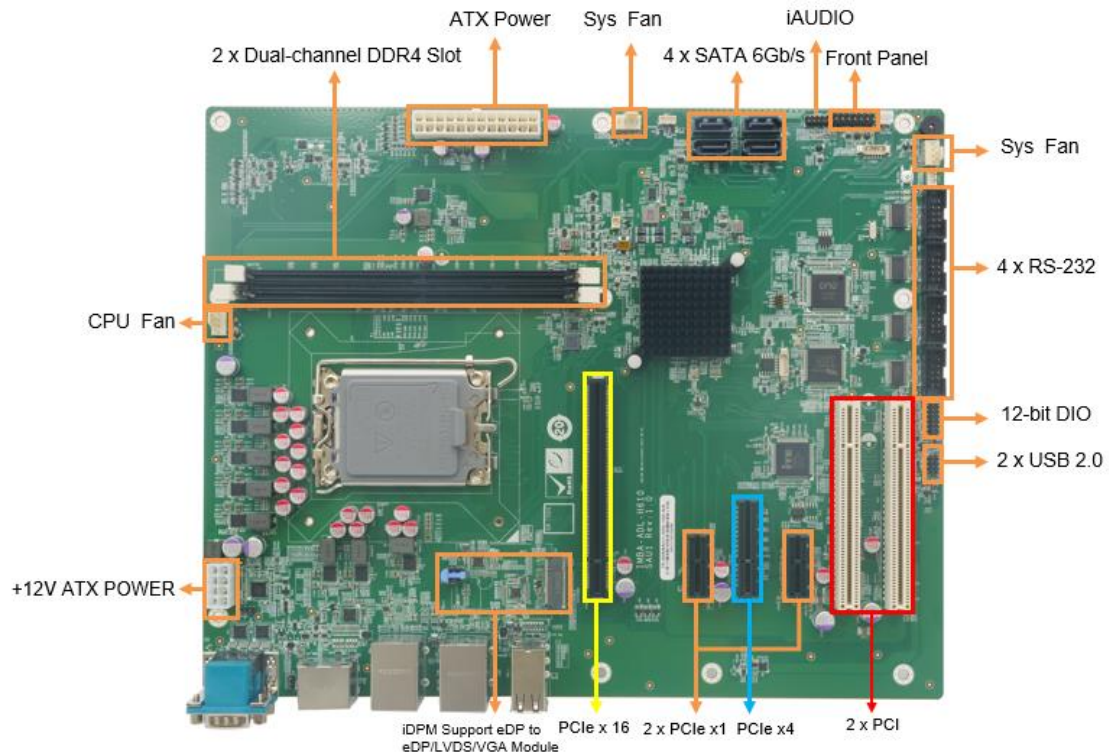


Figure 1-2: Connectors

1.4 Dimensions

The main dimensions of the IMBA-ADL-H610 are shown in the diagram below.

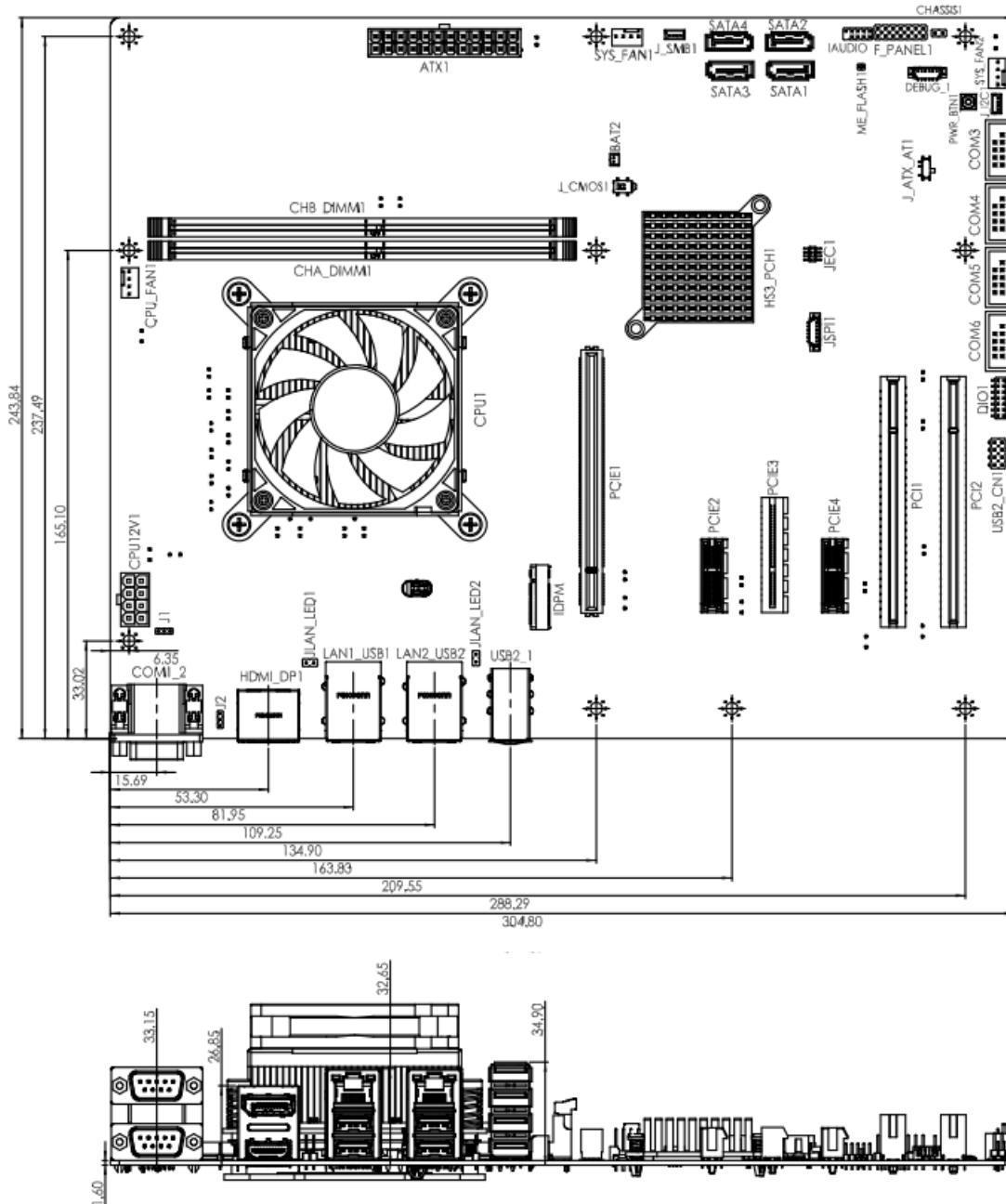


Figure 1-3: IMBA-ADL-H610 Dimensions (mm)

IMBA-ADL-H610 ATX Motherboard

1.5 Data Flow

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

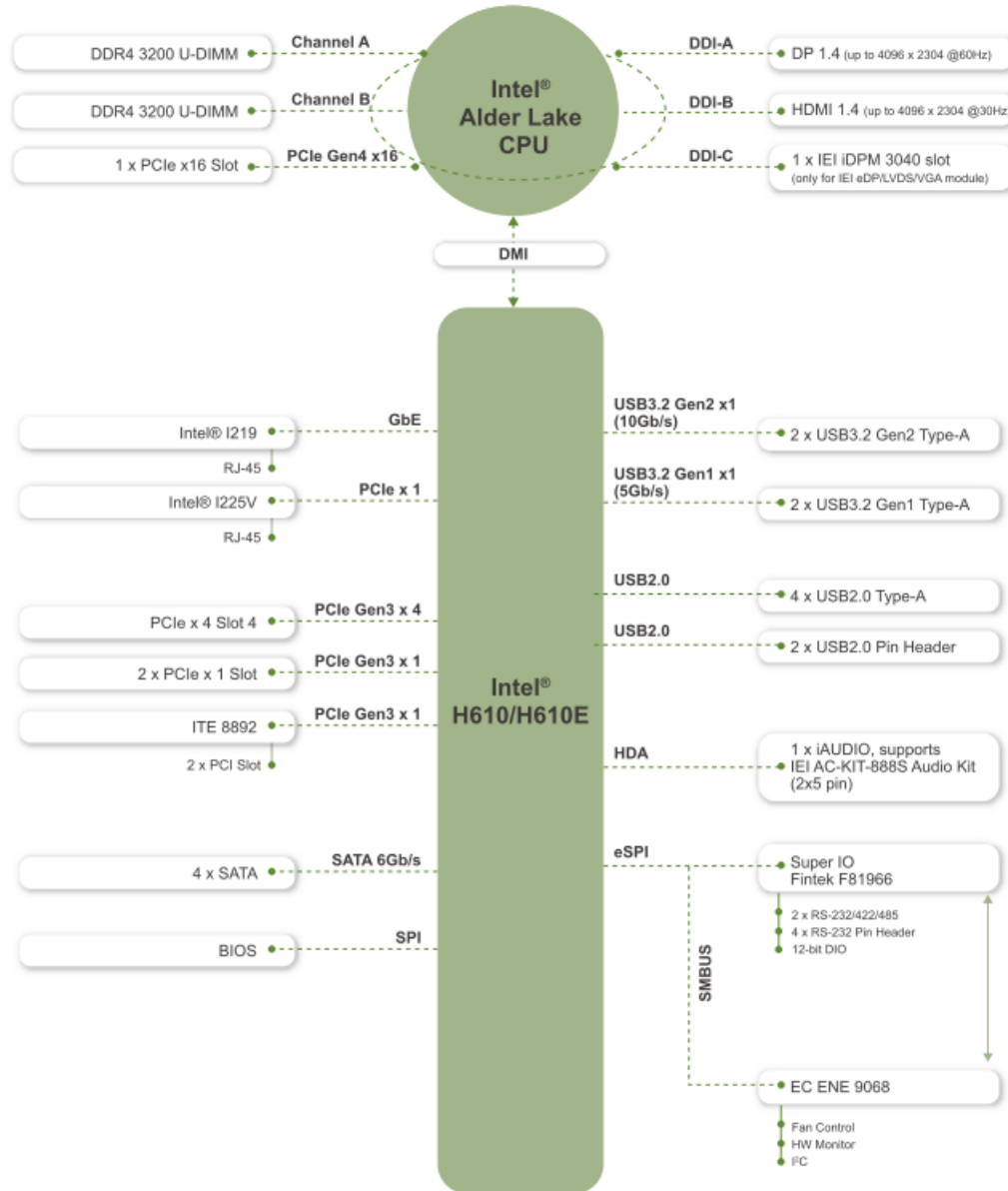


Figure 1-4: Data Flow Diagram

1.6 Technical Specifications

The IMBA-ADL-H610 technical specifications are listed below.

Specification/Model	IMBA-ADL-H610
Form Factor	ATX
CPU Supported	12 th /13 th generation LGA1700 Intel® Core™ i9/i7/i5/i3, Pentium® or Celeron® CPU
Chipset	Intel® H610/H610E
Memory	Two 288-pin 2933 MHz dual-channel unbuffered DDR4 SDRAM DIMMs supported (system max. 128 GB)
Graphics Engine	Intel® UHD Graphics
Display Output	Triple independent display 1 x DP (up to 4096 x 2304 @60Hz) 1 x HDMI (up to 4096 x 2304 @30Hz) 1 x iDPM 3040 slot (only for IEI eDP/LVDS/VGA module)
Ethernet Controllers	LAN1: Intel® I219LM 1GbE controller LAN2: Intel® I225V 2.5GbE controller
Audio	1 x iAUDIO (2x5 pin, P=2.0) Support 7.1 channel HD audio by IEI AC-KIT-888S kit module
BIOS	AMI UEFI BIOS
Super I/O Controller	Fintek F81966D
Watchdog Timer	Software programmable supports 1~255 sec. system reset
Expansions	**1 x PCIe Gen4 x16 1 x PCIe Gen3 x4 open-end 2 x PCIe Gen3 x1 2 X PCI
I/O Interface Connectors	
Chassis Intrusion	One 2-pin header
Digital I/O	12-bit digital I/O

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Ethernet	Two RJ-45 ports
Fan	One 4-pin CPU smart fan connector Two 4-pin system smart fan connector
Front Panel	One 14-pin header (power LED, HDD LED, speaker, power button, reset button)
I²C	One 4-pin wafer connector
LAN LED	Two 2-pin headers for LAN1 LED and LAN2 LED
Serial ATA	Four SATA 6Gb/s connectors
Serial Ports	Two RS-232/422/485 DB-9 (RS-485 support AFC) Four RS-232 via internal box header
SMBus	One 4-pin wafer connector
USB Ports	Two USB 3.2 Gen 2 (10Gb/s) ports (Type A) on rear panel Two USB 3.2 Gen 1 (5Gb/s) ports (Type A) on rear panel Four USB 2.0 ports (Type A) on rear panel Two USB 2.0 ports via internal pin header
Environmental and Power Specifications	
Power Supply	AT/ATX power supply
Power Consumption	3.3V@0.36A, 5V@7.04A, 12V@5.62A, 5VSB@0.7A (Intel® Core™ i7-12700E CPU with two 32 GB 2933 MHz DDR4 memory, EuP mode enabled)
Operating Temperature	0°C ~ 60°C
Storage Temperature	-30°C ~ 70°C
Operating Humidity	5% ~ 95% (non-condensing)
Physical Specifications	
Dimensions	244 mm x 305 mm
Weight (GW/NW)	1200 g/700 g

Table 1-1: IMBA-ADL-H610 Specifications

Chapter

2

Packing List

IMBA-ADL-H610 ATX Motherboard

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-ADL-H610 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-ADL-H610 was purchased from or contact an IEI sales representative directly by sending an email to sales@ieiworld.com.

The IMBA-ADL-H610 is shipped with the following components:






Quantity	Item and Part Number	Image
1	IMBA-ADL-H610 single board computer	
2	SATA cable (P/N: 32801-012500-100-RS)	
1	I/O shielding (P/N: 45014-0098C0-00-HF)	
1	Quick installation guide (P/N: 51000-025110-HF)	<p>ATX Motherboard Supports LGA1150 12th/13th Gen. Intel® Core™ ®10100, Pentium® and Celeron® Processors (FPGA, Triple Independent Channel, Dual GBE LAN, USB 3.1, SATA M.2, and more)</p> <p>IMBA-ADL-H610 Quick Installation Guide Version 1.0 September 1, 2022</p> <p>Package List IMBA-ADL-H610 package includes the following items:</p> <ul style="list-style-type: none"> • 1 x IMBA-ADL-H610 single board computer • 2 x SATA cable • 1 x I/O shielding • 1 x CD  <small>©2022 Copyright by IEI Integration Corp. All rights reserved.</small>

Table 2-1: Packing List

IMBA-ADL-H610 ATX Motherboard

2.4 Optional Items

The following are optional components which may be separately purchased:

Item and Part Number	Image
Dual-port USB cable with bracket (P/N: 19800-003100-100-RS)	
SATA power cable (P/N: 32102-000100-200-RS)	
RS-232 cable, 230mm · P=2.54 (P/N: 19800-020100-100-RS)	
Realtek ALC888S 7.1 Channel HD Audio peripheral board, RoHS (P/N: AC-KIT-888S-R10)	
High-performance LGA1155/LGA1156 cooler kit (1U chassis compatible, 45W) (P/N: CF-1156C-R20)	
High-performance LGA1155/1156 cooler kit, 1U chassis compatible 73W (P/N: CF-115XA-R10)	
High-performance LGA1155/LGA1156 cooler kit (1U chassis compatible, 65W) (P/N: CF-1156D-R30)	






Item and Part Number	Image
<p>High-performance LGA1155/LGA1156 cooler kit (95W) (P/N: CF-115XE-R10)</p>	
<p>eDP to eDP DisplayPort converter board (for IEI iDPM connector) (P/N: iDPM-eDP-R10)</p>	
<p>eDP to LVDS DisplayPort converter board (for IEI iDPM connector) (P/N: iDPM-LVDS-R10)</p>	
<p>eDP to VBO DisplayPort converter board (for IEI iDPM connector) (P/N: iDPM-VBO-R10)</p>	
<p>eDP to DP DisplayPort converter board (for IEI iDPM connector) (P/N: iDPM-DP-R10)</p>	

Table 2-2: Optional Items

Chapter

3

Connectors

3.1 Peripheral Interface Connectors

This chapter details all the peripheral interface connectors.

3.1.1 IMBA-ADL-H610 Layout

The figures below show all the peripheral interface connectors.

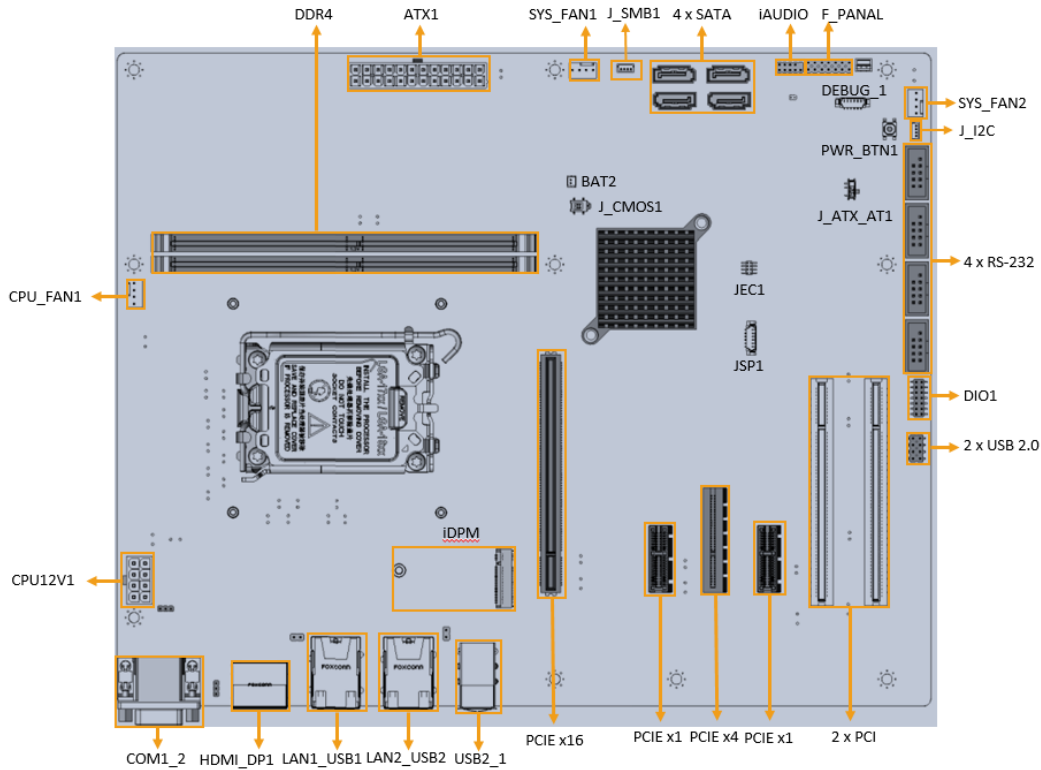


Figure 3-1: Peripheral Interface Connectors

3.1.2 Peripheral Interface Connectors

The table below lists all the connectors on the board.

Connector	Type	Label
ATX CPU 12V power connector	8-pin Molex power connector	CPU12V1
AT/ATX power mode setting	24-pin connector	J_ATX_AT1

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Connector	Type	Label
Clear CMOS jumper	4-pin switch	J_CMOS1
Flash escriptor security override jumper	3-pin header	ME_FLASH1
Audio connector for IEI AC-KIT-888S kit	10-pin header	IAUDIO
ATX power connector	24-pin connector	ATX1
ATX CPU 12V power connector	8-pin connector	CPU12V1
RTC battery connector	2-pin wafer	BAT2
Chassis intrusion connector	2-pin header	CHASSIS1
DDR4 DIMM slots	288-pin socket	CHA_DIMM1, CHB_DIMM1
Digital I/O connector	14-pin header	DIO1
EC debug connector	6-pin wafer	DEBUG_1
Fan connectors	4-pin wafer	CPU_FAN1, SYS_FAN1, SYS_FAN2
Front panel connector	14-pin header	F_PANEL1
I ² C connector	4-pin wafer	J_I2C1
LAN link LED connector	2-pin header	JLAN_LED1, JLAN_LED2
RS-232 serial port connectors	10-pin wafer	COM3, COM4, COM5, COM6
RAA229134 FW flash connector	3-pin header	J1
LT86101X FW flash connector	3-pin header	J2
SATA 6Gb/s connectors	7-pin SATA connector	SATA1, SATA2, SATA3, SATA4
SMBus connector	4-pin wafer	J_SMB1
Flash SPI ROM connector	6-pin wafer	JSPI1
Flash EC ROM connector	8-pin header	JEC1
Internal USB 2.0 connector	8-pin header	USB2_CN1

Connector	Type	Label
IEI iDPM slot	iDPM 3040 slot	IDPM
PCI slots	PCI slot	PCI1, PCI2
PCIe x1 slot	PCIe x1 slot	PCIE2, PCIE4
PCIe x4 slot	PCIe x4 slot	PCIE3
PCIe x16 slot	PCIe x16 slot	PCIE1
Onboard power button	Push button	PWR_BTN1

Table 3-1: Peripheral Interface Connectors

3.1.3 External Interface Panel Connectors

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

Connector	Type	Label
External RS-232/422/485 connector	Dual DB-9	COM1_2
External HDMI&DP combo connector	DisplayPort, HDMI	HDMI_DP1
External 1GbE RJ-45 and dual USB 3.2 Gen 1 combo connector	RJ-45,dual USB 3.2 Gen 1	LAN1_USB1
External 2.5GbE RJ-45 and dual USB 3.2 Gen 2 combo connector	RJ-45,dual USB 3.2 Gen 2	LAN2_USB2
External quad USB 2.0 connector	USB 2.0	USB2_1

Table 3-2: Rear Panel Connectors

IMBA-ADL-H610 ATX Motherboard

3.2 Internal Peripheral Connectors

The section describes all of the connectors on the IMBA-ADL-H610.

3.2.1 ATX CPU 12V Power Connector

- CN Label:** CPU12V1
- CN Type:** 8-pin Molex power connector
- CN Location:** See **Figure 3-2**.

The ATX CPU 12V power connector Supply 12V power to the CPU.

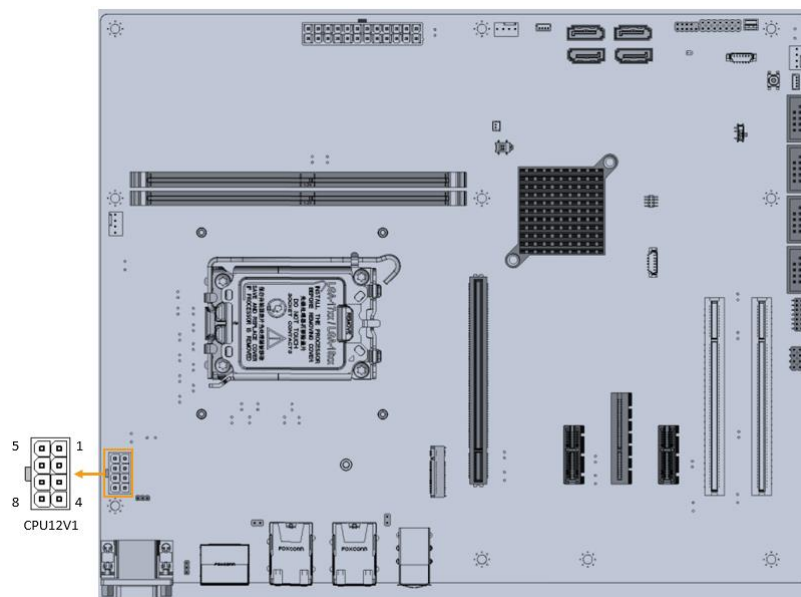


Figure 3-2: ATX CPU 12V power connector location

3.2.2 AT/ATX Power Mode Setting

- CN Label:** J_ATX_AT1
- CN Type:** 3-pin switch
- CN Location:** See Figure 3-3
- CN Pinouts:** See Table 3-3

The AT/ATX power mode selection is made through the AT/ATX power mode switch which is shown in Figure3-6.

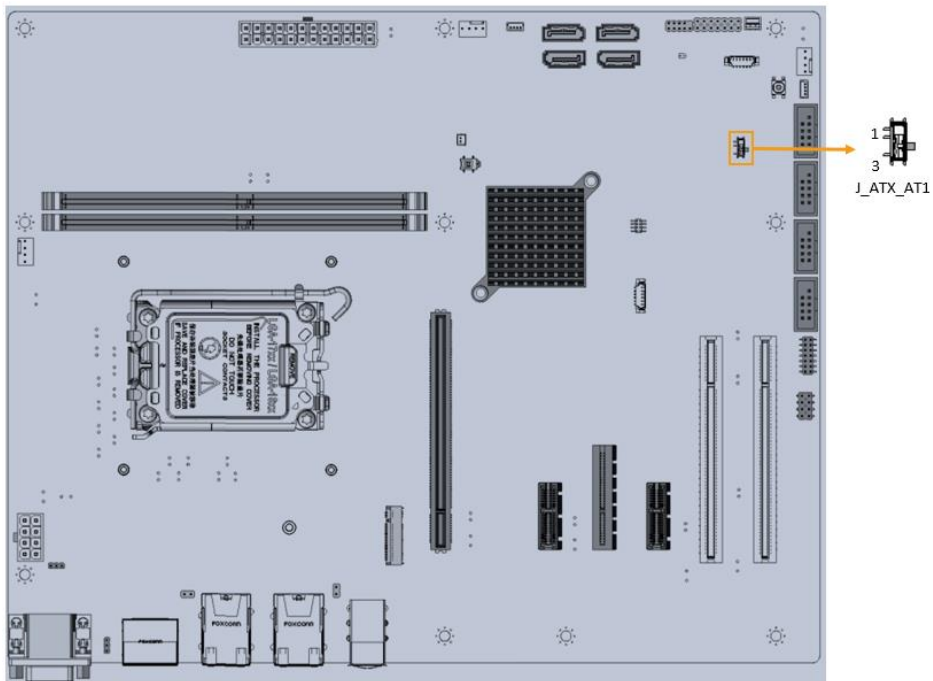


Figure 3-3: AT/ATX Power Mode Switch Locations

Pin	Description	Pin	Description
Short 1 - 2	ATX Power Mode (default)	Short 2 - 3	AT Power Mode

Table 3-3: AT/ATX Power Mode Switch Settings

IMBA-ADL-H610 ATX Motherboard

3.2.1 Clear CMOS Jumper

- CN Label:** J_CMOS1
- CN Type:** 4-pin switch
- CN Location:** See Figure 3-4
- CN Pinouts:** See Table 3-4

The J_CMOS1 is used for reset PCH registers in the RTC WELL to their default value.

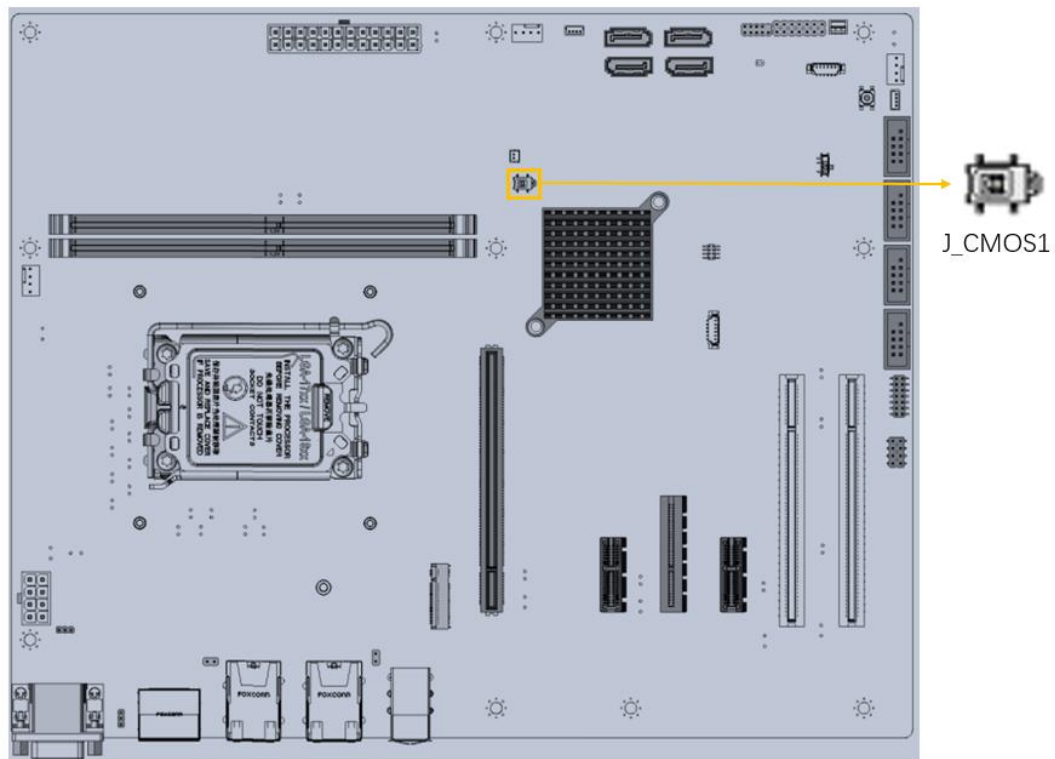


Figure 3-4: Clear CMOS Jumper Location

Pin	Description
Open (default)	Keep CMOS Setup (Normal Operation)
Short	Clear CMOS Setup

Table 3-4: Clear CMOS Jumper Pinouts

3.2.2 Flash Descriptor Security Override Jumper

- CN Label:** ME_FLASH1
- CN Type:** 2-pin header, p=1.27 mm
- CN Location:** See Figure 3-5
- CN Pinouts:** See Table 3-5

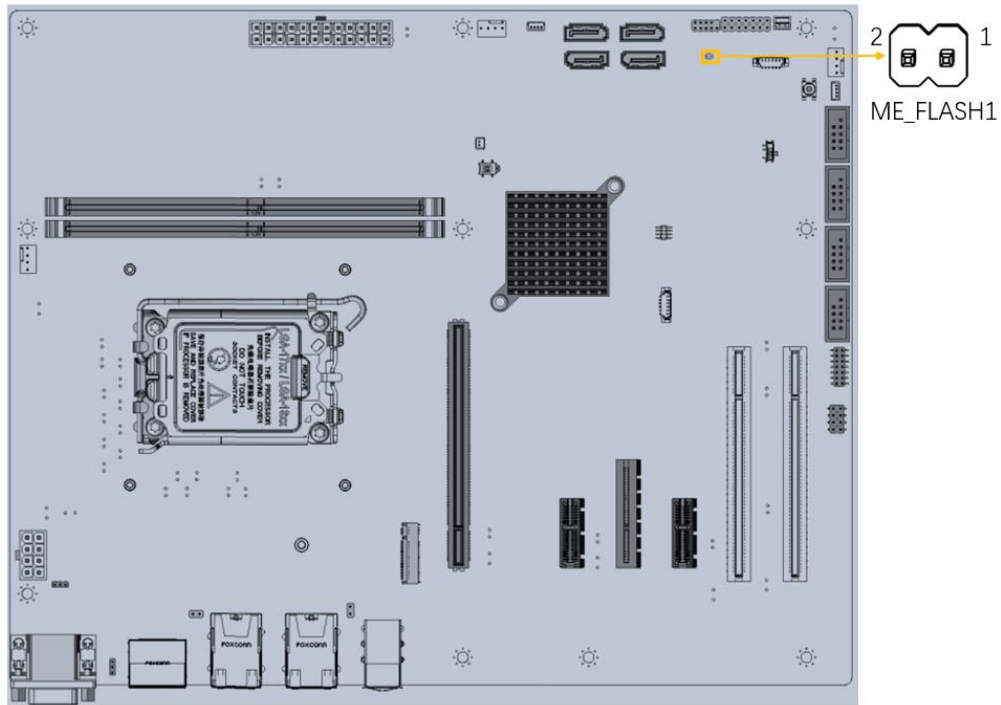


Figure 3-5: Flash Description Security Override Connector Location

Pin	Description	Pin	Description
NC	No override (Default)	Short	override

Table 3-5: Flash Description Security Override Connector Pinouts

3.2.3 Audio Connector For IEI AC-KIT-888S Kit

- CN Label:** IAUDIO
- CN Type:** 10-pin header, p=2.00 mm
- CN Location:** See Figure 3-6
- CN Pinouts:** See Table 3-6

IMBA-ADL-H610 ATX Motherboard

This connector connects to speakers, a microphone and an audio input.

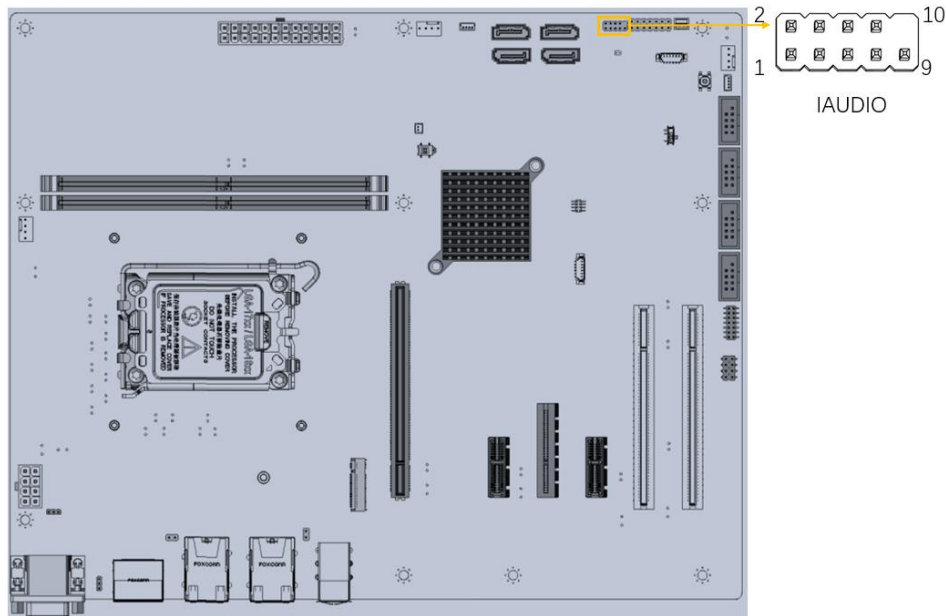


Figure 3-6: Audio Connector For IEI AC-KIT-888S Kit Location

Pin	Description	Pin	Description
1	HDA_SYNC_R	2	HDA_BCLK_R
3	HDA_SDO_R	4	HDA_PCBEIPC
5	HDA_SDI_0_R	6	HDA_RST_R
7	+5V	8	GND
9	+12V	10	GND

Table 3-6: Audio Connector For IEI AC-KI-888S Kit Pinouts

3.2.1 ATX Power Connector

- CN Label:** ATX1
- CN Type:** 24-pin connector, p=4.2 mm
- CN Location:** See **Figure 3-7**
- CN Pinouts:** See **Table 3-7**

The ATX power connector connects to an ATX power supply.

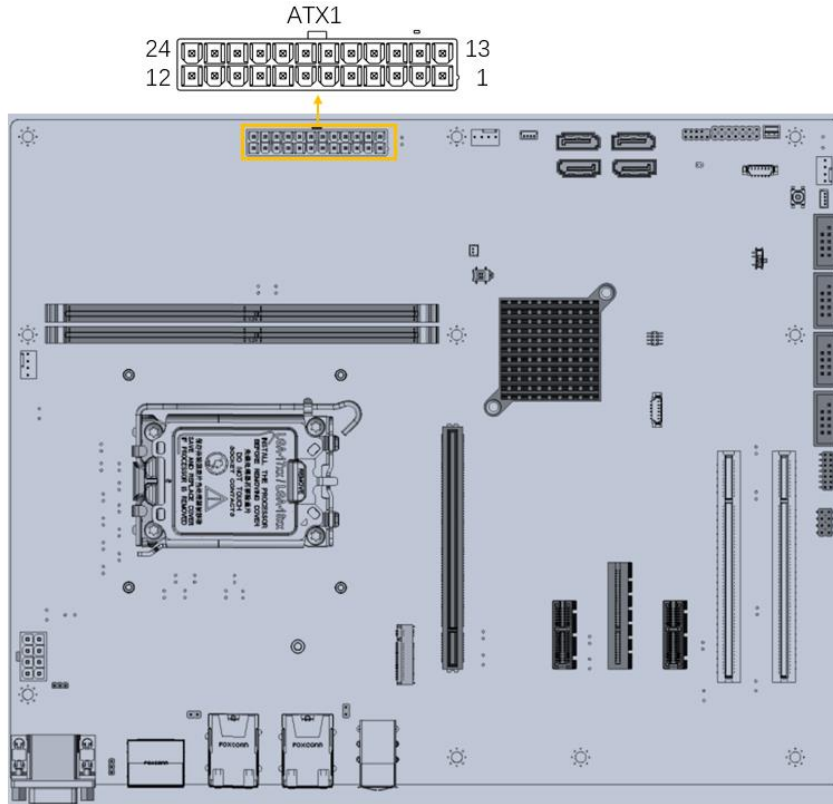


Figure 3-7: ATX Power Connector Location

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	Power good	20	-5V
9	5VSB	21	+5V
10	+12V	22	+5V
11	+12V	23	+5V
12	+3.3V	24	GND

Table 3-7: ATX Power Connector Pinouts

IMBA-ADL-H610 ATX Motherboard

3.2.2 CPU 12V Power Connector

- CN Label:** CPU12V1
- CN Type:** 8-pin Molex power connector, p=4.2mm
- CN Location:** See Figure 3-8
- CN Pinouts:** See Table 3-8

This connector provides power to the CPU.

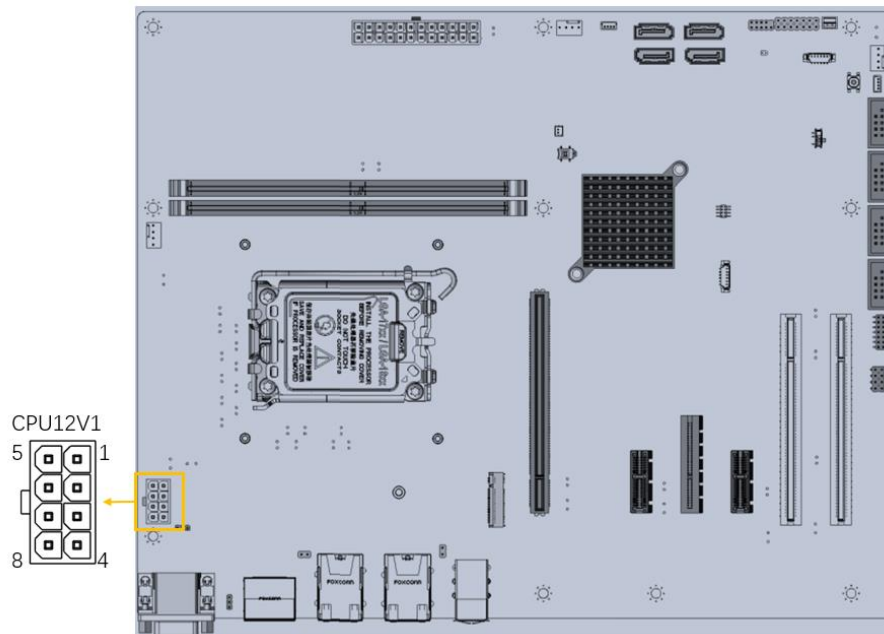


Figure 3-8: ATX CPU 12V Power Connector Location

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

Table 3-8: ATX CPU 12V Power Connector Pinouts

3.2.3 RTC Battery Connector

- CN Label:** **BAT2**
- CN Type:** 2-pin header, p=1.25 mm
- CN Location:** See **Figure 3-9**
- CN Pinouts:** See **Table 3-9**

The RTC battery connector use for connect battery to supply RTC.

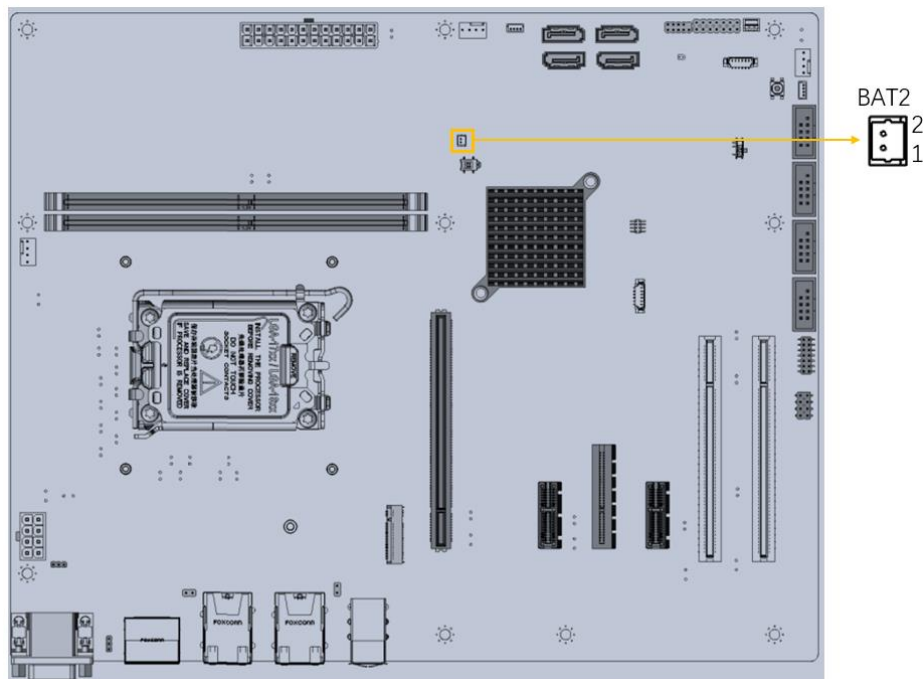


Figure 3-9: RTC Battery Connector Location

Pin	Description	Pin	Description
1	VBATT	2	GND

Table 3-9: RTC Battery Connector Pinouts

IMBA-ADL-H610 ATX Motherboard

3.2.1 Chassis Intrusion Connector

- CN Label:** CHASSIS1
- CN Type:** 2-pin wafer
- CN Location:** See **Figure 3-10**
- CN Pinouts:** See **Table 3-10**

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

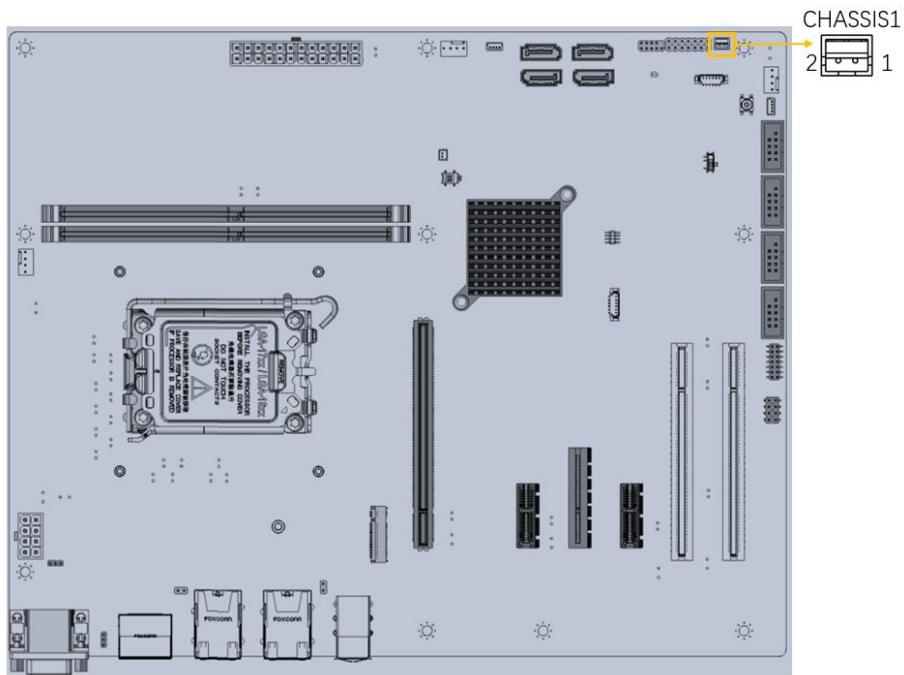


Figure 3-10: Chassis Intrusion Connector Location

Pin	Description
1	CASEOPEN_N
2	GND

Table 3-10: Chassis Intrusion Connector Pinouts

3.2.1 DDR4 DIMM Sockets

CN Label: CHA_DIMM1, CHB_DIMM1

CN Type: 288-pin socket

CN Location: See Figure 3-11

The DIMM slots are for DDR4 DIMM memory modules

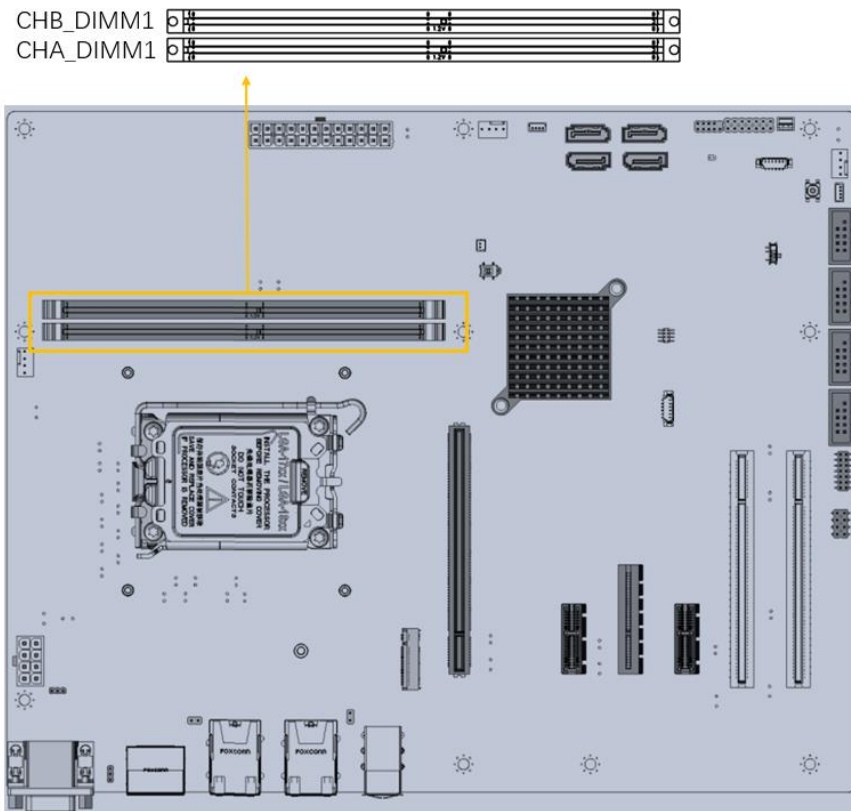


Figure 3-11: DDR4 DIMM Sockets Location

IMBA-ADL-H610 ATX Motherboard

3.2.1 Digital I/O Connector

- CN Label:** DIO1
- CN Type:** 14-pin header, p=2.0 mm
- CN Location:** See **Figure 3-12**
- CN Pinouts:** See **Table 3-11**

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

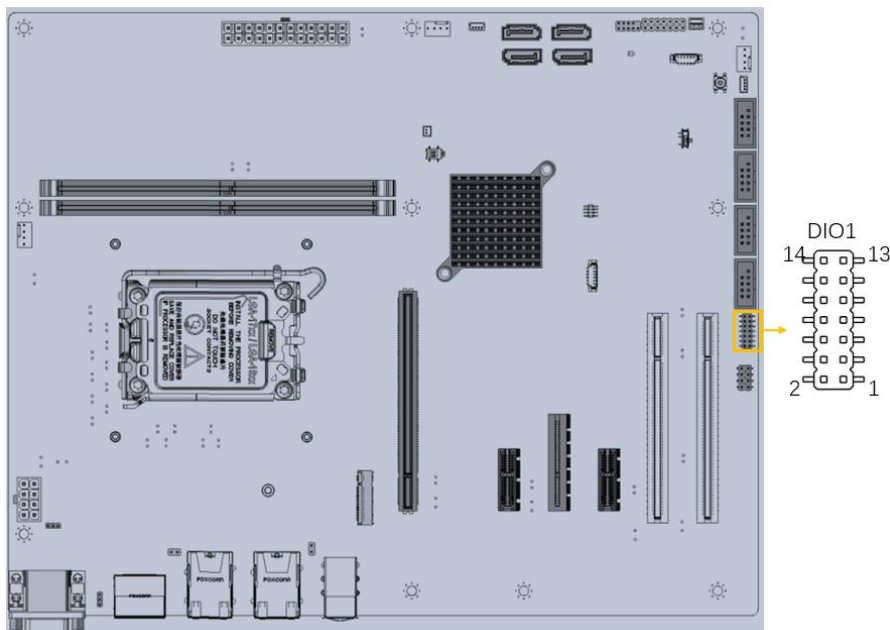


Figure 3-12: Digital I/O Connector Location

Pin	Description	Pin	Description
1	GND	2	VCC
3	Output 5	4	Output 4
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 3-11: Digital I/O Connector Pinouts

3.2.1 EC debug Connector

- CN Label:** **DEBUG_1**
- CN Type:** 6-pin wafer, p=1.25 mm
- CN Location:** See **Figure 3-13**
- CN Pinouts:** See **Table 3-12**

The DEBUG_SPI1 connector is used for EC debug (with SPI protocol).

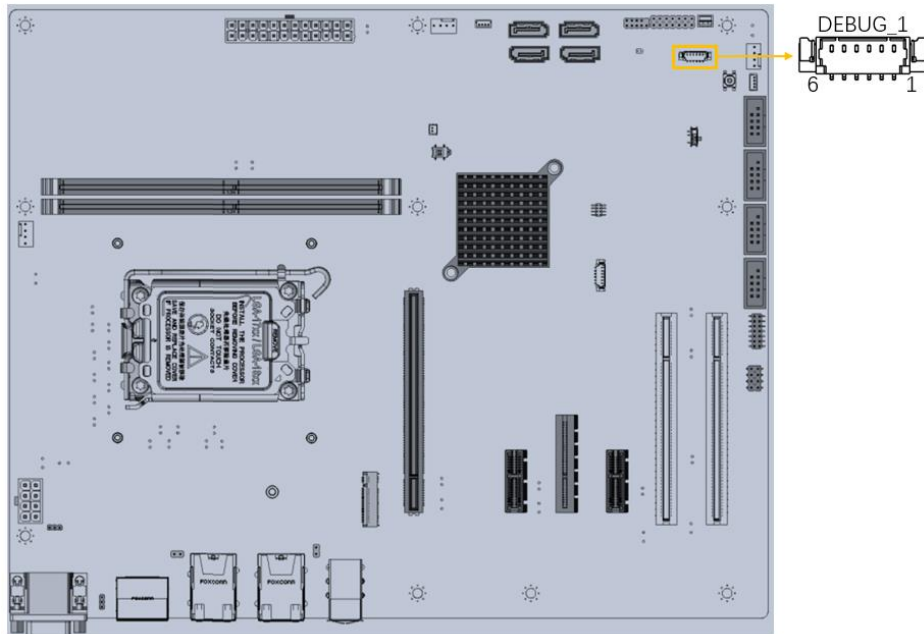


Figure 3-13: EC Debug Connector Location

Pin	Description	Pin	Description
1	NC	4	EDICLK
2	EDICLK	5	EDIDI
3	EDIDO	6	GND

Table 3-12: EC Debug Connector Pinouts

IMBA-ADL-H610 ATX Motherboard

3.2.1 Fan Connector (CPU)

- CN Label:** CPU_FAN1
- CN Type:** 4-pin wafer, p=2.54 mm
- CN Location:** See Figure 3-14
- CN Pinouts:** See Table 3-13

The fan connector attaches to a CPU cooling fan.

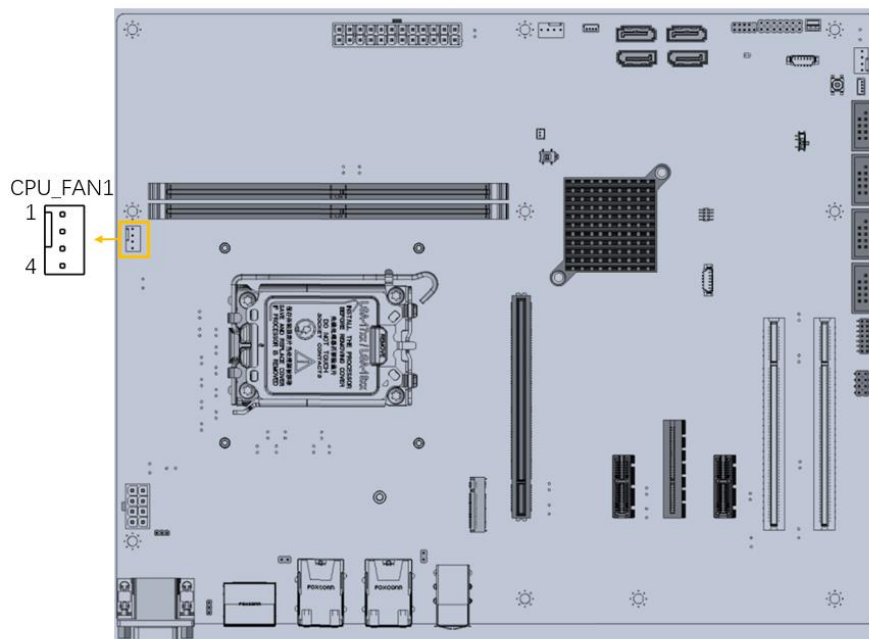


Figure 3-14: CPU Fan Connector Location

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

Table 3-13: CPU Fan Connector Pinouts

3.2.2 Fan Connectors (System)

- CN Label:** **SYS_FAN1, SYS_FAN2**
- CN Type:** 4-pin wafer, p=2.54 mm
- CN Location:** See **Figure 3-15**
- CN Pinouts:** See **Table 3-14**

Each fan connector attaches to a system cooling fan. The SYS_FAN1&SYS_FAN2 provides smart fan function.

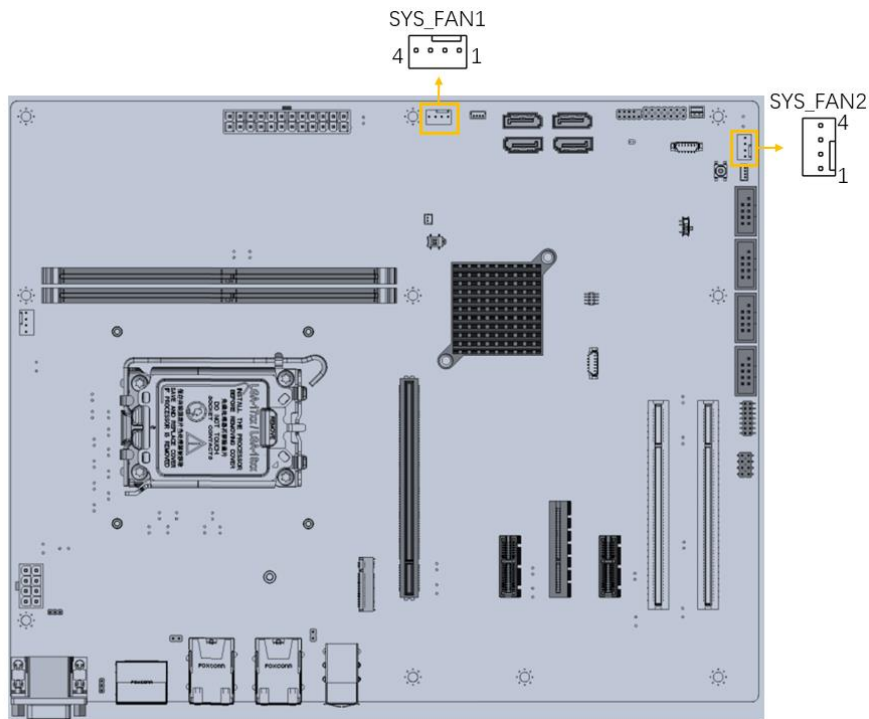


Figure 3-15: System Fan 1&2 Locations

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

Table 3-14: System Fan 1&2 Pinouts

IMBA-ADL-H610 ATX Motherboard

3.2.3 Front Panel Connector

- CN Label:** F_PANEL1
- CN Type:** 14-pin header, p=2.54 mm
- CN Location:** See Figure 3-16
- CN Pinouts:** See Table 3-15

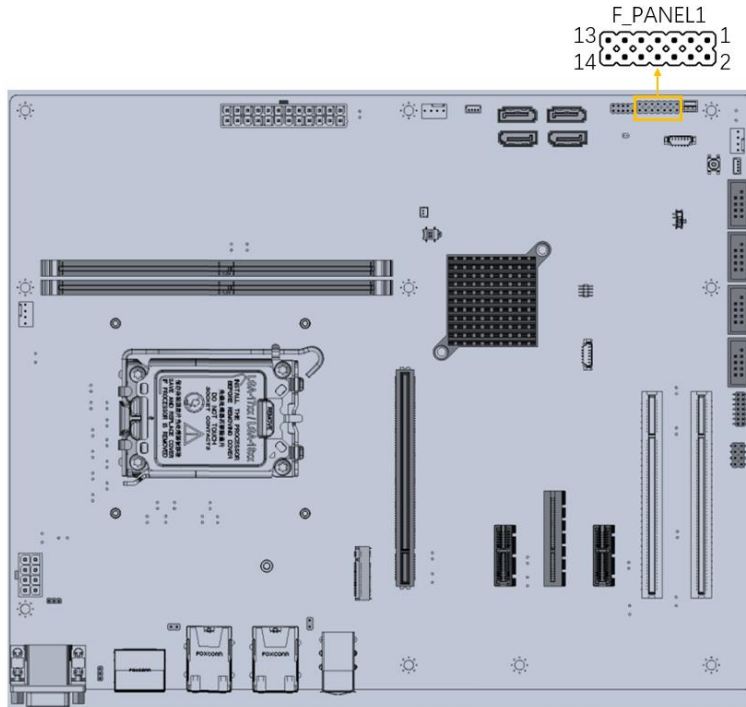


Figure 3-16: Front Panel Connector Location

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

Table 3-15: Front Panel Connector Pinouts

3.2.1 I²C Connector

- CN Label:** J_I2C1
- CN Type:** 4-pin wafer, p=1.25 mm
- CN Location:** See **Figure 3-17**
- CN Pinouts:** See **Table 3-16**

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

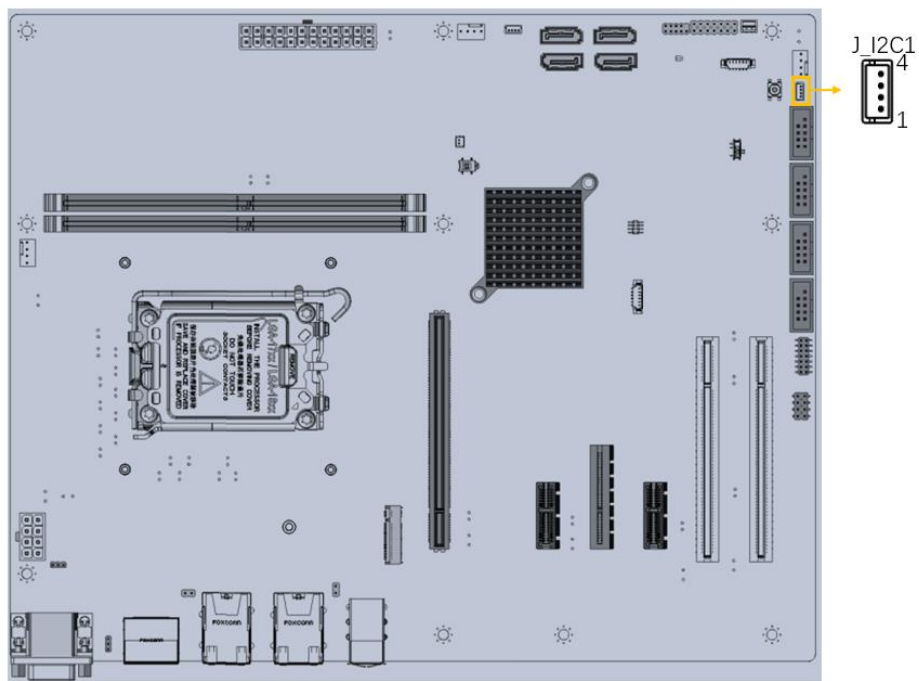


Figure 3-17: I²C Connector Location

Pin	Description	Pin	Description
1	GND	3	I2C_CLK
2	I2C_DAT	4	+5V

Table 3-16: I²C Connector Pinouts

IMBA-ADL-H610 ATX Motherboard

3.2.2 LAN Link LED Connector

CN Label: JLAN_LED1, JLAN_LED2

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

CN Location: See **Figure 3-18**

CN Pinouts: See **Table 3-17**

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.

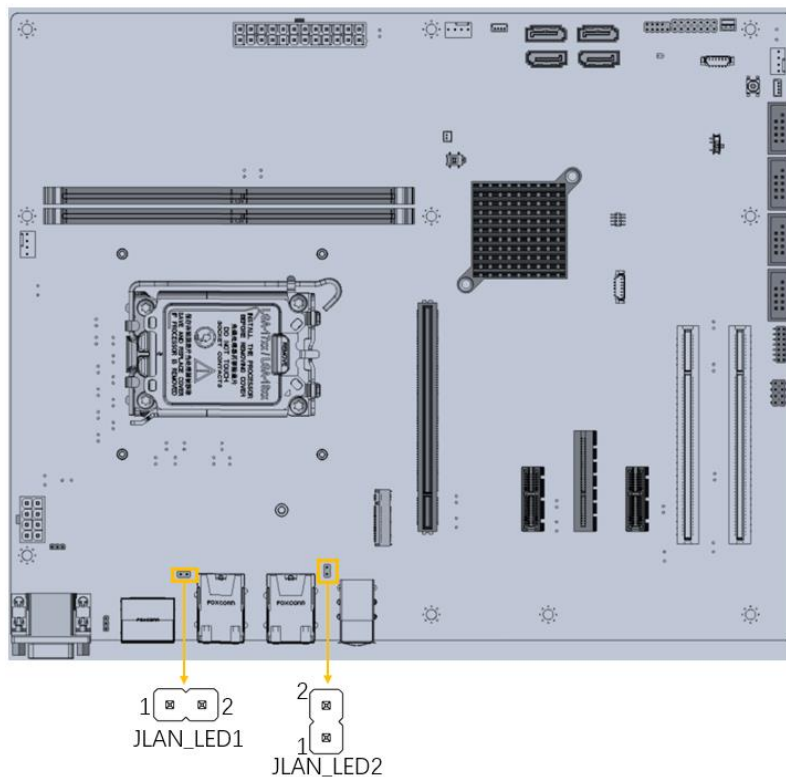


Figure 3-18: LAN LED Connector Locations

Pin	Description
1	+3.3V
2	LAN1_LED_LINK#_ACT

Table 3-17: LAN LED Connector Pinouts

3.2.3 Serial Port, RS-232

CN Label: COM3, COM4, COM5, COM6

CN Type: 10-pin header, p=2.00 mm

CN Location: See Figure 3-19

CN Pinouts: See Table 3-18

Each of these connectors provides RS-232 connections.

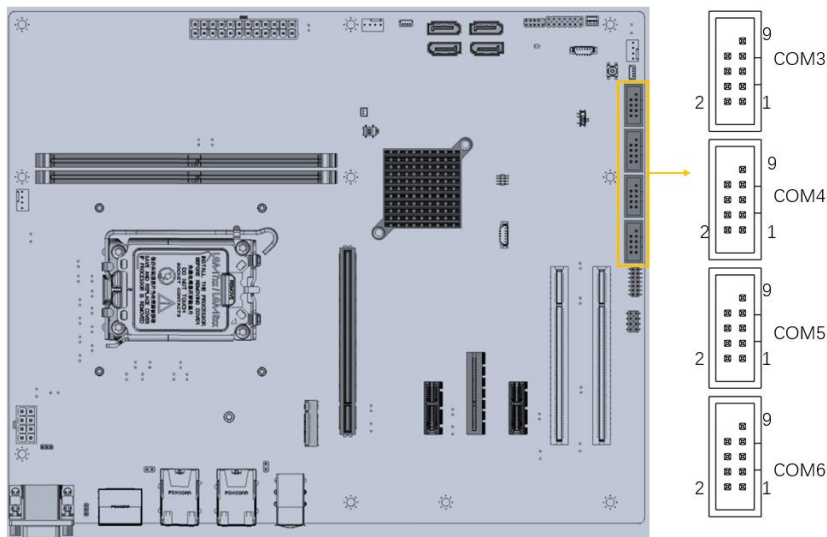


Figure 3-19: RS-232 Serial Port Connector Location

Pin	Description	Pin	Description
1	DCD	2	DSR
3	RXD	4	RTS
5	TXD	6	CTS
7	DTR	8	RI
9	GND	10	GND

Table 3-18: RS-232 Serial Port Connector Pinouts

IMBA-ADL-H610 ATX Motherboard

3.2.4 RAA229134 FW Flash Connector

- CN Label:** J1
- CN Type:** 2-pin header, p=2.00 mm
- CN Location:** See Figure 3-20
- CN Pinouts:** See Table 3-19

The RAA229134 FW Flash Connector is used for connect RA229134 firmware.

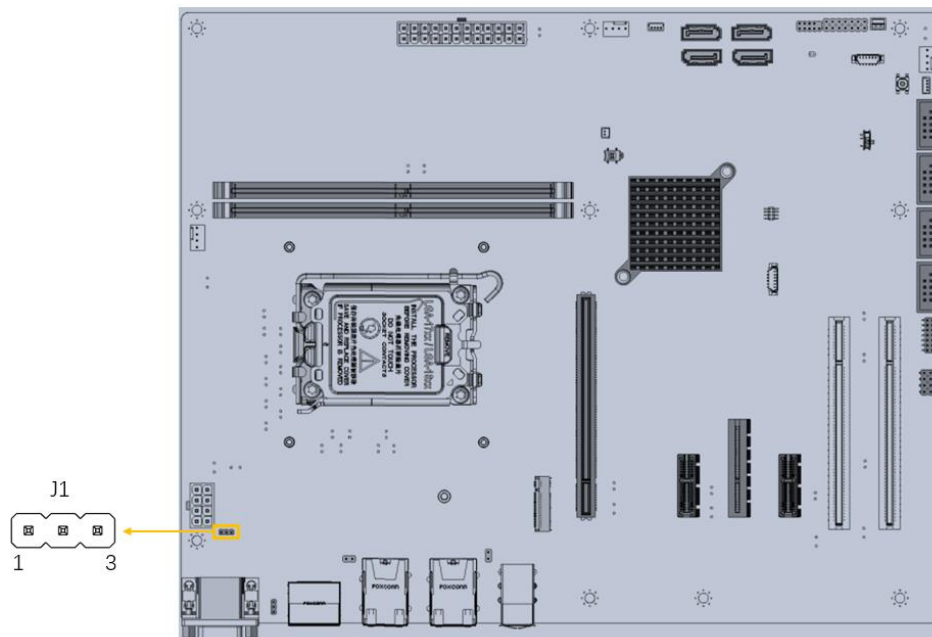


Figure 3-20: RAA229134 FW Flash Connector Locations

Pin	Description	Pin	Description
1	SDA	3	GND
2	SCL		

Table 3-19: RAA229134 FW Connector Pinouts

3.2.5 LT86101X FW Flash Connector

- CN Label:** J2
- CN Type:** 2-pin header, p=2.00 mm
- CN Location:** See **Figure 3-21**
- CN Pinouts:** See **Table 3-20**

The LT86101X connector is used for connect LT86101X firmware.

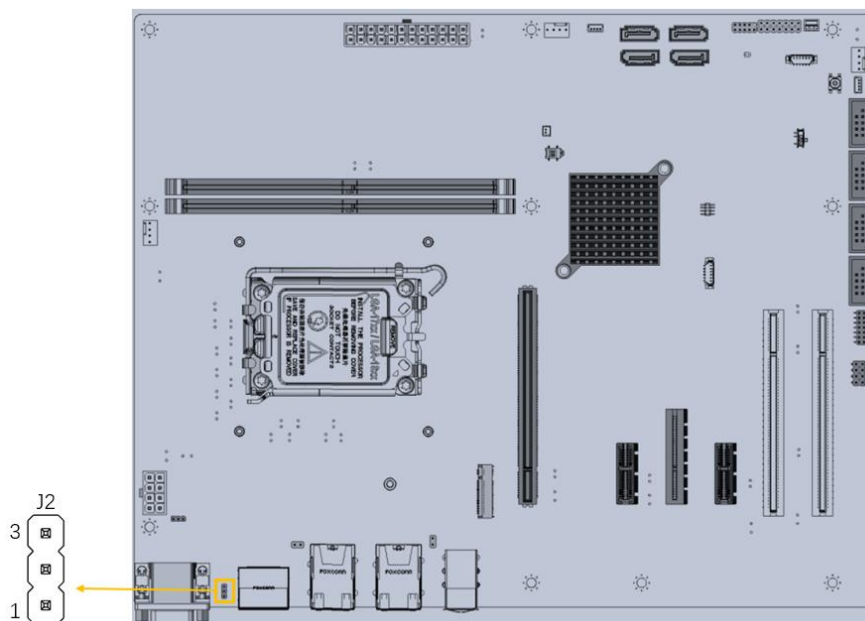


Figure 3-21: LT86101X FW Flash Connector Location

Pin	Description	Pin	Description
1	SDA	3	GND
2	SCL		

Table 3-20: LT86101X FW Flash Connector Pinouts

IMBA-ADL-H610 ATX Motherboard

3.2.1 SATA 6Gb/s Connectors

CN Label: SATA1, SATA2, SATA3, SATA4

CN Type: 7-pin SATA connector

CN Location: See Figure 3-22

CN Pinouts: See Table 3-21

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

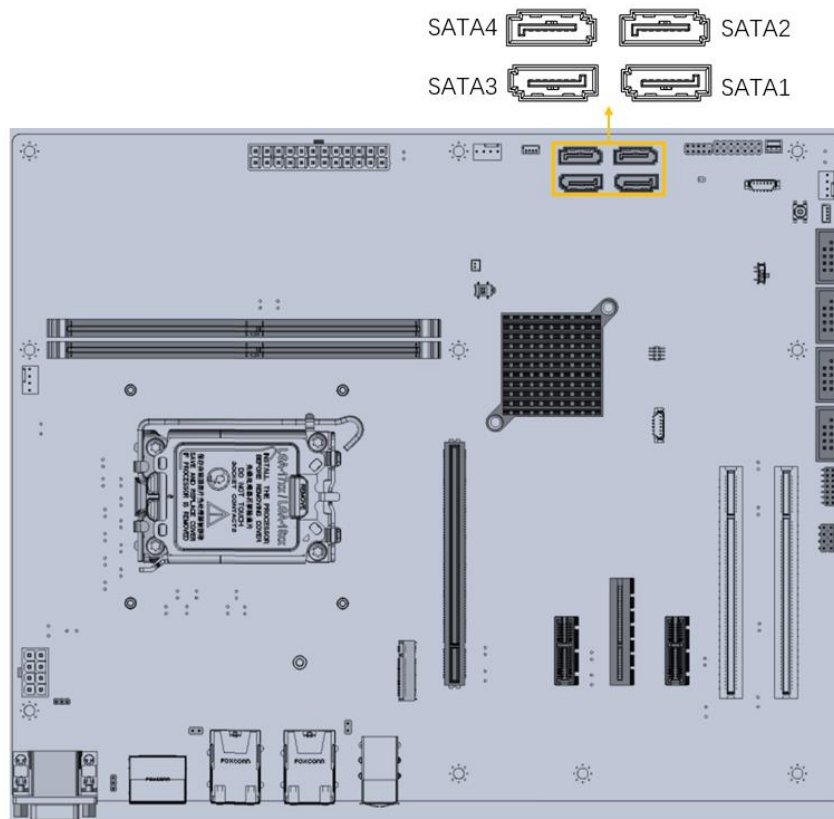


Figure 3-22: SATA 6Gb/s Connector Locations

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

Table 3-21: SATA 6Gb/s Connector Pinouts

3.2.1 SMBus Connector

- CN Label:** J_SMB1
- CN Type:** 4-pin wafer, p=1.25 mm
- CN Location:** See **Figure 3-23**
- CN Pinouts:** See **Table 3-22**

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

IMBA-ADL-H610 ATX Motherboard

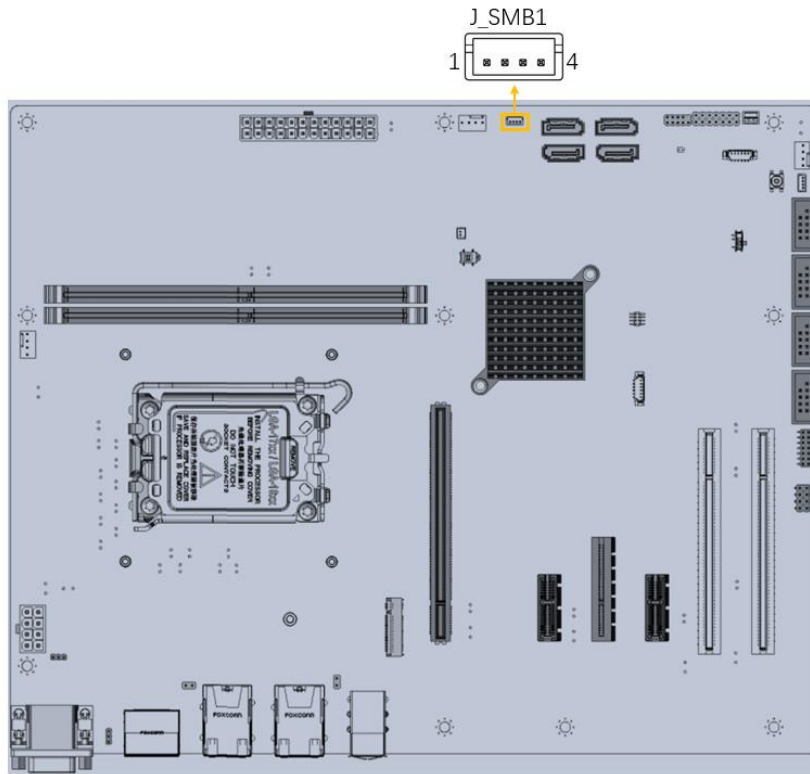


Figure 3-23: SMBus Connector Location

Pin	Description
1	GND
2	SMB_DATA
3	SMB_CLK
4	+5V

Table 3-22: SMBus Connector Pinouts

3.2.1 Flash SPI ROM Connector

- CN Label:** JSPI1
- CN Type:** 6-pin wafer, p=1.25 mm
- CN Location:** See **Figure 3-24**
- CN Pinouts:** See **Table 3-23**

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

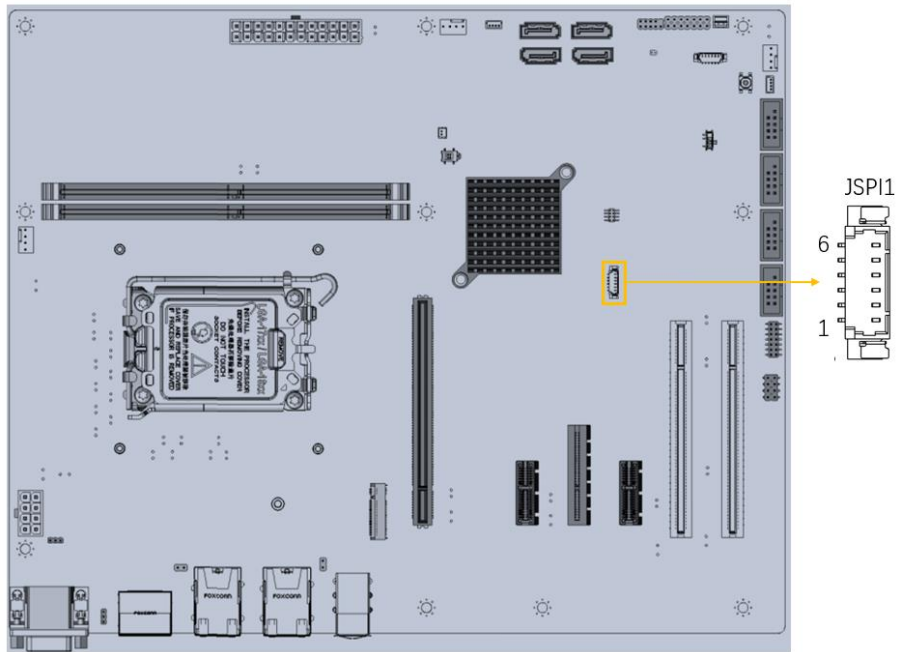


Figure 3-24: Flash SPI ROM Connector Location

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

Table 3-23: Flash SPI ROM Connector Pinouts

IMBA-ADL-H610 ATX Motherboard

3.2.1 Flash EC ROM Connector

- CN Label:** JEC1
- CN Type:** 8-pin header, p=1.27 mm
- CN Location:** See Figure 3-25
- CN Pinouts:** See Table 3-24

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

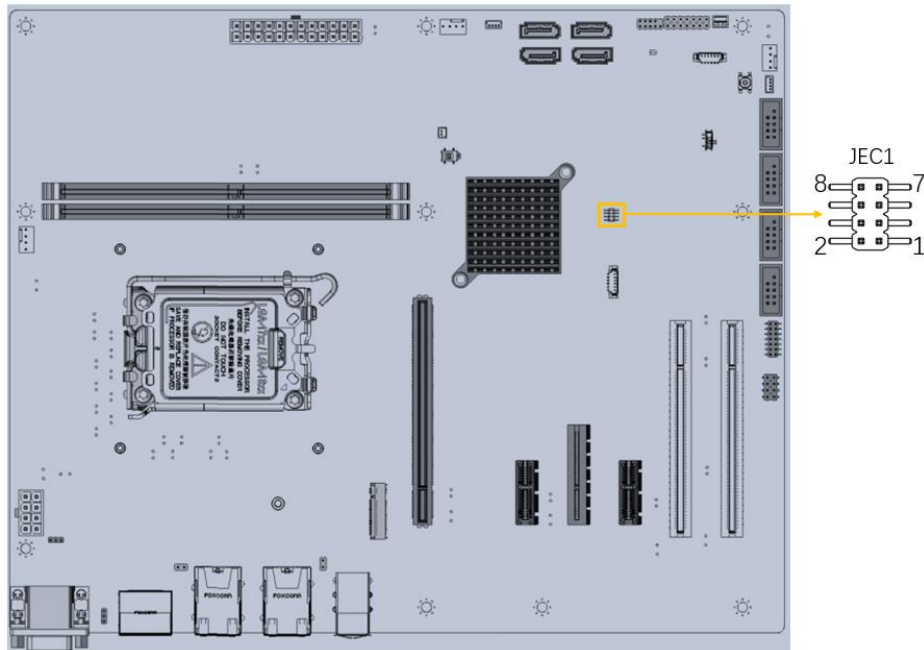


Figure 3-25: Flash EC ROM Connector Location

Pin	Description	Pin	Description
1	FSCE#	2	+3.3V
3	FMISO	4	NC
5	EC_DET_FLASH	6	FSCK
7	GND	8	FMOSI

Table 3-24: Flash EC ROM Connector Pinouts

3.2.1 Internal USB 2.0 Connector

- CN Label:** USB2_CN1
- CN Type:** 8-pin header, p=1.27 mm
- CN Location:** See Figure 3-26
- CN Pinouts:** See Table 3-25

The Internal USB 2.0 connector connects to USB 2.0 devices.

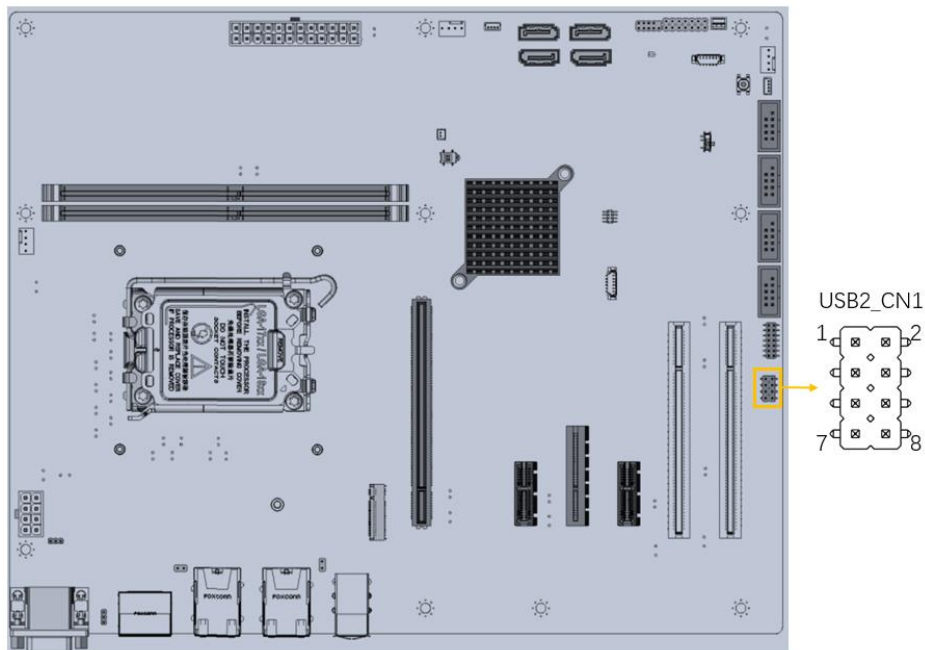


Figure 3-26: Internal USB 2.0 Connector Locations

Pin	Description	Pin	Description
1	VCC	2	GND
3	USB_DATA-	4	USB_DATA+
5	USB_DATA+	6	USB_DATA-
7	GND	8	VCC

Table 3-25: Internal USB 2.0 Connector Pinouts

IMBA-ADL-H610 ATX Motherboard

3.2.2 IEI iDPM Slot

- CN Label:** IDPM
- CN Type:** iDPM 3040 slot
- CN Location:** See **Figure 3-27**

The IEI iDPM slot is only used for IEI eDP/LVDS/VGA module.

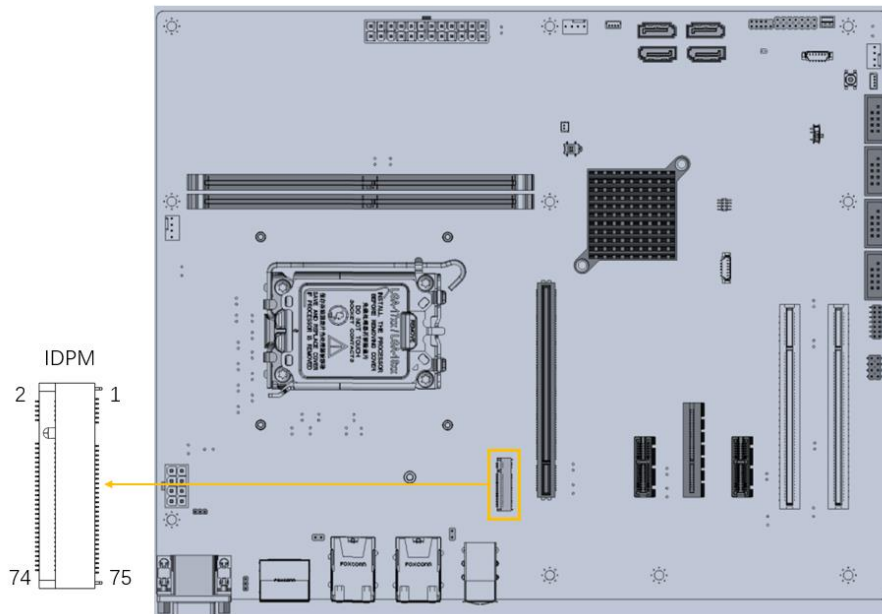


Figure 3-27: IEI iDPM Slot Location

3.2.1 PCI Slots

- CN Label:** PCI1, PCI2
- CN Type:** PCI Slot
- CN Location:** See **Figure 3-28**

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

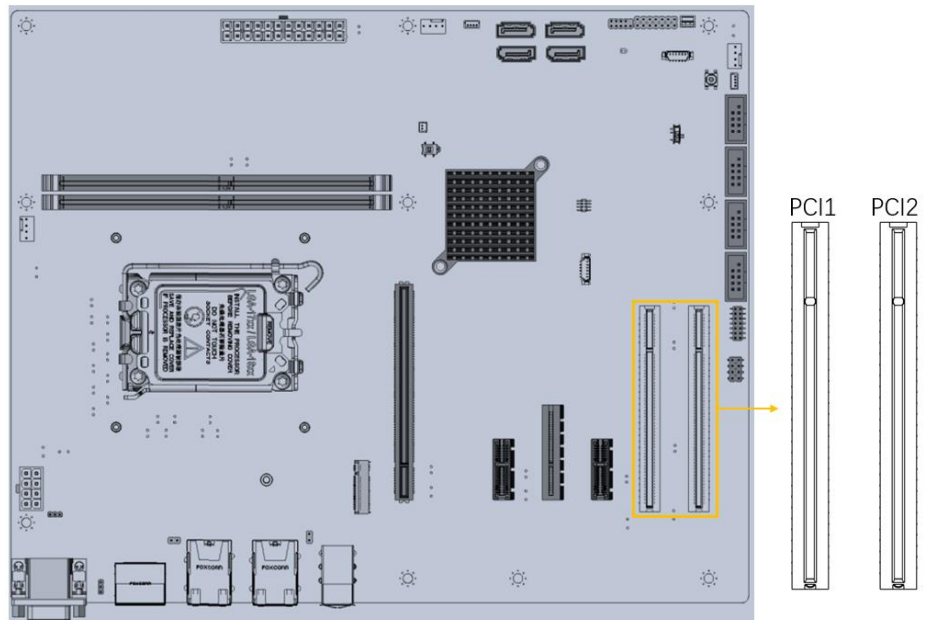


Figure 3-28: PCI Slot Locations

3.2.2 PCIe x1 Slot

- CN Label:** PCIE2, PCIE4
- CN Type:** PCI Slot
- CN Location:** See **Figure 3-29**

IMBA-ADL-H610 ATX Motherboard

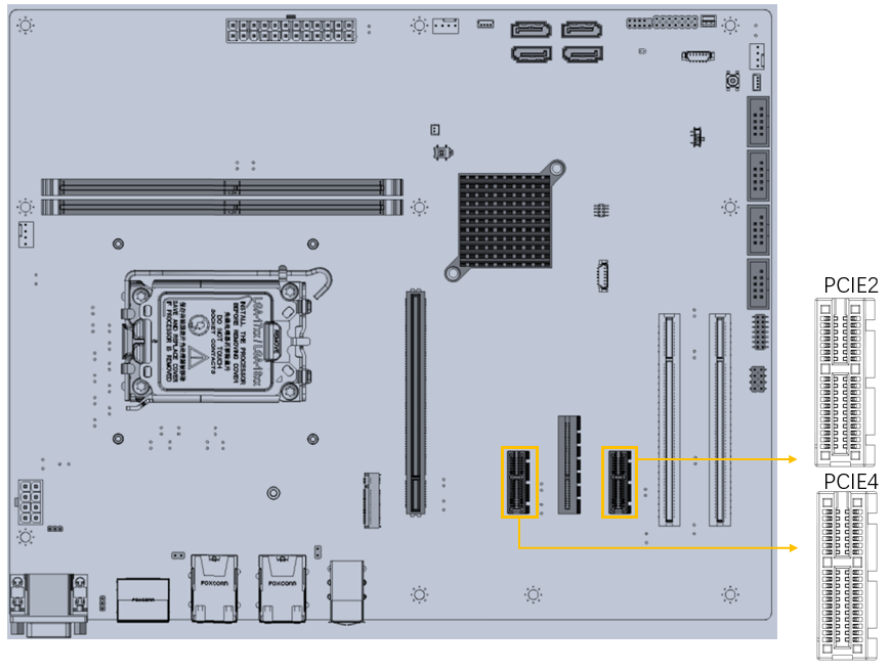


Figure 3-29: PCIe x1 Slot Locations

3.2.1 PCIe x4 Slots

- CN Label:** PCIE3
- CN Type:** PCIe x4 slot
- CN Location:** See **Figure 3-30**

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

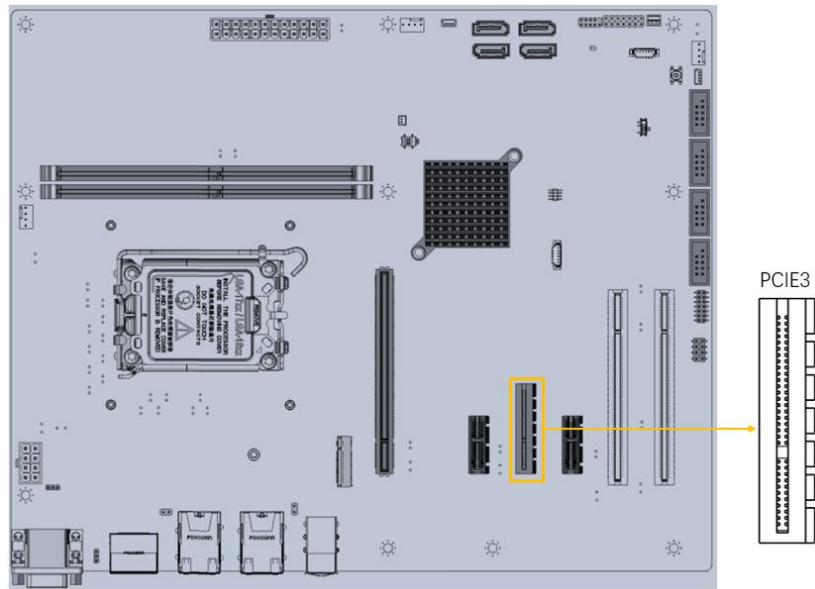


Figure 3-30: PCIe x4 Slot Locations

IMBA-ADL-H610 ATX Motherboard

3.2.1 PCIe x16 Slots

- CN Label:** PCIE1
- CN Type:** PCIe x16 slot
- CN Location:** See Figure 3-31

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

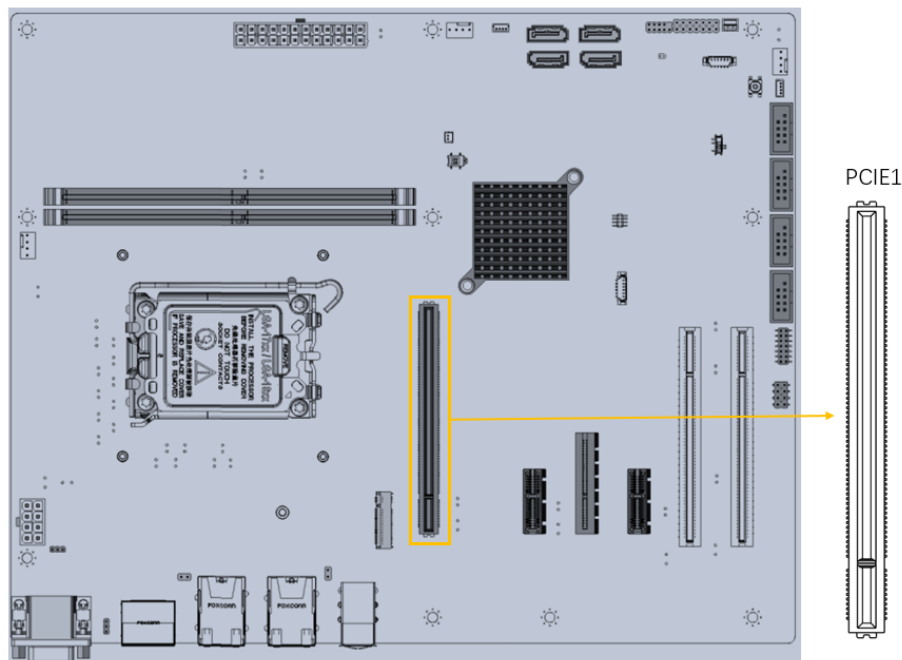


Figure 3-31: PCIe x8 Slot Locations

3.2.1 Onboard Power Button

- CN Label:** PWR_BTN1
- CN Type:** Push button
- CN Location:** See Figure 3-32

The on-board power button controls system power.

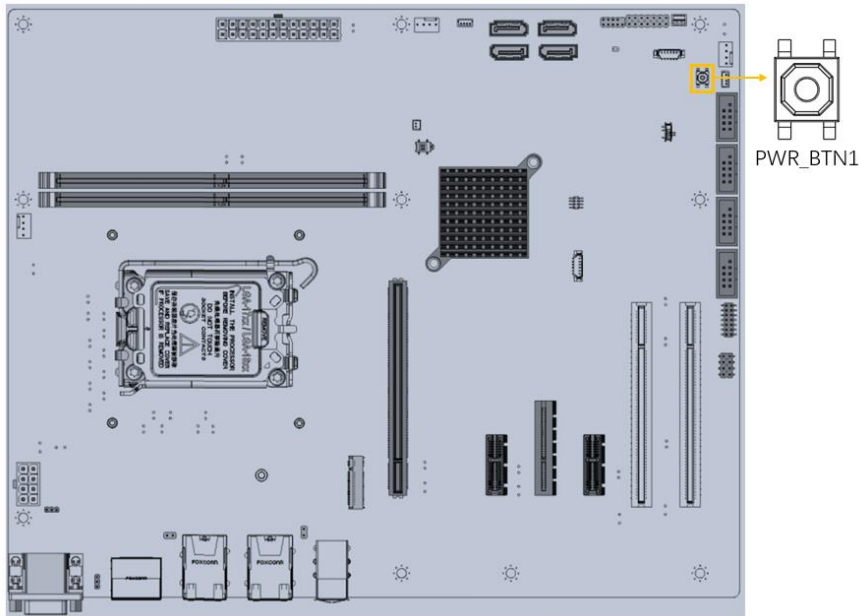


Figure 3-32: Power Button Location

3.3 External Peripheral Interface Connector Panel

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

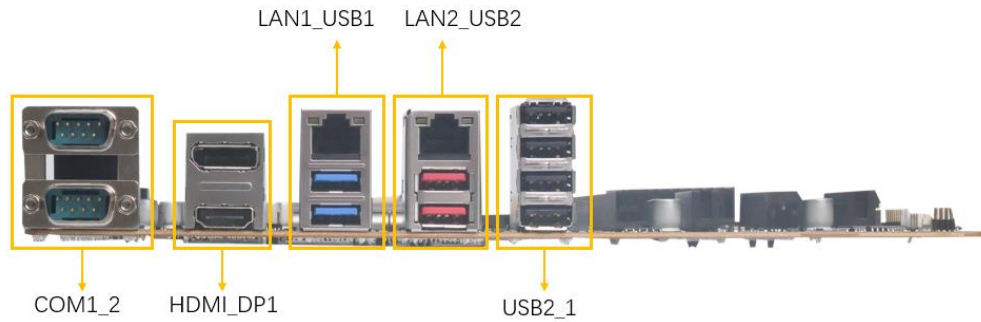


Figure 3-33: External Peripheral Interface Connector

IMBA-ADL-H610 ATX Motherboard

3.3.1 External RS-232/422/485 Combo Connector

- CN Label:** COM1, COM2
- CN Type:** Dual DB-9
- CN Location:** See Figure 3-33
- CN Pinouts:** See Table 3-26

The COM1&COM2 connector connects to a serial device that supports RS-232/422/485 communications.

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 3-26: External RS-232/422/485 Connector Pinouts

3.3.2 External HDMI&DP Combo Connector

- CN Label:** HDMI_DP1
- CN Type:** HDMI, DisplayPort
- CN Location:** See Figure 3-33
- CN Pinouts:** See Table 3-27 and Table 3-28

The HDMI connector can connect to an HDMI device.

Pin	Description	Pin	Description
21	HDMI_DATA2P	31	GND
22	GND	32	HDMI_CLKN

Pin	Description	Pin	Description
23	HDMI_DATA2N	33	N/C
24	HDMI_DATA1P	34	N/C
25	GND	35	HDMI_CLK
26	HDMI_DATA1N	36	HDMI_SDA
27	HDMI_DATA0P	37	GND
28	GND	38	+5V
29	HDMI_DATA0N	39	HDMI_HPD
30	HDMI_CLKP		

Table 3-27: HDMI Connector Pinouts

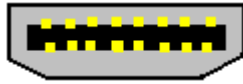


Figure 3-34: HDMI Connector

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

Pin	Description	Pin	Description
1	LANE0P	11	GND
2	GND	12	LANE3N
3	LANE0N	13	CONFIG_A_1
4	LANE1P	14	CONFIG_A_2
5	GND	15	AUXP
6	LANE1N	16	GND
7	LANE2P	17	AUXN
8	GND	18	HPD
9	LANE2N	19	GND
10	LANE3P	20	+5V

Table 3-28: DP++ Connector Pinouts

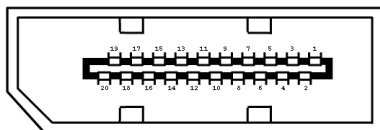


Figure 3-35: DP++ Connector

IMBA-ADL-H610 ATX Motherboard

3.3.3 External 1GbE RJ-45 and Dual USB 3.2 Gen 1 Combo Connector

- CN Label:** LAN1_USB1
- CN Type:** Dual RJ45
- CN Location:** See Figure 3-33
- CN Pinouts:** See Table 3-29 and Table 3-30

The external 1GbE RJ-45 and dual USB 3.2 Gen 1 connector on the IMBA-ADL-H610.

PIN	DESCRIPTION	PIN	DESCRIPTION
1	VCC	10	VCC
2	USB_DATA-	11	USB_DATA-
3	USB_DATA+	12	USB_DATA+
4	GND	13	GND
5	USB3_RX-	14	USB3_RX-
6	USB3_RX+	15	USB3_RX+
7	GND	16	GND
8	USB3_TX-	17	USB3_TX-
9	USB3_TX+	18	USB3_TX+

Table 3-29: Dual USB 3.2 Gen 1 Connector Pinouts

PIN	DESCRIPTION	PIN	DESCRIPTION
1	LAN1_MD0+	5	LAN1_MD2+
2	LAN1_MD0-	6	LAN1_MD2-
3	LAN1_MD1+	7	LAN1_MD3+
4	LAN1_MD1-	8	LAN1_MD3-

Table 3-30: 1GbE RJ-45 Connector Pinouts

LED	DESCRIPTION	LED	DESCRIPTION
A	on: linked blinking: data is being sent/received	B	off: 10 Mb/s orange: 100 Mb/s green: 1000 Mb/s

Table 3-31: LAN LED Pinouts

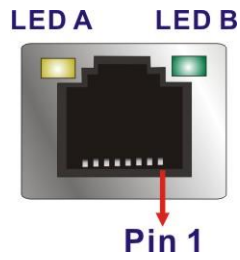


Figure 3-36: LAN LED Location

3.3.1 External 2.5GbE RJ-45 and Dual USB 3.2 Gen 2 Combo Connector

- CN Label:** LAN2_USB2
- CN Type:** Dual RJ45
- CN Location:** See **Figure 3-33**
- CN Pinouts:** See **Table 3-32** and **Table 3-33**

The external 2.5GbE RJ-45 and dual USB 3.2 Gen 2 connector on the IMBA-ADL-H610.

PIN	DESCRIPTION	PIN	DESCRIPTION
1	VCC	10	VCC
2	USB_DATA-	11	USB_DATA-
3	USB_DATA+	12	USB_DATA+
4	GND	13	GND
5	USB3_RX-	14	USB3_RX-
6	USB3_RX+	15	USB3_RX+
7	GND	16	GND
8	USB3_TX-	17	USB3_TX-
9	USB3_TX+	18	USB3_TX+

Table 3-32: USB 3.2 Gen 1 Connector

PIN	DESCRIPTION	PIN	DESCRIPTION
1	LAN1_MD0+	5	LAN1_MD2+
2	LAN1_MD0-	6	LAN1_MD2-
3	LAN1_MD1+	7	LAN1_MD3+
4	LAN1_MD1-	8	LAN1_MD3-

Table 3-33: 2.5 GbE RJ-45 Connector

IMBA-ADL-H610 ATX Motherboard

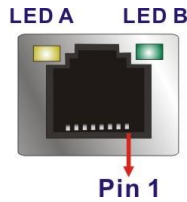


Figure 3-37: LAN LED Location

LED	DESCRIPTION	LED	DESCRIPTION
A	on: linked blinking: data is being sent/received	B	off: 10 Mb/s orange: 100 Mb/s green: 1000 Mb/s

Table 3-34: LAN LED Pinouts

3.3.2 External USB 2.0 Connector

- CN Label:** USB1
- CN Type:** USB 2.0
- CN Location:** See Figure 3-33
- CN Pinouts:** See Table 3-35

There are two external USB 2.0 connectors on the IMBA-ADL-H610. The USB 2.0 connector can be connected to a USB 2.0/1.1 device

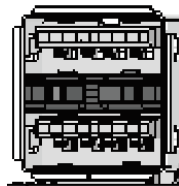


Figure 3-38: USB 2.0 Connector

Pin	Description	Pin	Description
1	GND	5	GND
2	USB_DATA+	6	USB_DATA+
3	USB_DATA-	7	USB_DATA-
4	VCC	8	VCC

Table 3-35: USB 2.0 Pinouts

Installation

IMBA-ADL-H610 ATX Motherboard

4.1 Anti-static Precautions



WARNING:

Failure to take ESD precautions during the installation of the IMBA-ADL-H610 may result in permanent damage to the IMBA-ADL-H610 and severe injury to the user.

Electrostatic discharge (ESD) can cause serious damage to electronic components, including the IMBA-ADL-H610. Dry climates are especially susceptible to ESD. It is therefore critical that whenever the IMBA-ADL-H610 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-ADL-H610, place it on an anti-static pad. This reduces the possibility of ESD damaging the IMBA-ADL-H610.
- **Only handle the edges of the PCB:-:** When handling the PCB, hold the PCB by the edges.

4.2 Internal Peripheral Device Connections

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

4.2.1 SATA Drive Connection

The IMBA-ADL-H610 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 4-1**.

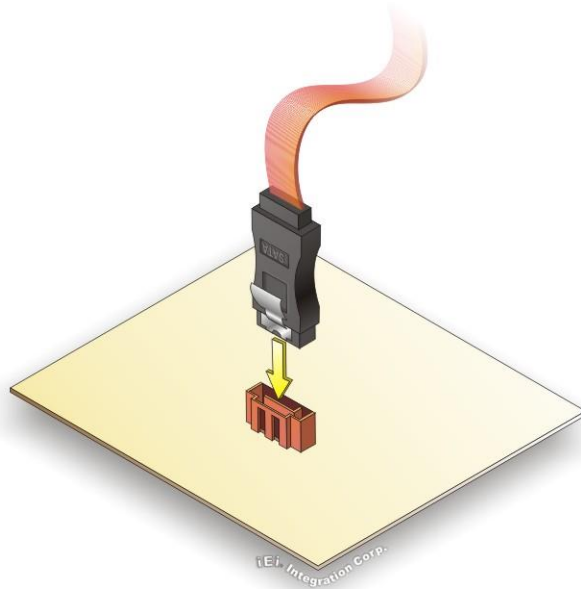


Figure 4-1: SATA Drive Cable Connection

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 4-2**.

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

IMBA-ADL-H610 ATX Motherboard

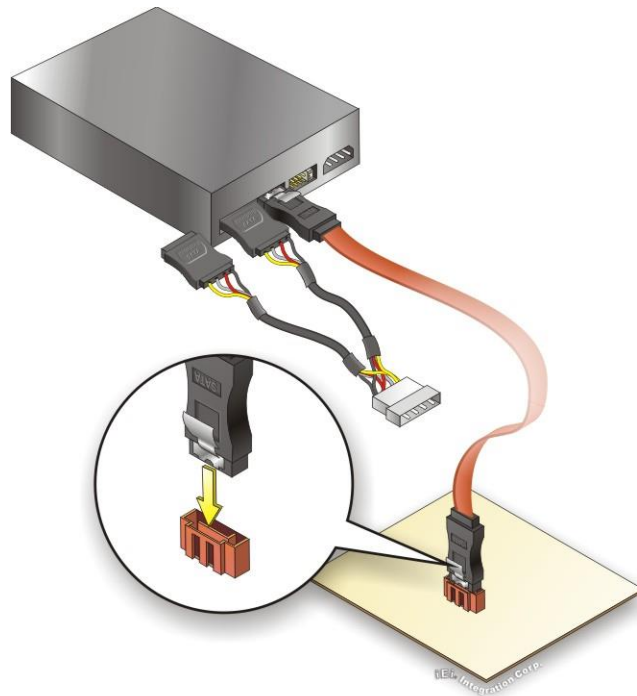


Figure 4-2: SATA Power Drive Connection

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

4.3 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-ADL-H610 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-ADL-H610 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-ADL-H610 off:
 - When working with the IMBA-ADL-H610, 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-ADL-H610, **DO NOT:**

IMBA-ADL-H610 ATX Motherboard

- 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.

4.4 Socket LGA1200 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 4-3**.

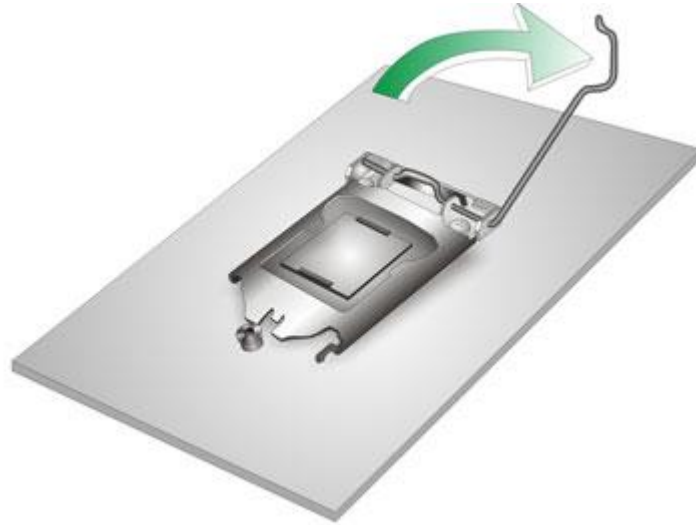


Figure 4-3: Disengage The CPU Socket Load Lever

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 4-4.

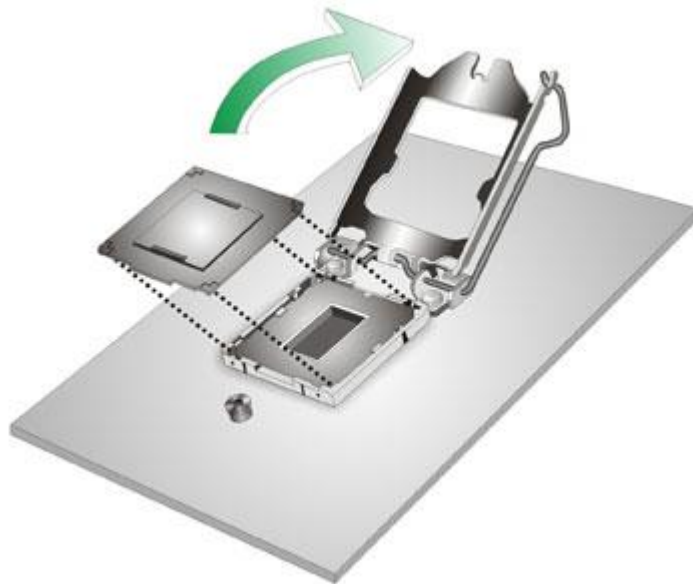


Figure 4-4: Remove Protective Cover

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.

IMBA-ADL-H610 ATX Motherboard

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 4-5.**

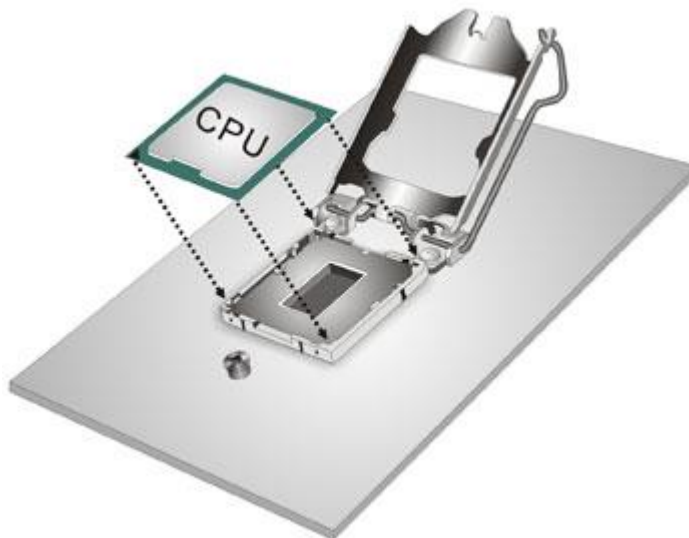


Figure 4-5: Insert The Socket LGA1700 CPU

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 4-6**). There will be some resistance, but will not require extreme pressure.

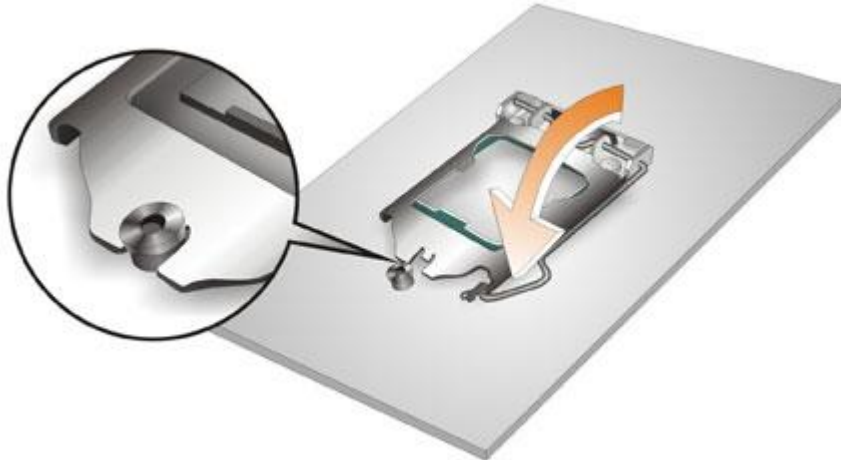


Figure 4-6: Close The Socket LGA1700

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

4.5 Socket LGA1200 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.

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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 4-7**.

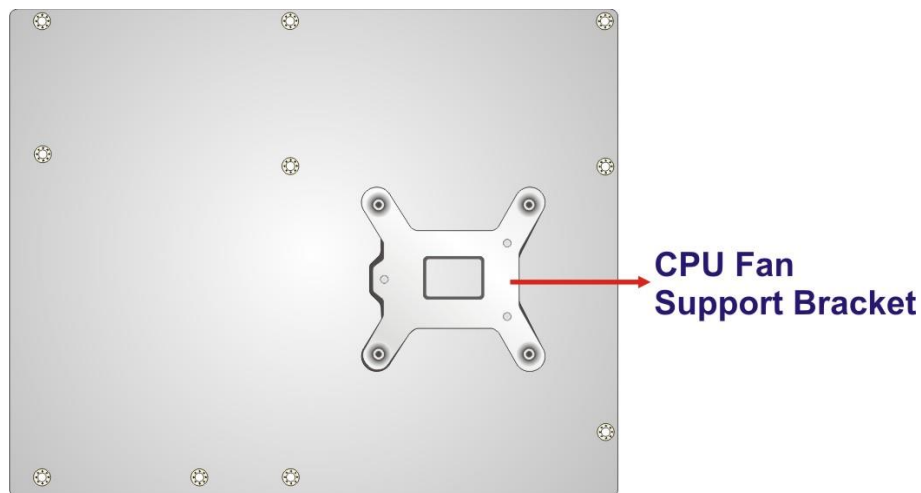


Figure 4-7: Cooling Kit Support Bracket

Step 2: Place the cooling kit onto the socket LGA1200 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-ADL-H610. Carefully route the cable and avoid heat generating chips and fan blades.

4.6 DIMM Installation

To install a DIMM, please follow the steps below and refer to **Figure 4-8**.

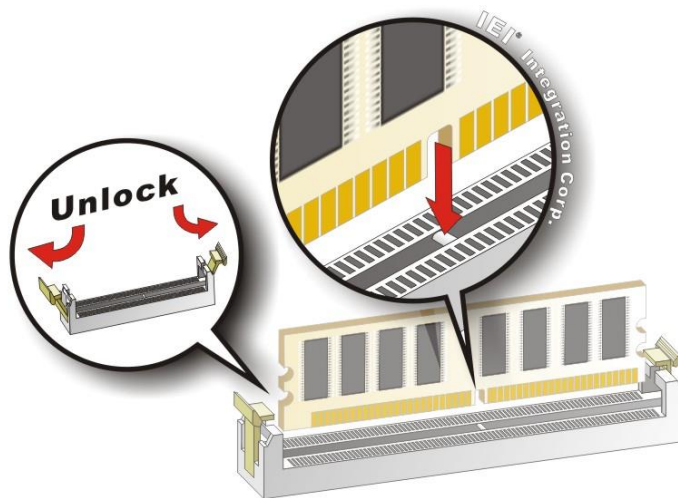


Figure 4-8: DIMM Installation

Step 1: Open the DIMM socket handles. Open the two handles outwards as far as they can. See **Figure 4-8**.

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 4-8**.

Step 3: Insert the DIMM. Once aligned, press down until the DIMM is properly seated. Clip the two handles into place. See **Figure 4-8**.

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

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CAUTION:

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

4.7 M.2 Module Installation

The IMBA-Q470 provide two ways to install the M.2 expansion card. One is using screw, and the other is using the retainer. Please follow the steps below.

Mode One: Using screw

- 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 20° (**Figure 4-9**).

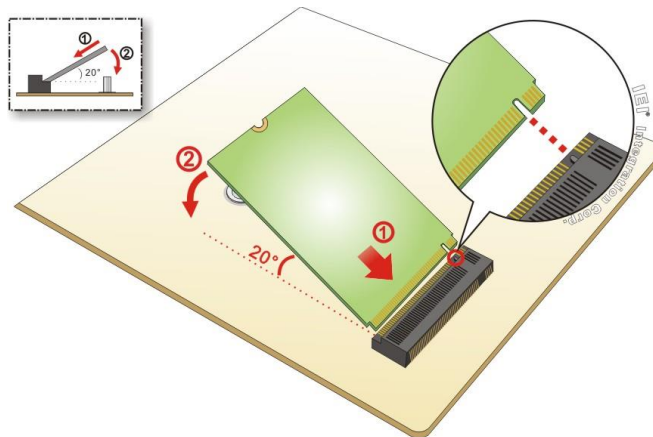


Figure 4-9: Inserting the M.2 Module into the Slot at an Angle

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

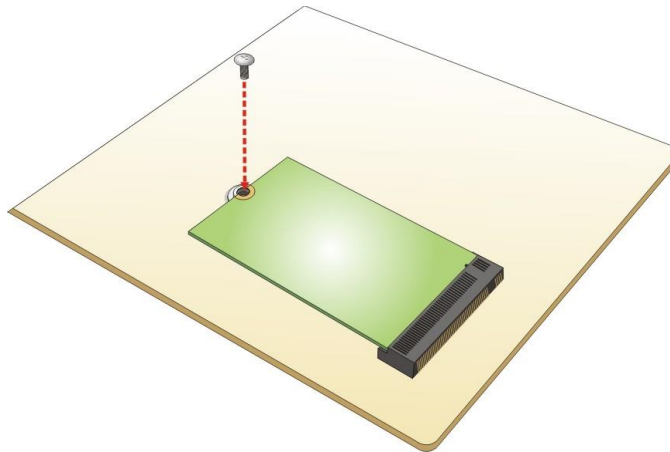


Figure 4-10: Securing the M.2 Module

Mode Two: Using the Retainer

Step 1: Press the retainer down as shown below. (See **Figure 4-11**)

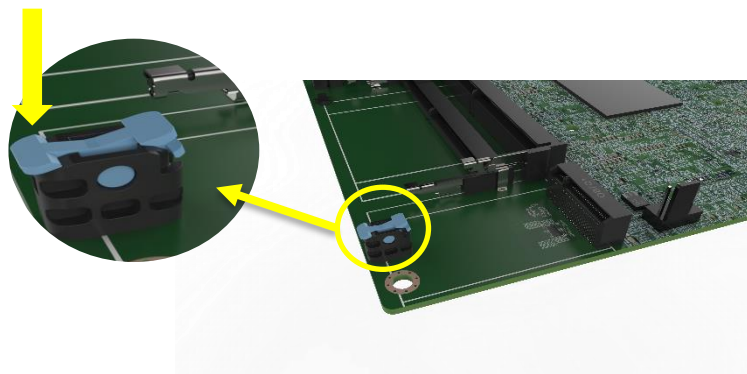


Figure 4-11: Press the Retainer

IMBA-ADL-H610 ATX Motherboard

Step 2: Line up the notch on the M.2 module with the notch on the slot. Slide the M.2 module into the socket at an angle of about 20°. (See **Figure 4-9**)

Step 3: Align the notch on the end of the M.2 module with the clip of the retainer. (See

Figure 4-12)

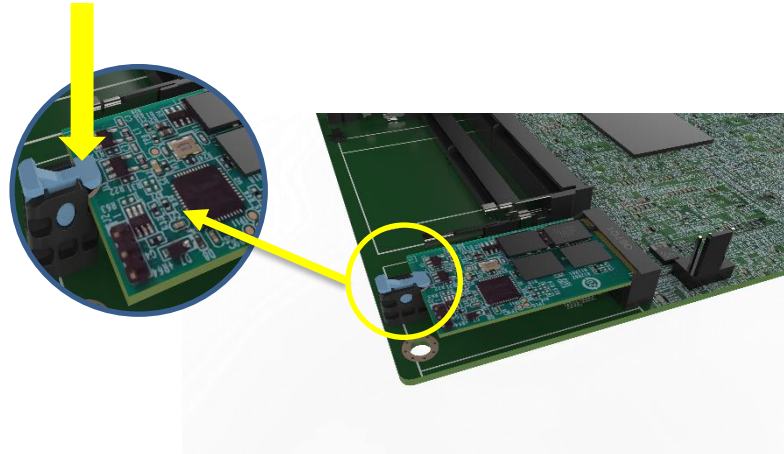


Figure 4-12: Aligning the M.2 Module with the Retainer

Step 4: Press the M.2 module down until it is secured into place by the retainer. (See **Figure 4-13**)

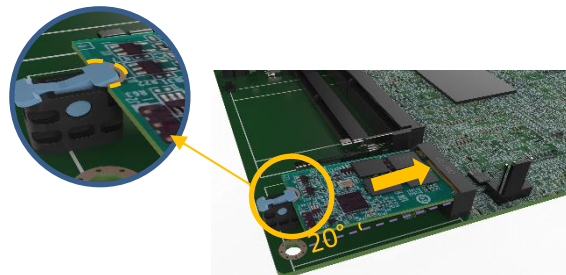


Figure 4-13: Securing the M.2 Module

Step 5: If you want to remove the M.2 module, you should press the retainer down as described in Step 1 to release the M.2 module.. (See **Figure 4-11**)

4.8 Software Installation

All the drivers for the IMBA-ADL-H610 are available on IEI Resource Download Center (<https://download.ieiworld.com>). Type IMBA-ADL-H610 and press Enter to find all the relevant software, utilities, and documentation.

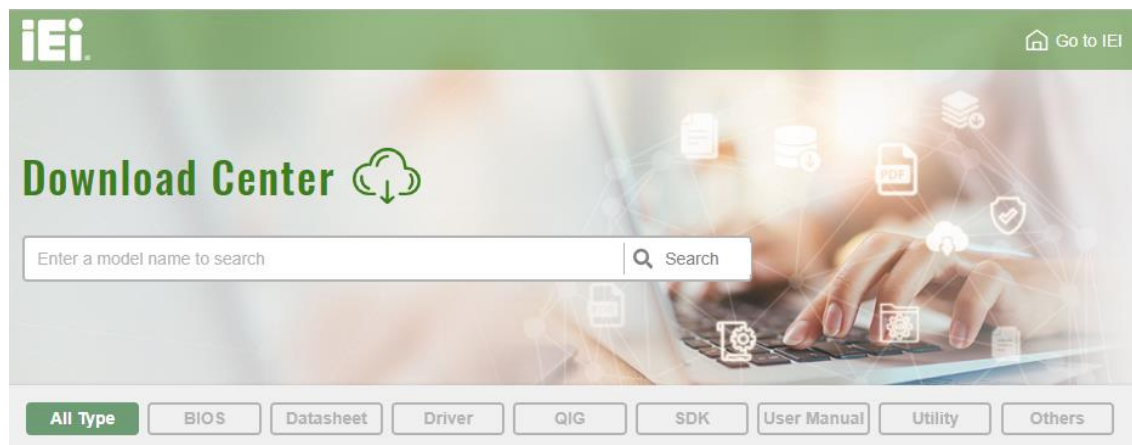
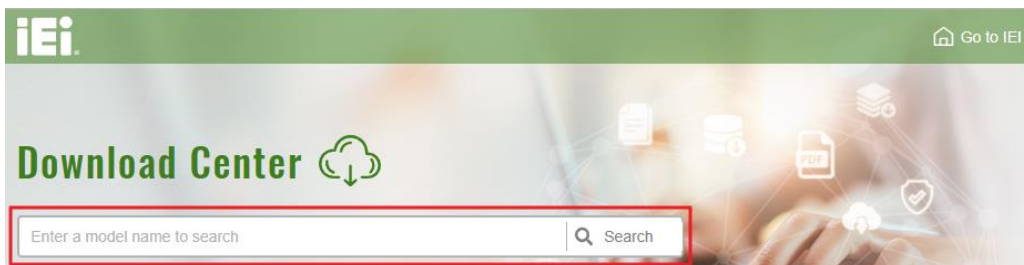


Figure 4-14: IEI Resource Download Center

4.9 Driver Download

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

Step 1: Go to <https://download.ieiworld.com>. Type IMBA-ADL-H610 and press Enter.



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

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

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

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

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

Step 3: Click the driver file name on the page and you will be prompted with the following window. You can download the entire ISO file (❶), or click the small arrow to find an individual driver and click the file name to download (❷).

7B000-001168-RS_V1.4.iso

❶ [Click here to download entire ISO file. \(2.99 GB\)](#)

* Download individual file *

- Docs
 - 1.Chipset
 - ❷ 10.1.1.12.zip (2.7 MB)
 - 2.VGA
 - 3.Audio
 - 4.Lan
 - 5.USB 3.0
 - 6.Serial IO
 - 7.TXE
 - 8.Manual



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.

4.10 Intel® AMT Setup Procedure

The IMBA-ADL-H610 is featured with the Intel® Active Management Technology (AMT). To enable the Intel® AMT function, follow the steps below.

- Step 1:** Make sure at least one of the memory sockets is installed with a DDR4 DIMM.
- Step 2:** Connect an Ethernet cable to the RJ-45 connector labeled **JP1**
- Step 3:** The AMI BIOS options regarding the Intel® ME or Intel® AMT must be enabled,
- Step 4:** Properly install the Intel® Management Engine Components drivers from the iAMT Driver & Utility directory in the driver CD.
- Step 5:** Configure the Intel® Management Engine BIOS extension (MEBx). To get into the Intel® MEBx settings, press <Ctrl+P> after a single beep during boot-up process. Enter the Intel® current ME password as it requires (the Intel® default password is **admin**).

Chapter

4

BIOS

5.1 Introduction

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



NOTE:

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

5.1.1 Starting Setup

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

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

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

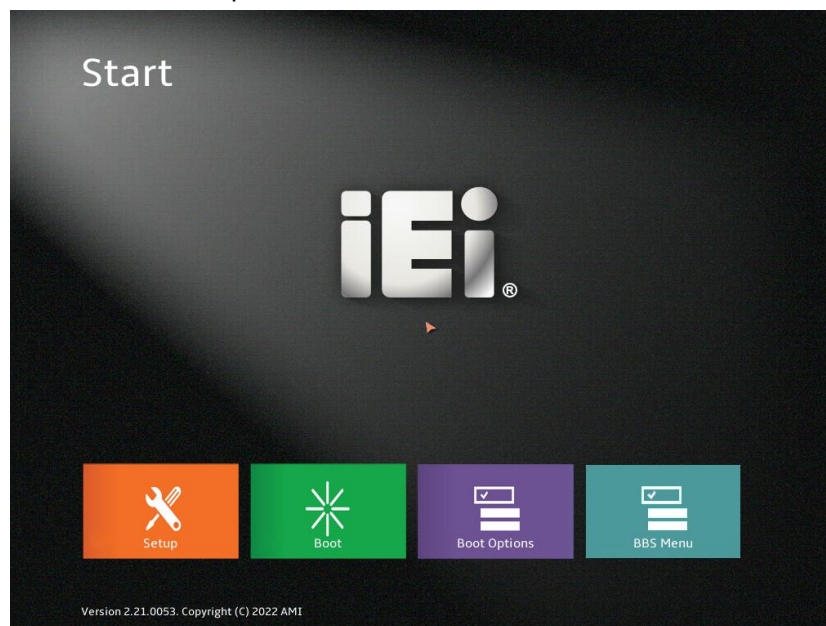


Figure 5-1: BIOS Starting Menu

IMBA-ADL-H610 ATX Motherboard

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

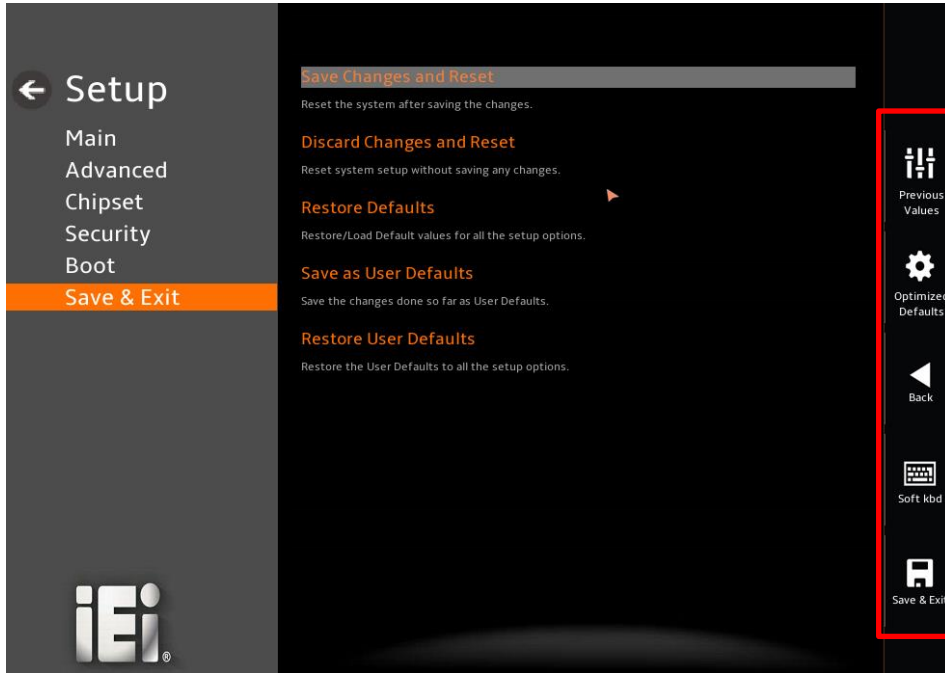
For keyboard navigation, use the navigation keys shown in **Table 5-1**.

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

IMBA-ADL-H610 ATX Motherboard

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

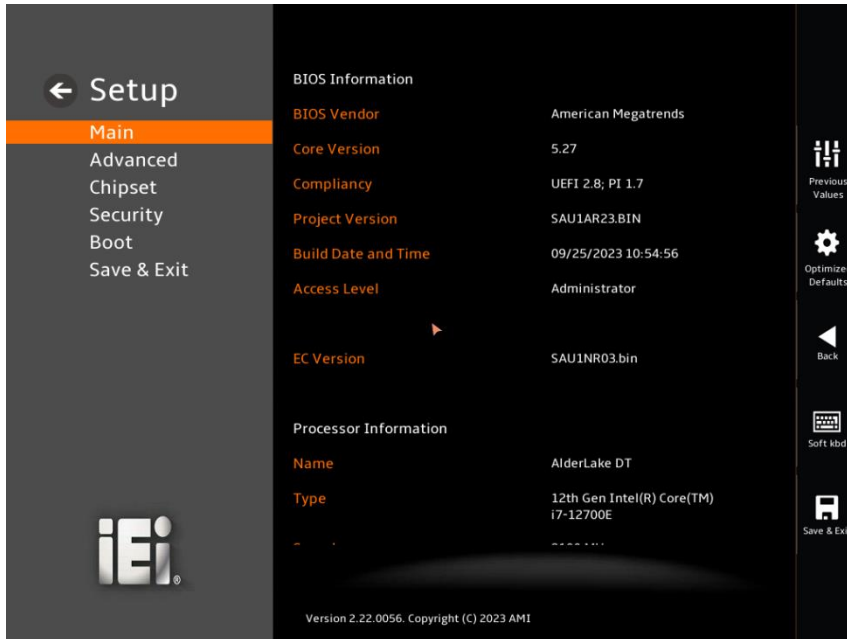
The **menu bar** on top of the BIOS screen has the following main items:

- 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

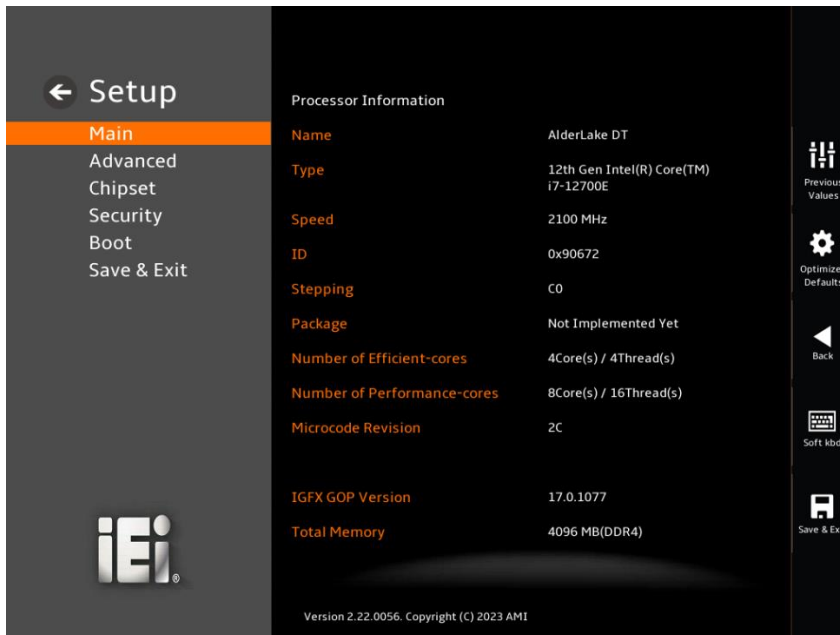
The following sections completely describe the configuration options found in the menu items at the top of the BIOS screen and listed above.

5.2 Main

The **Main** BIOS menu (**BIOS Menu 1 & BIOS Menu 2 & BIOS Menu 3 & BIOS Menu 4**) appears when the **BIOS Setup** program is entered. The **Main** menu gives an overview of the basic system information.



BIOS Menu 1: Main (1/4)

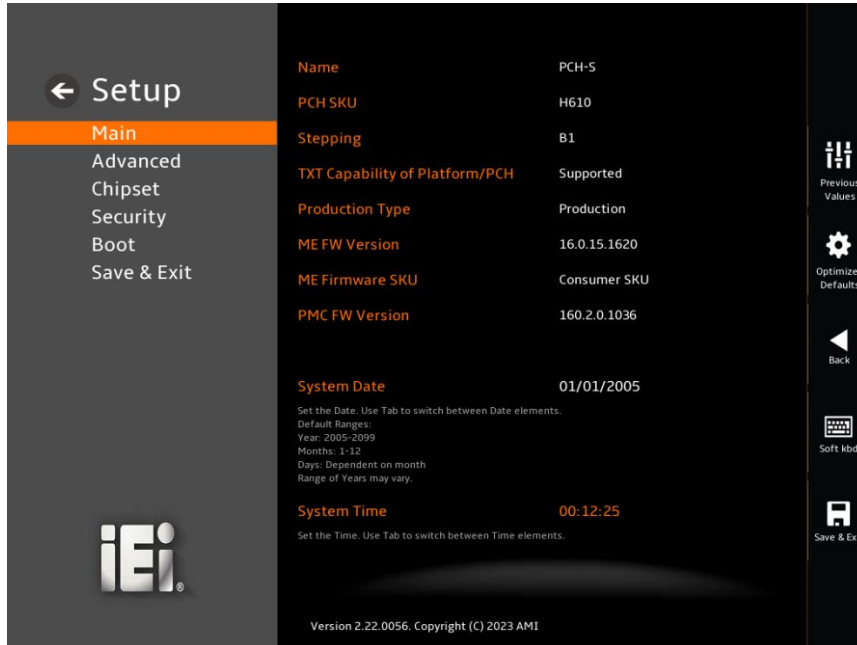


BIOS Menu 2: Main (2/4)

IMBA-ADL-H610 ATX Motherboard



BIOS Menu 3: Main (3/4)



BIOS Menu 4: Main (4/4)

→ BIOS Information

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

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

→ Processor Information

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

- **Name:** Displays the Processor Details
- **Type:** Displays the Processor Type
- **Speed:** Displays the Processor Speed
- **ID:** Displays the Processor ID
- **Stepping:** Displays the Processor Stepping
- **Package:** Displays the Processor Package
- **Number of Efficient-Processors:** Displays number of CPU E-cores
- **Number of Performance-cores:** Displays number of CPU P-cores
- **Microcode Revision:** CPU Microcode Revision
- **IGFX GOP Version:** Displays the IGFX GOP Version
- **Total Memory:** Total Memory in the System
- **Memory Frequency:** Displays the Frequency of Memory

→ PCH Information

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

- **Name:** Displays the PCH Name

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- **PCH SKU:** Displays the PCH SKU
- **Stepping:** Displays the PCH Stepping
- **TXT Capability of Platform/PCH:** Display the TXT Capability of Platform/PCH
- **Production Type:** Display the Production Type
- **ME FW Version:** Displays the ME Firmware Version
- **ME Firmware SKU:** Displays the ME Firmware SKU
- **PMC FW Version:** Displays the PMC Firmware Version

The System Overview field also has two user configurable fields:

→ **System Date [xx/xx/xx]**

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

→ **System Time [xx:xx:xx]**

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

5.3 Advanced

Use the **Advanced** menu (**BIOS Menu 5**) 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 5: Advanced

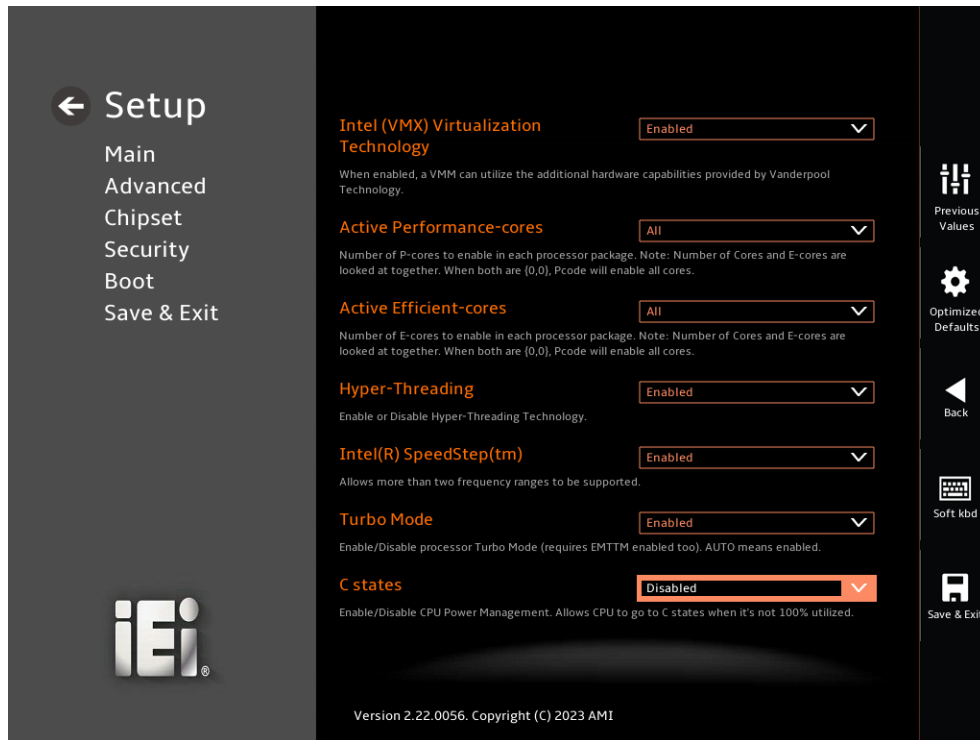
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5.3.1 CPU Configuration

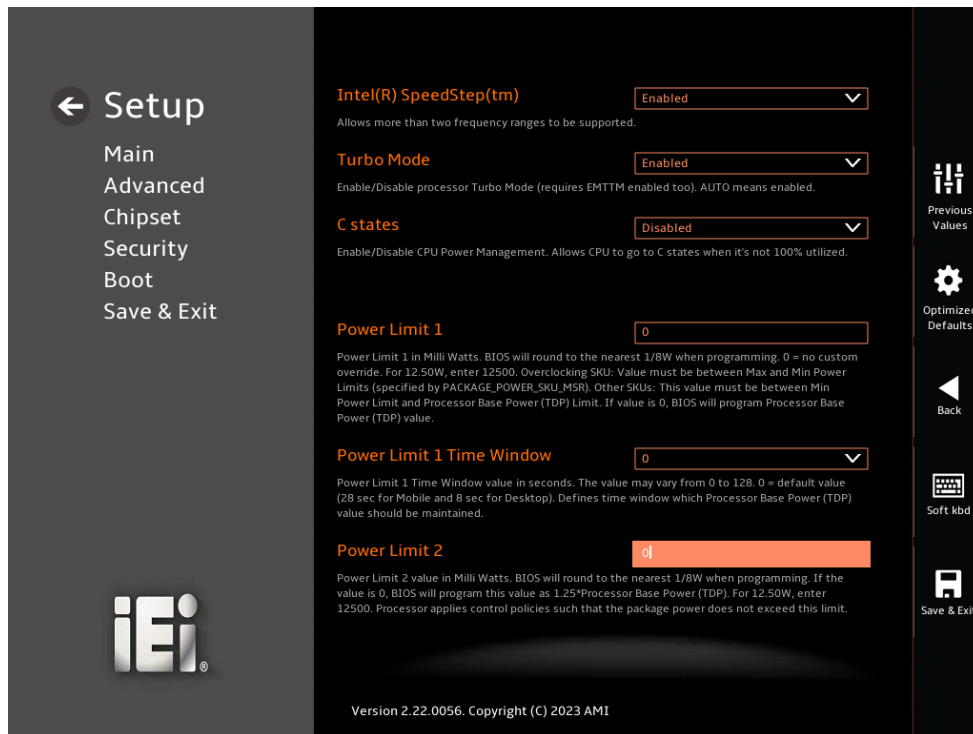
Use the **CPU Configuration** menu (**BIOS Menu 6 & BIOS Menu 7 & BIOS Menu 8**) to view detailed CPU specifications or enable the Intel Virtualization Technology.



BIOS Menu 6: CPU Configuration (1/3)



BIOS Menu 7: CPU Configuration (2/3)



BIOS Menu 8: CPU Configuration (3/3)

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→ Intel (VMX) Virtualization Technology [Disabled]

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

- **Disabled** Disables Intel Virtualization Technology.
- **Enabled** **DEFAULT** Enables Intel Virtualization Technology.

→ Active Processor Cores [All]

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

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

→ Active Efficient-cores [All]

→	All	DEFAULT	Enable all cores in the processor package.
→	0		Enable zero core in the processor package.
→	1		Enable one core in the processor package.
→	2		Enable two cores in the processor package.
→	3		Enable three cores in the processor package.

→ Hyper-Threading [Enabled]

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

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

→ Intel(R) SpeedStep(tm) [Enabled]

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

- **Disabled** Disables Intel® SpeedStep Technology
- **Enabled** **DEFAULT** Enables Intel® SpeedStep Technology

→ Turbo Mode

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

- **Disabled** **DEFAULT** Disables Turbo Mode Technology
- **Enabled** Enables Turbo Mode Technology

→ C states [Disabled]

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

- **Disabled** **DEFAULT** Disables CPU power management
- **Enabled** Enables CPU power management

→ Power Limit 1 Override [Disabled]

Enable/Disable Power Limit 1 override. If this option is disabled. BIOS will program the default values for Limit 1 and Power Limit 1 Time Window.

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→ Power Limit 1 Time Window

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

→ Power Limit 2 Override [Disabled]

Power Limit 1 in Milli Watts. BIOS will round to the nearest 1/8W when programming. 0 = no custom override. For 12.50W, enter 12500.

5.3.1.1 Efficient-core Information

Use the **Efficient-core Information (BIOS Menu 9)** to view information about Efficient-core.



BIOS Menu 9: Efficient-core Information

5.3.1.2 Performance-core Information

Use the **Performance-core Information (BIOS Menu 10)** to view information about Performance-core.



BIOS Menu 10: Performance-core Information

5.3.3 iEi One Key Recovery

Use the **iEi One Key Recovery** menu (**BIOS Menu 12**) to set or change the configurations for the Auto Recovery Function.



BIOS Menu 12: iEi One Key Recovery

➔ Auto Recovery Function [disabled]

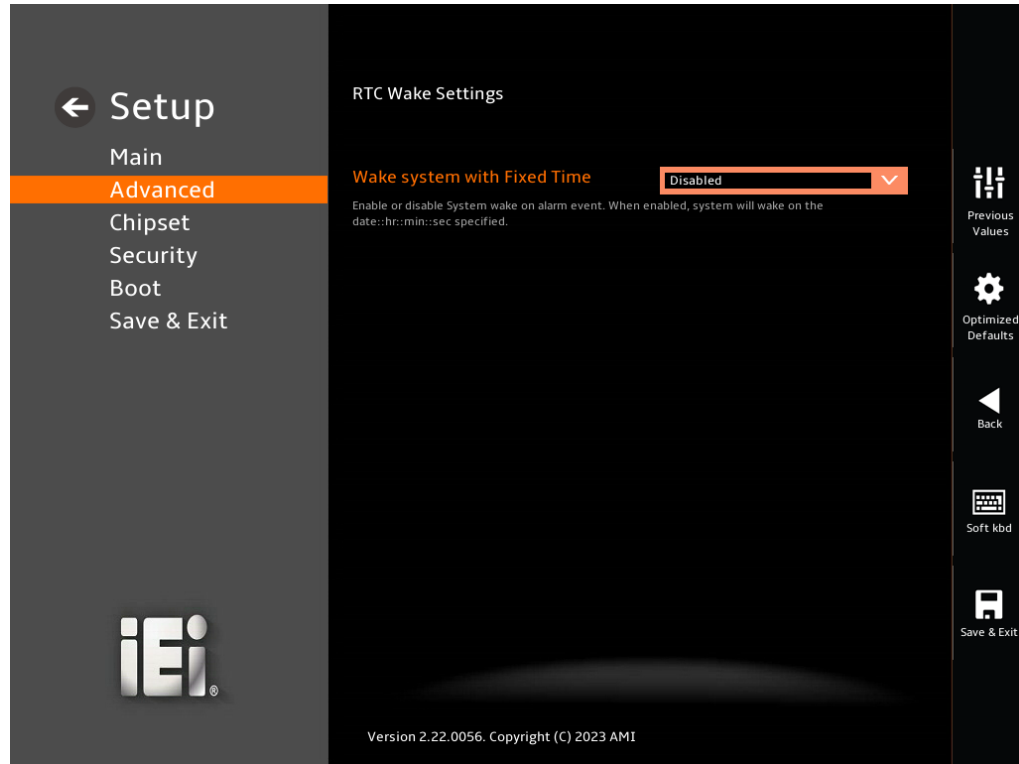
Use the **Auto Recovery Function** option to enable or disable the **watch dog function**, when OS crashes It will automatically recover system.

- ➔ **Disabled** **DEFAULT** Disables watch dog function
- ➔ **Enabled** Enables watch dog function

5.3.4 RTC Wake Settings

Use the **RTC Wake Setting** menu (**BIOS Menu 13**) to enable or disable Wake system with Fixed Time.

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BIOS Menu 13: RTC Wake Setting

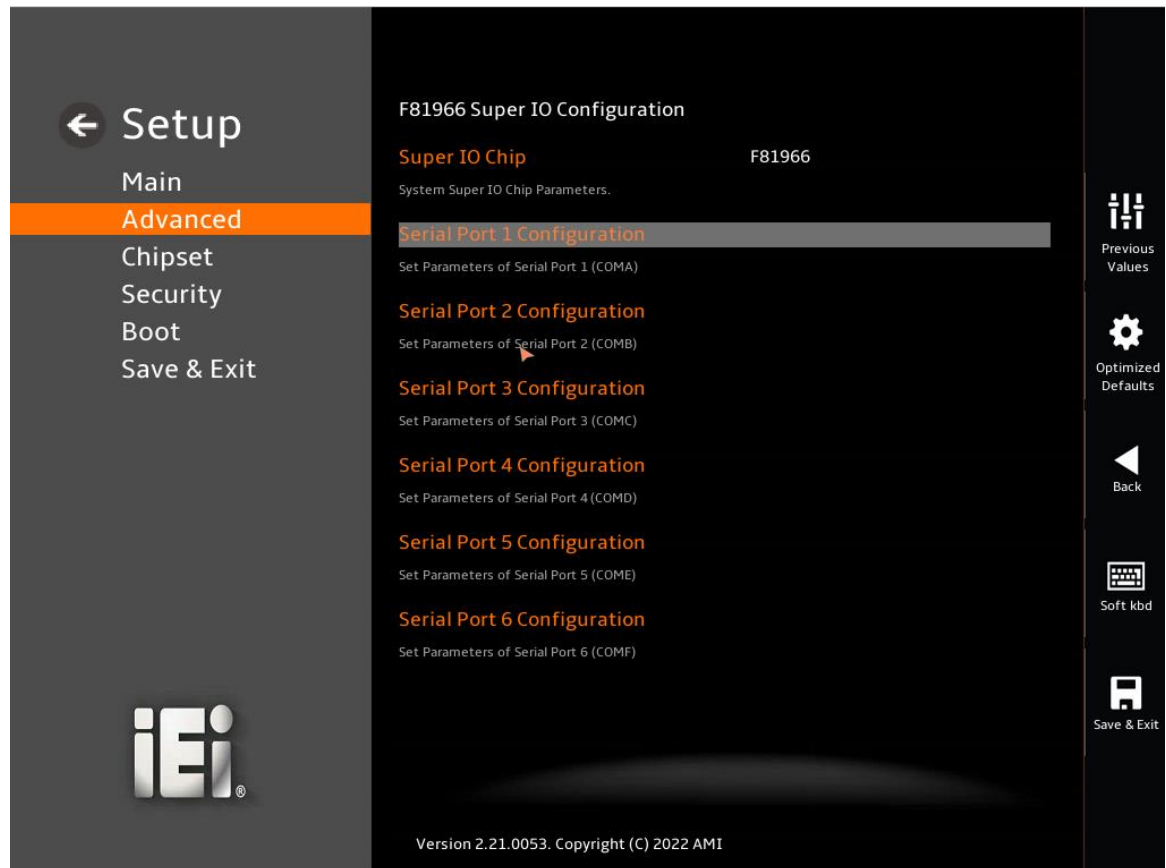
➔ **RTC Wake Setting [disabled]**

Use the **RTC Wake Setting** option to enable or disable the **System wake on alarm event** Technology, when enabled, system will wake on the date.

- ➔ **Disabled** **DEFAULT** Disables System wake on alarm event Technology
- ➔ **Enabled** Enables System wake on alarm event Technology

5.3.5 F81866 Super IO Configuration

Use the **F81866 Super IO Configuration** menu (**BIOS Menu 14**) to set or change the configurations for the parallel ports and serial ports.

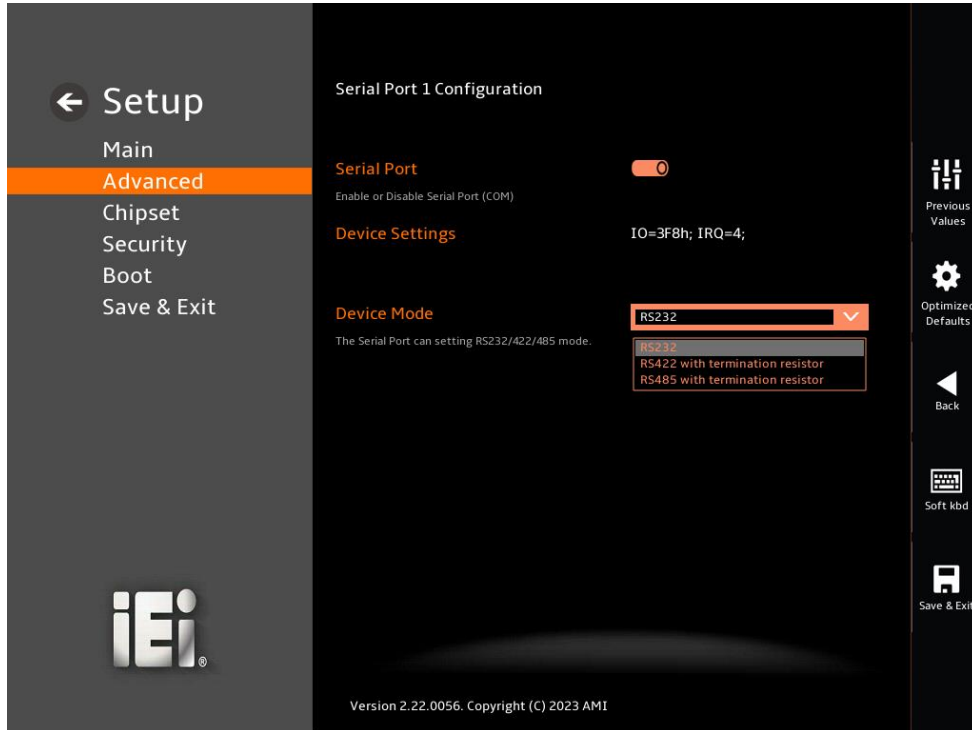


BIOS Menu 14: F81866 Super IO Configuration

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5.3.5.1 Serial Port 1 Configuration

Use the **Serial Port 1 Configuration** menu (**BIOS Menu 15**) to configure the serial port n.



BIOS Menu 15: 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

Use the **Device Settings** option to change the serial port IO port address and interrupt address.

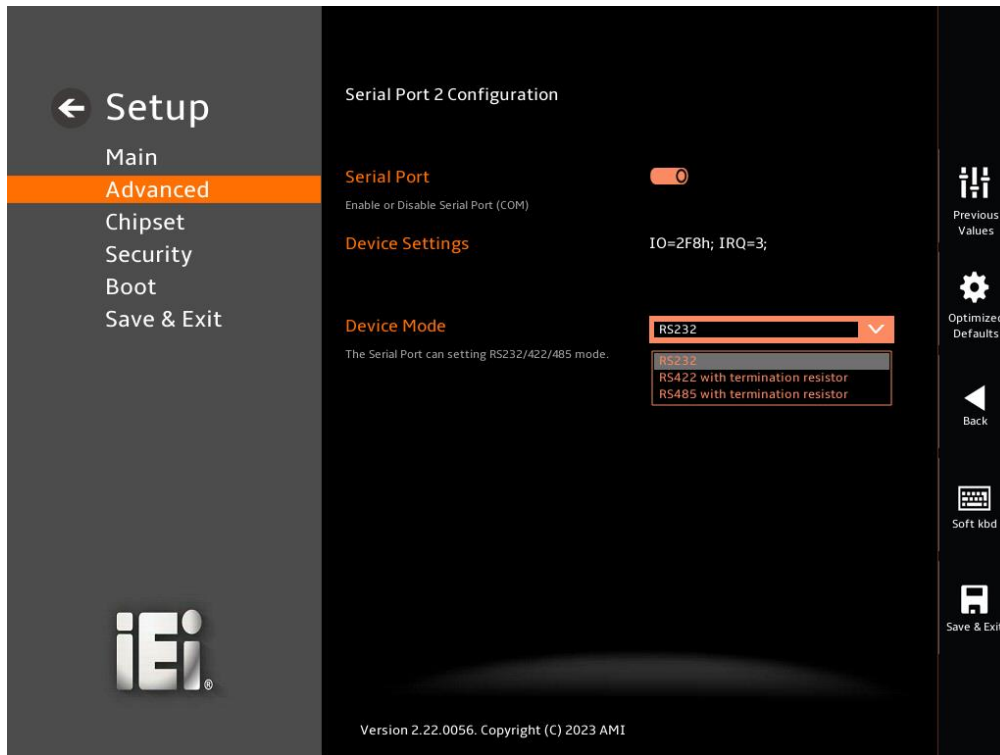
➔ **IO=3F8h;** Serial Port I/O port address is 3F8h and the interrupt
IRQ=4 address is IRQ4

→ **Device Mode [RS232]**

- **RS232** **DEFAULT** The Device Mode is RS232.
- **RS422 with termination resistor** The Device Mode is RS422.
- **RS485 with termination resistor** The Device Mode is RS485.

5.3.5.2 Serial Port 2 Configuration

Use the **Serial Port 2 Configuration** menu (**BIOS Menu 16**) to configure the serial port n.



BIOS Menu 16: Serial Port 2 Configuration Menu

→ **Serial Port [Enabled]**

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

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

➔ **Device Settings**

Use the **Device Settings** option to change the serial port IO port address and interrupt address.

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

➔ **Device Mode [RS232]**

- ➔ **RS232** **DEFAULT** The Device Mode is RS232.
- ➔ **RS422 with** The Device Mode is RS422.
termination
resistor
- ➔ **RS485 with** The Device Mode is RS485.
termination
resistor

5.3.5.3 Serial Port 3 Configuration

Use the **Serial Port 3 Configuration** menu (**BIOS Menu 17**) to configure the serial port 3.



BIOS Menu 17: 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

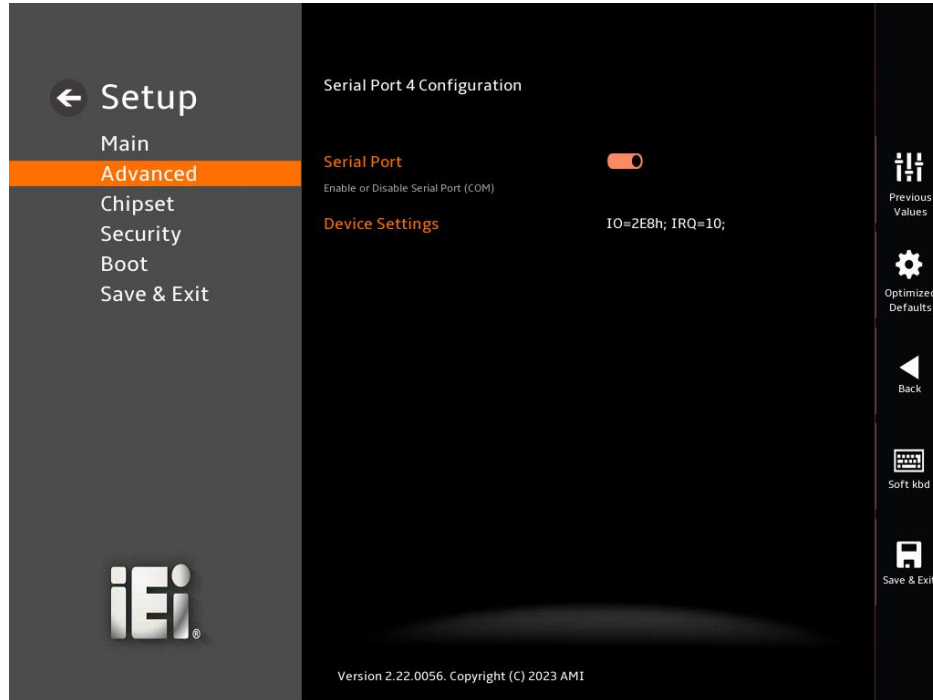
Use the **Device Settings** option to change the serial port IO port address and interrupt address.

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

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5.3.5.4 Serial Port 4 Configuration

Use the **Serial Port 4 Configuration** menu (**BIOS Menu 18**) to configure the serial port 4.



BIOS Menu 18: 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

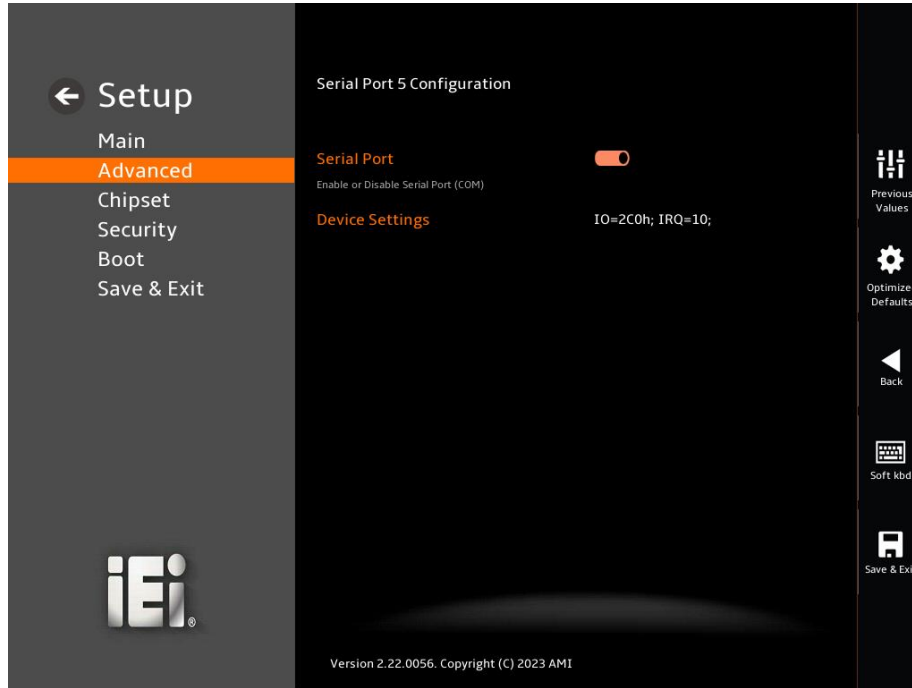
→ Device Settings

Use the **Device Settings** option to change the serial port IO port address and interrupt address.

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

5.3.5.5 Serial Port 5 Configuration

Use the **Serial Port 5 Configuration** menu (**BIOS Menu 19**) to configure the serial port 5.



BIOS Menu 19: 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

Use the **Device Settings** option to change the serial port IO port address and interrupt address.

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

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5.3.5.6 Serial Port 6 Configuration

Use the **Serial Port 6 Configuration** menu (**BIOS Menu 20**) to configure the serial port 6.



BIOS Menu 20: 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

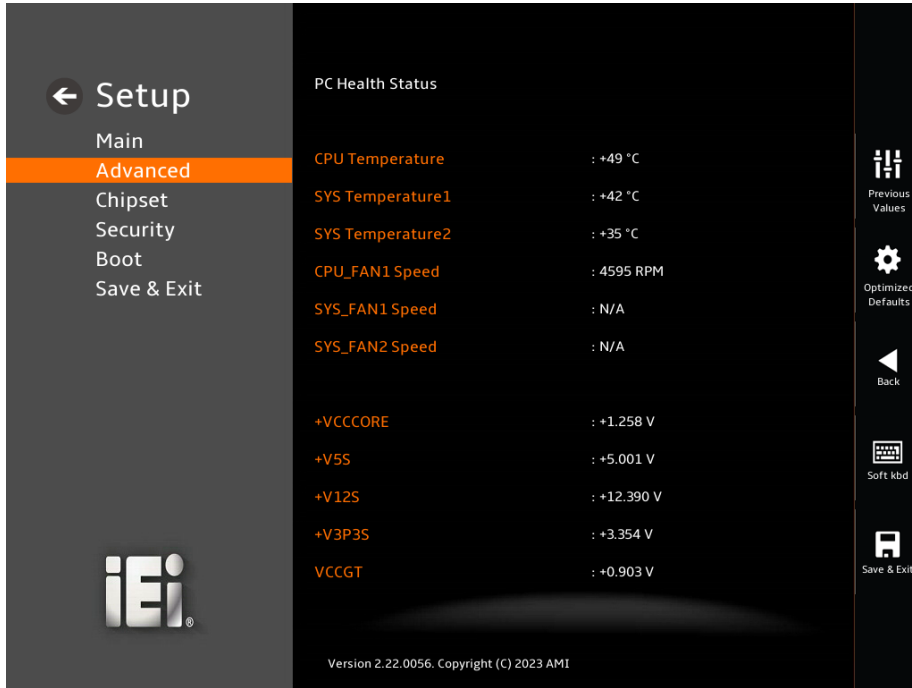
➔ Device Settings

Use the **Device Settings** option to change the serial port IO port address and interrupt address.

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

5.3.6 EC KB9068 H-W Monitor

The EC KB9068 H-W Monitor menu (**BIOS Menu 21 & BIOS Menu 22**) 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 21: EC KB9068 H-W Monitor (1/2)

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BIOS Menu 22: EC KB9068 H-W Monitor (2/2)

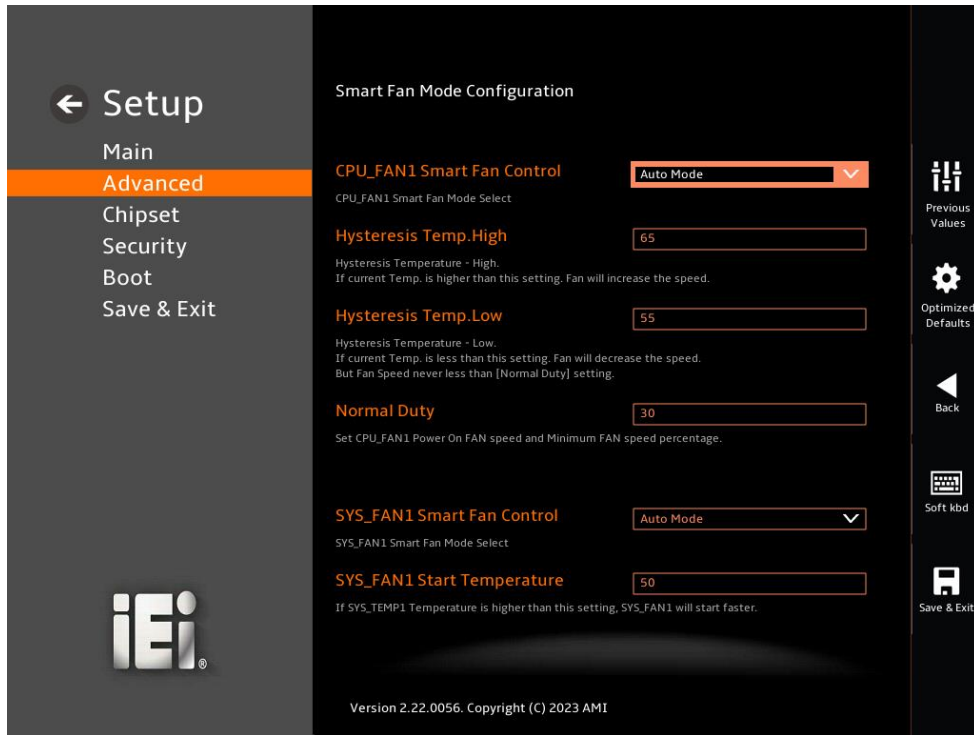
→ PC Health Status

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

- System Temperatures:
 - CPU Temperature
 - System Temperature
- Fan Speeds:
 - CPU Fan Speed
 - System Fan Speed
- Voltages:
 - VCCCORE
 - +V5S
 - +V12S
 - +V3P3S
 - VCCGT
 - +VDDQ
 - +VCCIN_AUX_CPU

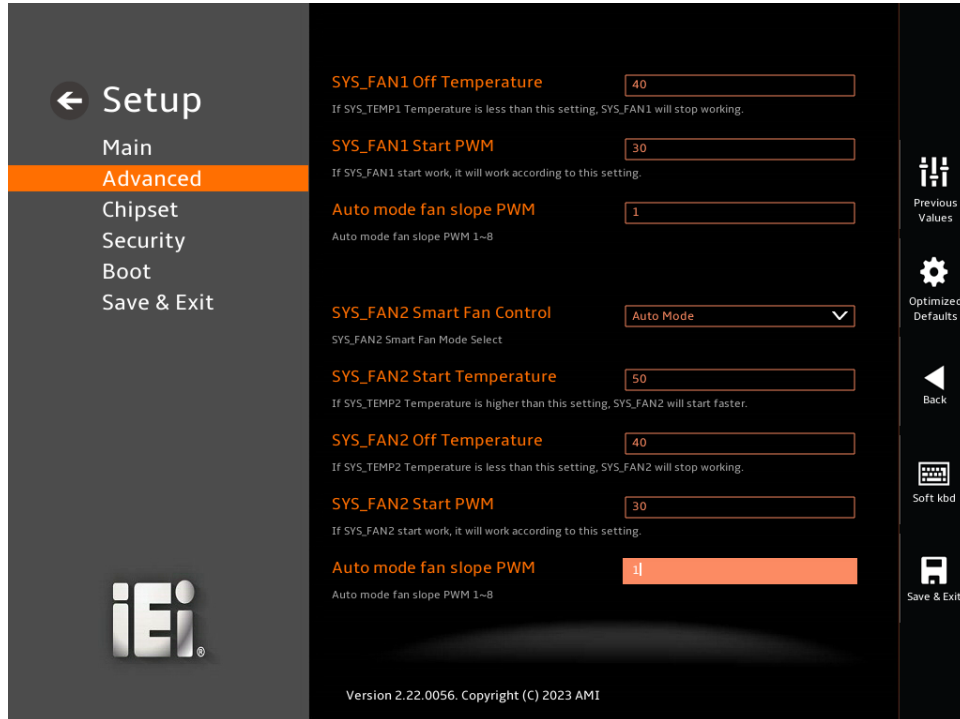
5.3.6.1 Smart Fan Mode Configuration

Use the **Smart Fan Mode Configuration** submenu (**BIOS Menu 23 & BIOS Menu 24**) to configure the CPU/system fan start/off temperature and control mode.



BIOS Menu 23: Smart Fan Mode Configuration (1/2)

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BIOS Menu 24: Smart Fan Mode Configuration (2/2)

→ 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.

→ Hysteresis Temp.High

Use the **Hysteresis Temp.High** option to control CPU_FAN1 speed when temperature is change. If current Temp.is higher than this setting, Fan will increase the speed. Use the + or – key to change the value or enter a decimal number between 1 and 100.

→ Hysteresis Temp.Low

Use the **Hysteresis Temp.Low** option to control CPU_FAN1 speed when temperature is change. If current Temp.is lower than this setting, Fan will decrease the speed. Use the +

or – key to change the value or enter a decimal number between 1 and 100.. But Fan Speed never less than [Normal Duty] setting.

→ **Normal Duty**

Use the **Normal Duty** option to set CPU_FAN1 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**

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

→ **SYS_FAN1 Off Temperature**

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

→ **SYS_FAN1 Start PWM**

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**

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

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→ **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**

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

→ **SYS_FAN2 Off Temperature**

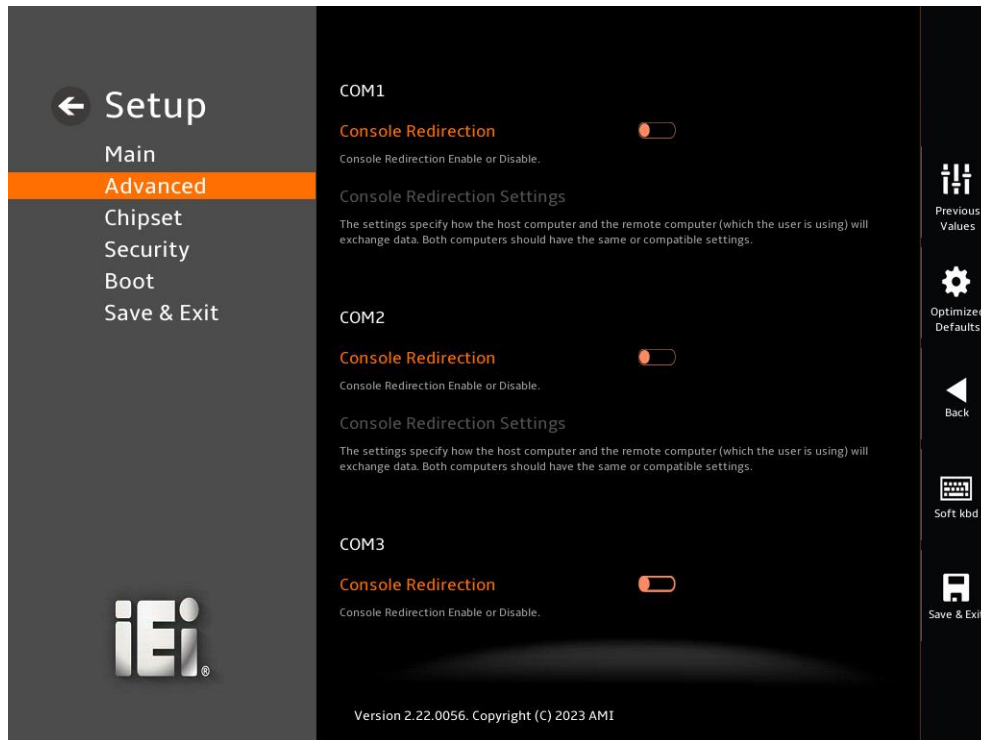
If the System temperature is lower than the value set this option, the fan speed change to be lowest. To set a value, Use the + or – key to change the value or enter a decimal number between 1 and 100.

→ **SYS_FAN2 Start PWM**

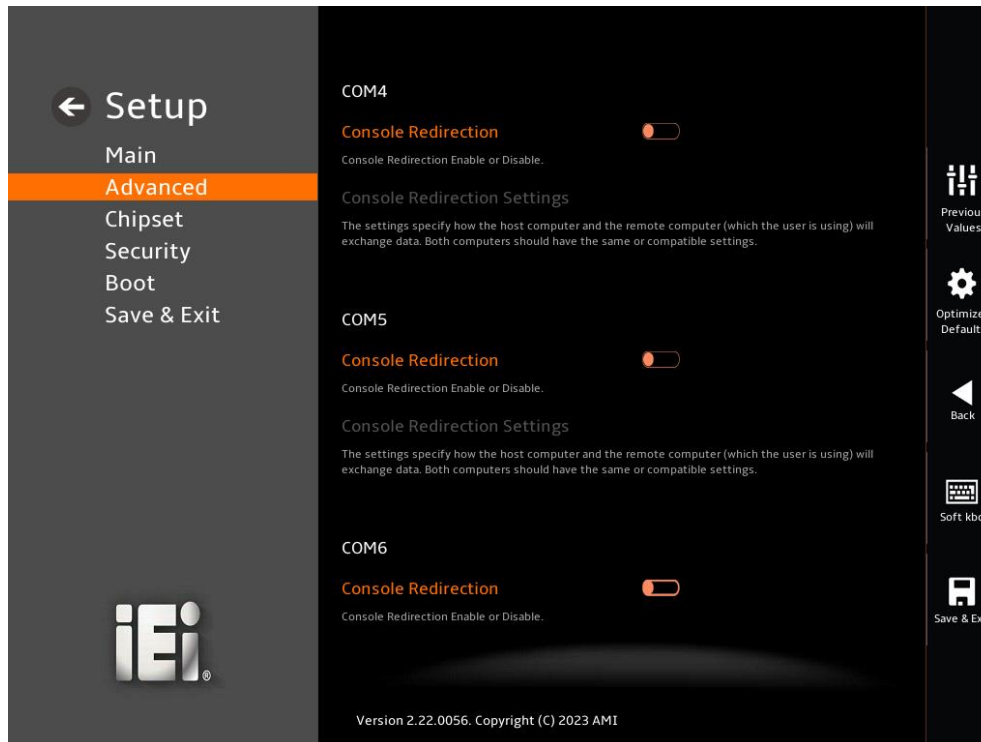
Use the **SYS_Fan2 Start PWM** option to set the PWM start value. Use the + or – key to change the value or enter a decimal number between 1 and 100.

5.3.7 Serial Port Console Redirection

The **Serial Port Console Redirection** menu (**BIOS Menu 25 & BIOS Menu 26**) 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 25: Serial Port Console Redirection (1/2)



BIOS Menu 26: Serial Port Console Redirection (2/2)

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→ Console Redirection [Disabled]

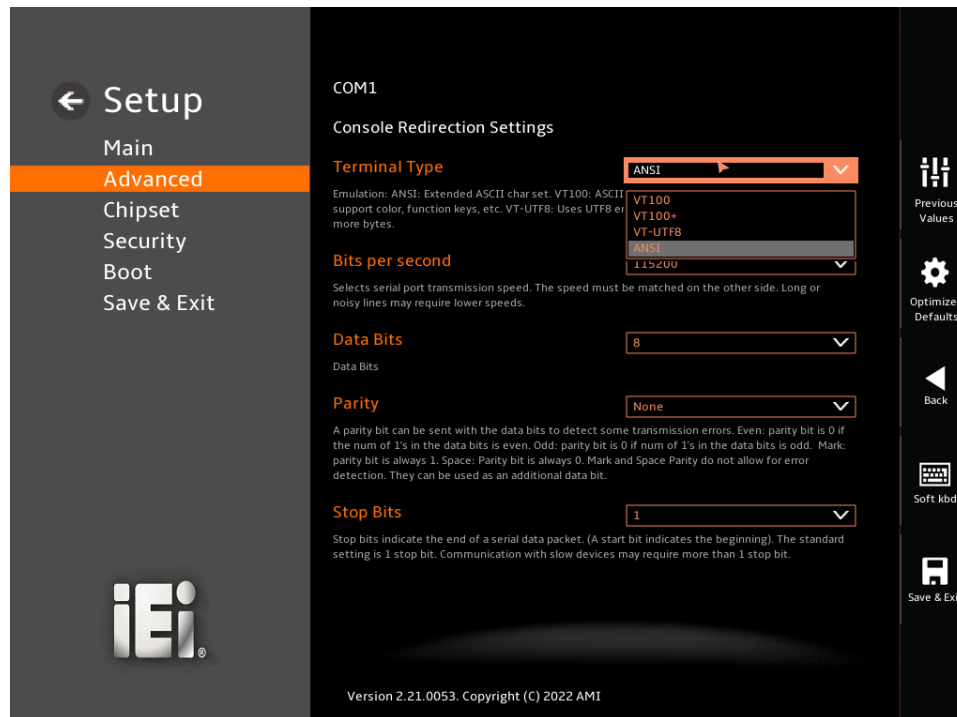
Use **Console Redirection** option to enable or disable the console redirection function.

- **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.

5.3.7.1 Console Redirection Settings

The following options are available in the **Console Redirection Settings** submenu (**BIOS Menu 27**) when the **COM Console Redirection** (for COM1 to COM6) option is enabled.



BIOS Menu 27: COM Console Redirection Settings

→ Terminal Type [ANSI]

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

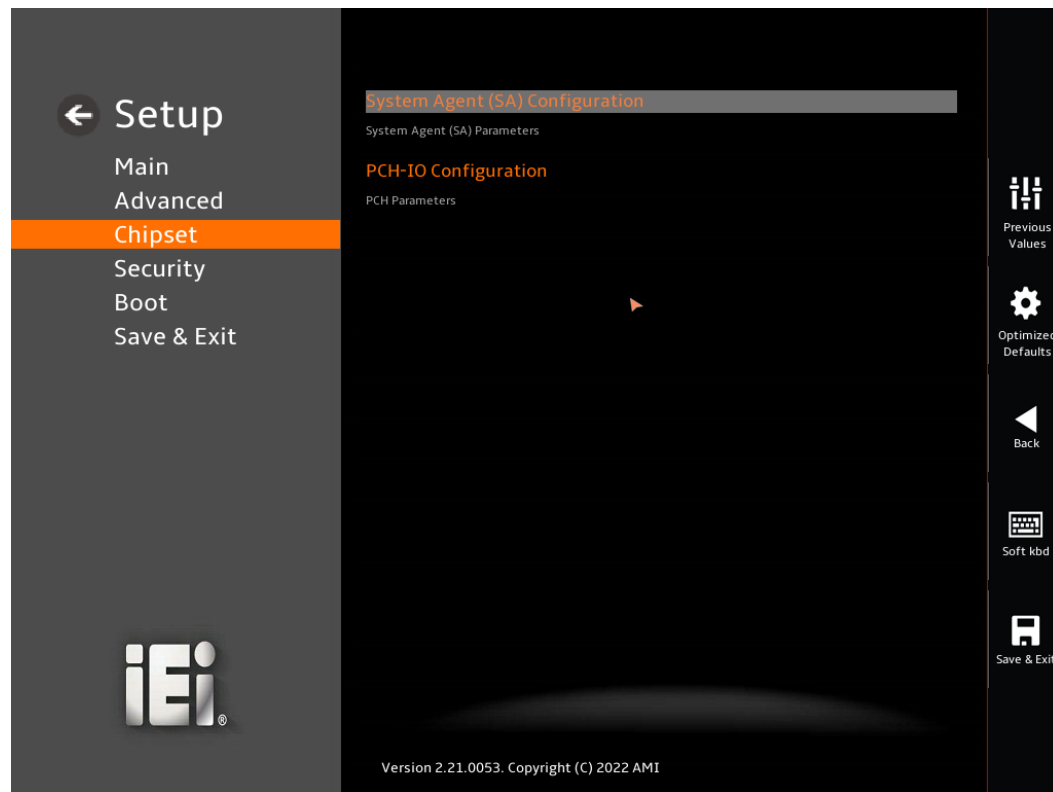
5.4 Chipset

Use the **Chipset** menu (**BIOS Menu 28**) to access the PCH IO and System Agent (SA) configuration menus.



WARNING!

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

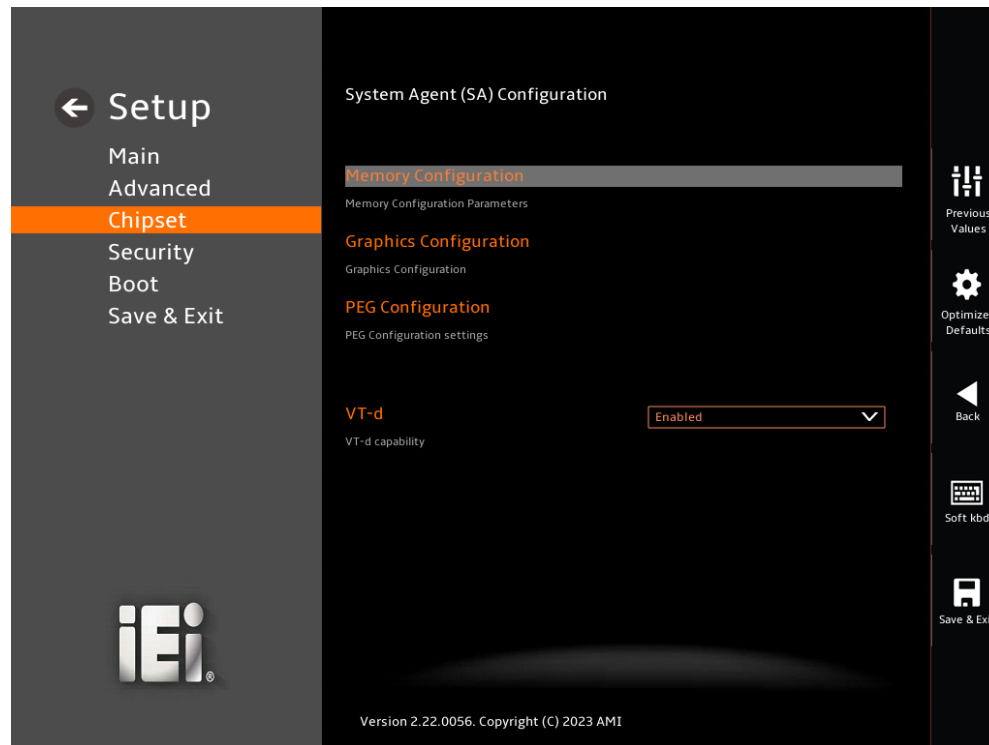


BIOS Menu 28: Chipset

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5.4.1 System Agent (SA) Configuration

Use the **System Agent (SA) Configuration** menu (**BIOS Menu 29**) to configure the System Agent (SA) parameters.



BIOS Menu 29: System Agent (SA) Configuration

→ VT-d [Enabled]

Use the **VT-d** option to enable or disable the VT-d capability.

- **Disabled** Disable the VT-d capability
- **Enabled** **DEFAULT** Enable the VT-d capability

5.4.1.1 Memory Configuration

Use the **Memory Configuration** submenu (**BIOS Menu 30**) to view memory information.

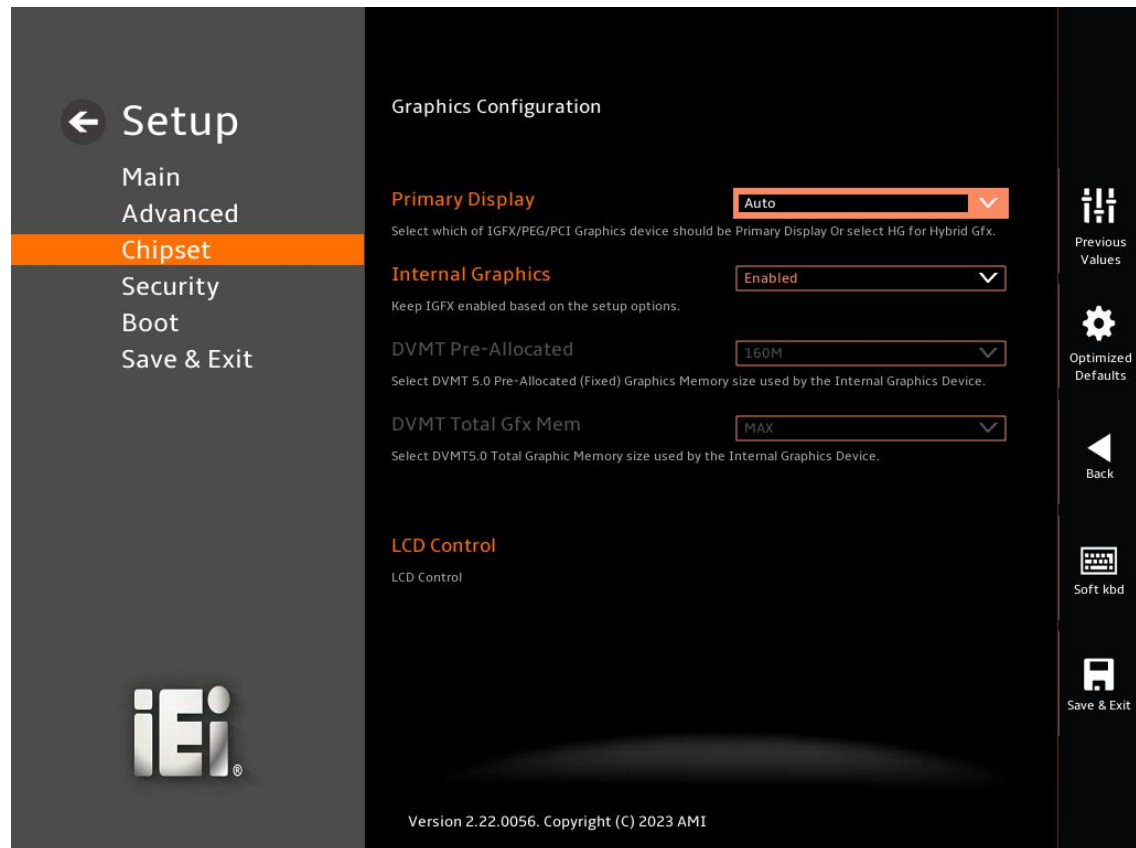


BIOS Menu 30: Memory Configuration

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5.4.1.2 Graphics Configuration

Use the **Graphics Configuration (BIOS Menu 31)** menu to configure the video device connected to the system.



BIOS Menu 31: Graphics Configuration

→ Primary Display [Auto]

Use the **Primary Display** option to select the primary graphics controller the system uses.

The following options are available:

- Auto **Default**
- IGFX
- PEG
- PCI
- SG

→ Internal Graphics [Enabled]

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

- | | | | |
|---|-----------------|----------------|----------------|
| → | Auto | | Auto mode |
| → | Disabled | | Disables IGFX. |
| → | Enabled | Default | Enables IGFX. |

→ DVMT Pre-Allocated [160M]

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

→ DVMT Total Gfx Mem [MAX]

Use the **DVMT Total Gfx Mem** option to select DVMT5.0 total graphic memory size used by the internal graphic device. The following options are available.

5.4.1.2.1 LCD Control

Use the **LCD Control** menu (**BIOS Menu 32**) to set or change LVDS Backlight PWM mode.

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BIOS Menu 32: LCD Control

→ LVDS Backlight PWM mode [Invert]

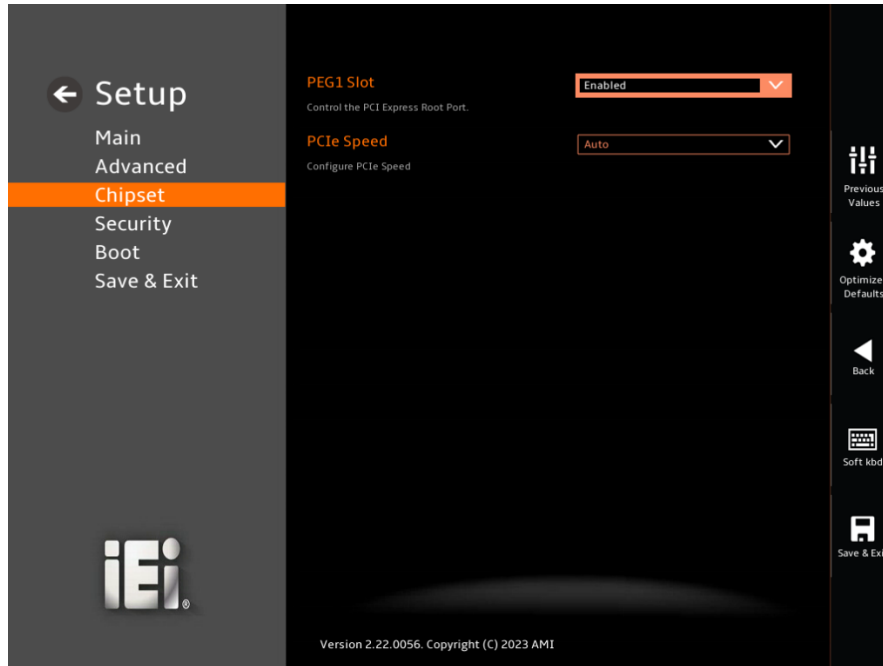
Use the **LVDS Backlight PWM mode** option to change the **LVDS Backlight Control PWM Mode** Normal or Invert.

- **Normal** LVDS Backlight PWM mode normal
- **Invert** **DEFAULT** LVDS Backlight PWM mode Invert

5.4.1.3 PEG Port Configuration

Use the **PEG Port Configuration** menu (**BIOS Menu 33**) to set or change the PCIe1 configuration.

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BIOS Menu 34: PCIE1 Configure

→ PEG1 Slot [Enabled]

Use the **PEG1 Slot** BIOS option to set or change PCI express root port.

- **Enabled** **DEFAULT** Enabled the PCI Express Root Port.
- **Disabled** Disabled the PCI Express Root Port.

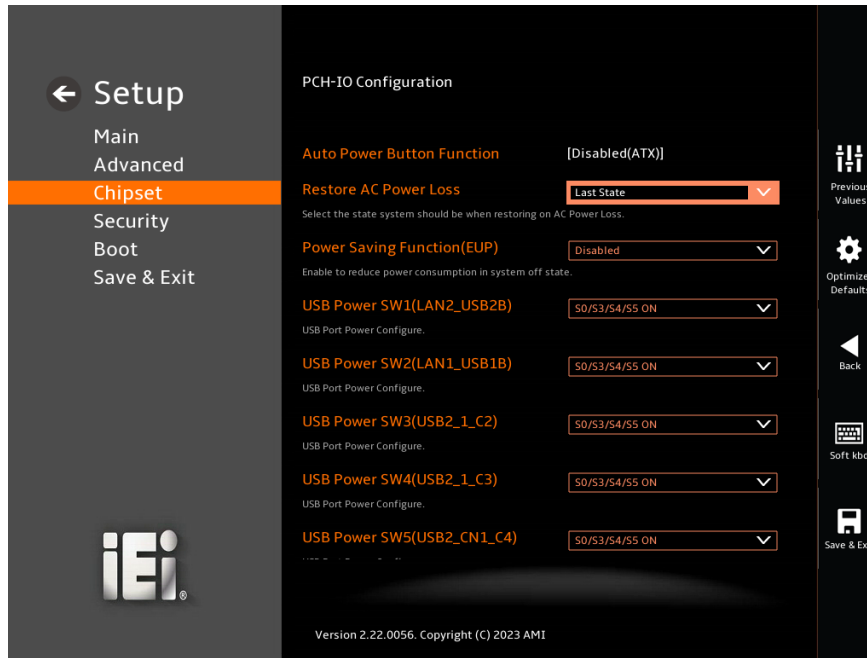
→ PCIe Speed [Auto]

Use the **PCIe Speed** BIOS option to configure PCIe Speed

→	Auto	DEFAULT	Auto Mode
→	Gen1		Configure PCIe Speed to Gen1.
→	Gen2		Configure PCIe Speed to Gen2.
→	Gen3		Configure PCIe Speed to Gen3.
→	Gen4		Configure PCIe Speed to Gen4.
→	Gen5		Configure PCIe Speed to Gen5.

5.4.2 PCH-IO Configuration

Use the **PCH-IO Configuration** menu (**BIOS Menu 35 & BIOS Menu 36**) to configure the PCH parameters.



BIOS Menu 35: PCH-IO Configuration (1/2)



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BIOS Menu 36: PCH-IO Configuration (2/2)

→ Auto Power Button Function [Disabled(ATX)]

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

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

→ Restore AC Power Loss [Last State]

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

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

→ Power Saving Function(EUP) [Disabled]

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

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

→ USB Power SW1(LAN2_USB2B) [S0/S3/S4/S5 ON]

Use the **USB Power SW1** BIOS option to configure the USB power source for the corresponding USB connectors (Table 5-3).

- **S3/S4/S5 OFF** Sets the USB power configure S3/S4/S5 OFF
- **S0/S3/S4/S5 ON** **DEFAULT** Sets the USB power configure S0/S3/S4/S5 ON

→ USB Power SW2(LAN1_USB1B) [S0/S3/S4/S5 ON]

Use the **USB Power SW2** BIOS option to configure the USB power source for the corresponding USB connectors (Table 5-3).

- **S3/S4/S5 OFF** Sets the USB power configure S3/S4/S5 OFF
- **S0/S3/S4/S5 ON** **DEFAULT** Sets the USB power configure S0/S3/S4/S5 ON

→ USB Power SW3(USB2_1_C2) [S0/S3/S4/S5 ON]

Use the **USB Power SW3** BIOS option to configure the USB power source for the corresponding USB connectors (Table 5-3).

- **S3/S4/S5 OFF** Sets the USB power configure S3/S4/S5 OFF
- **S0/S3/S4/S5 ON** **DEFAULT** Sets the USB power configure S0/S3/S4/S5 ON

→ USB Power SW4(USB2_1_C3) [S0/S3/S4/S5 ON]

Use the **USB Power SW4** BIOS option to configure the USB power source for the corresponding USB connectors (Table 5-3).

- **S3/S4/S5 OFF** Sets the USB power configure S3/S4/S5 OFF
- **S0/S3/S4/S5 ON** **DEFAULT** Sets the USB power configure S0/S3/S4/S5 ON

→ USB Power SW5(USB2_CN1_C4) [S0/S3/S4/S5 ON]

Use the **USB Power SW5** BIOS option to configure the USB power source for the corresponding USB connectors (Table 5-3).

- **S3/S4/S5 OFF** Sets the USB power configure S3/S4/S5 OFF
- **S0/S3/S4/S5 ON** **DEFAULT** Sets the USB power configure S0/S3/S4/S5 ON

→ USB Power SW7(USB2_CN1_C6) [S0/S3/S4/S5 ON]

Use the **USB Power SW7** BIOS option to configure the USB power source for the corresponding USB connectors (Table 5-3).

- **S3/S4/S5 OFF** Sets the USB power configure S3/S4/S5 OFF

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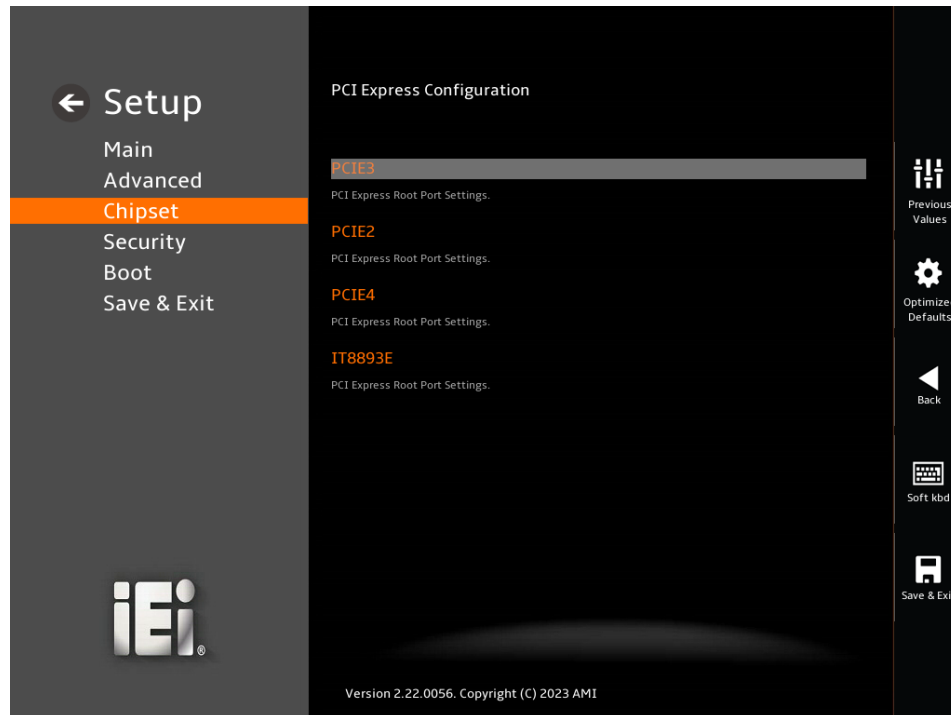
➔ **S0/S3/S4/S5 ON** **DEFAULT** Sets the USB power configure S0/S3/S4/S5 ON

BIOS Options	Configured USB Ports
USB Power SW1	K/M_USB1 (external USB 2.0 ports)
	LAN1_USB1 (external USB 3.2 Gen 2 ports)
	LAN2_USB2 (external USB 3.2 Gen 1 ports)
USB Power SW2	USB1 (internal USB 2.0 ports)
	USB2 (internal USB 2.0 ports)
	USB3-1 (internal USB 3.2 Gen 1 ports)

Table 5-3: BIOS Options and Configured USB Ports

5.4.2.1 PCI Express Configuration

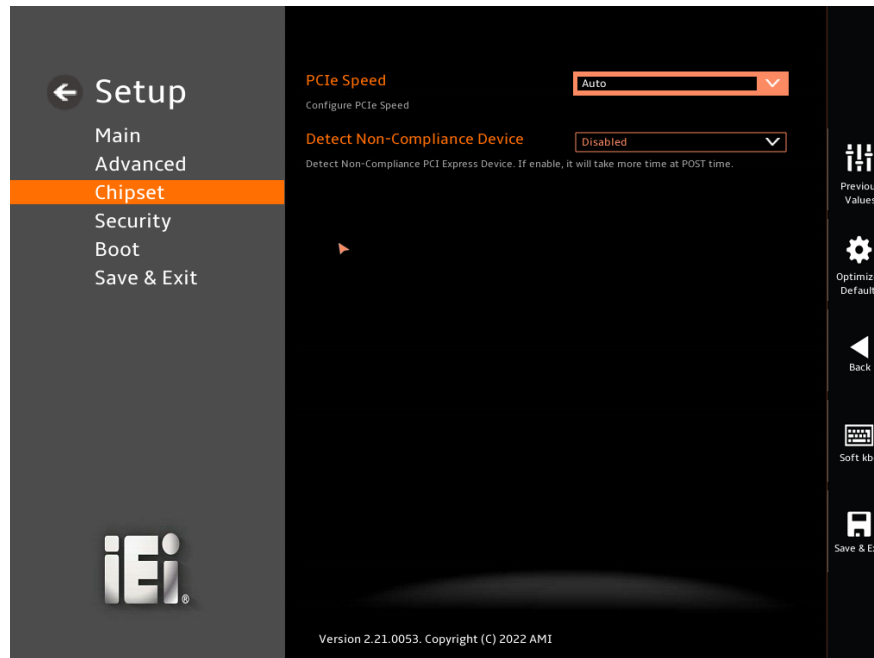
Use the **PCI Express Configuration** submenu (**BIOS Menu 37**) to configure the PCI Express slots.



BIOS Menu 37: PCI Express Configuration

5.4.2.1.1 PCIe Root Port Setting

Use the **PCIE3**, **PCIE2**, **PCIE4**, **IT8893E** submenu (**BIOS Menu 38**) to configure the PCI Root Port Setting.



BIOS Menu 38: PCIe Slot Configuration Submenu

➔ PCIe Speed [Auto]

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

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

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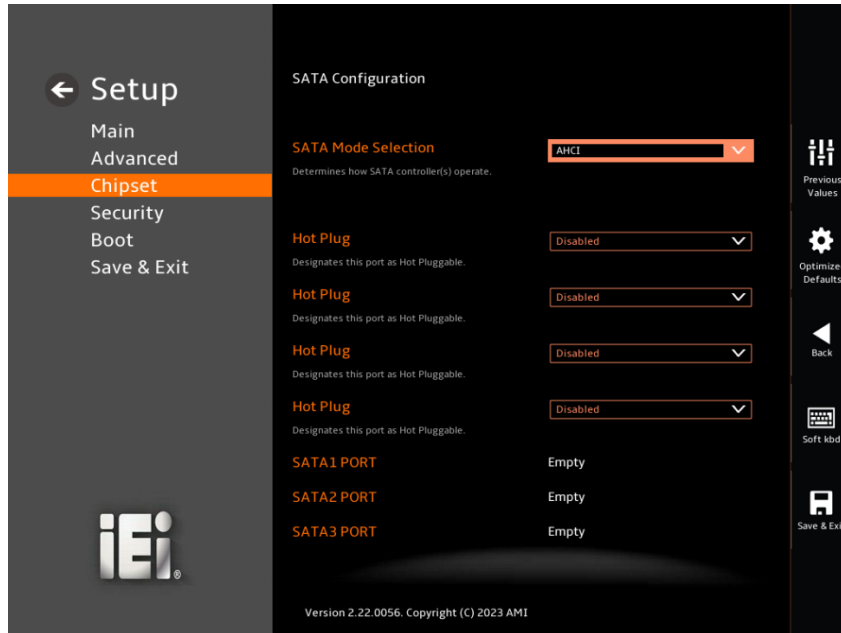
→ Detect Non-Compliance Device [Disabled]

Use the **Detect Non-Compliance Device** option to configure whether to detect if a non-compliance PCI Express device is connected to the PCI Express port.

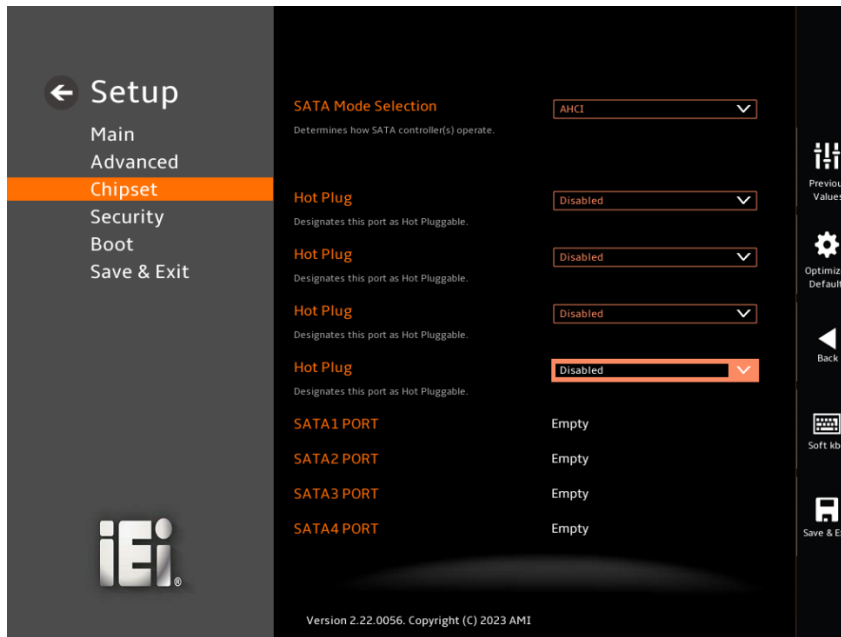
- | | | |
|-------------------|----------------|--------------------------------------------------------------------------------------------|
| → Disabled | DEFAULT | Do not detect if a non-compliance PCI Express device is connected to the PCI Express port. |
| → Enabled | | Detect if a non-compliance PCI Express device is connected to the PCI Express port. |

5.4.2.2 SATA Configuration

Use the **SATA Configuration** menu (**BIOS Menu 39 & BIOS Menu 40**) to change and/or set the configuration of the SATA devices installed in the system.



BIOS Menu 39: SATA Configuration (1/2)



BIOS Menu 40: SATA Configuration (2/2)

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→ SATA Mode Selection [AHCI]

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

- **AHCI** **DEFAULT** Configures SATA devices as AHCI device.
- **Intel RST Premium With Intel Optane System Acceleration** Configures SATA devices to the Intel RST Premium With Intel Optane System Acceleration mode.

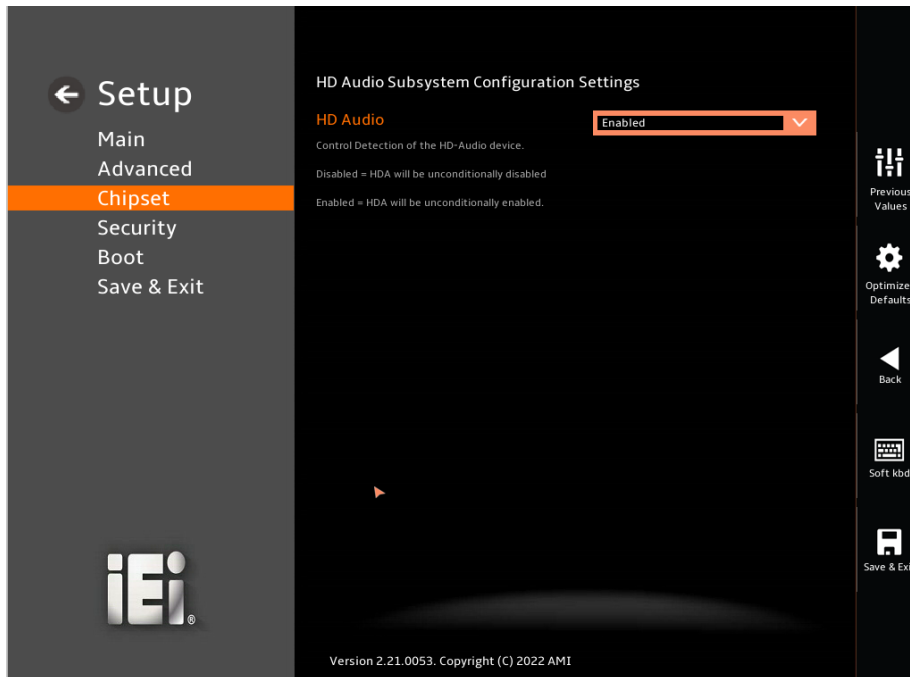
→ Hot Plug [Disabled]

Use the **Hot Plug** option (for S_ATA1 to S_ATA4 and M2_M1) to designate the correspondent port as hot-pluggable.

- **Disabled** **DEFAULT** Disables the hot-pluggable function of the SATA port.
- **Enabled** Designates the SATA port as hot-pluggable.

5.4.2.3 HD Audio Configuration

Use the **HD Audio Configuration** menu (**BIOS Menu 41**) to configure the PCH Azalia settings.



BIOS Menu 41: HD Audio Configuration

→ HD Audio [Auto]

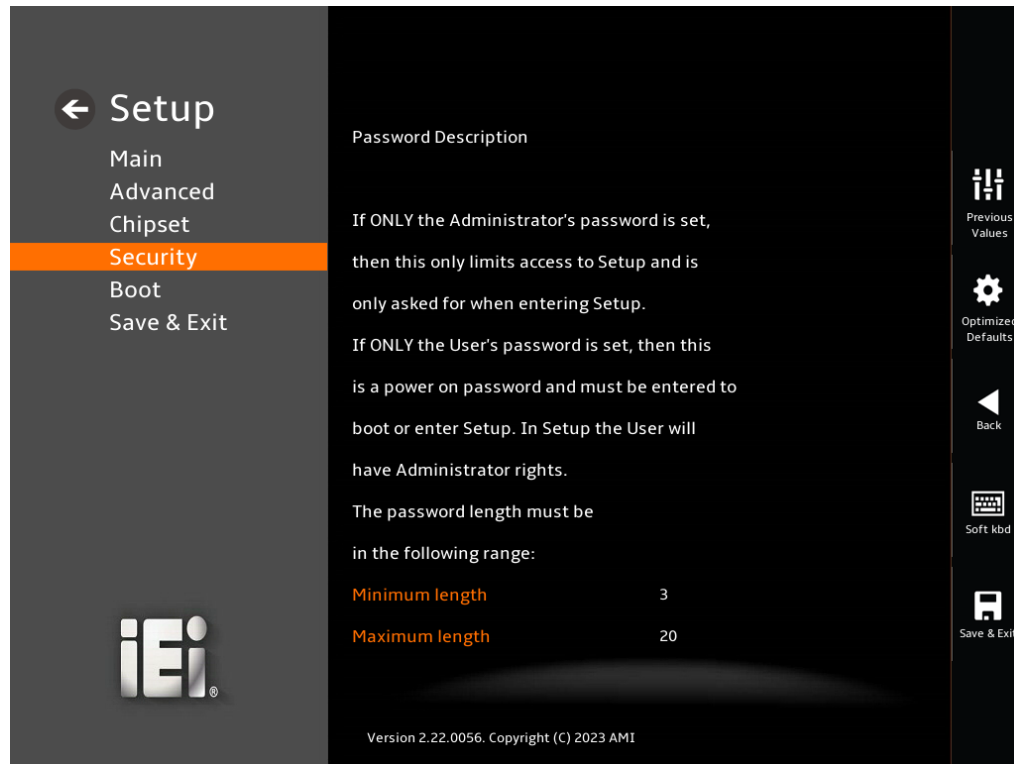
Use the **HD Audio** option to enable or disable the High Definition Audio controller.

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

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5.5 Security

Use the **Security** menu (**BIOS Menu 42 & BIOS Menu 43**) to set system and user passwords.



BIOS Menu 42: Security (1/2)



BIOS Menu 43: Security (2/2)

➔ **Administrator Password**

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

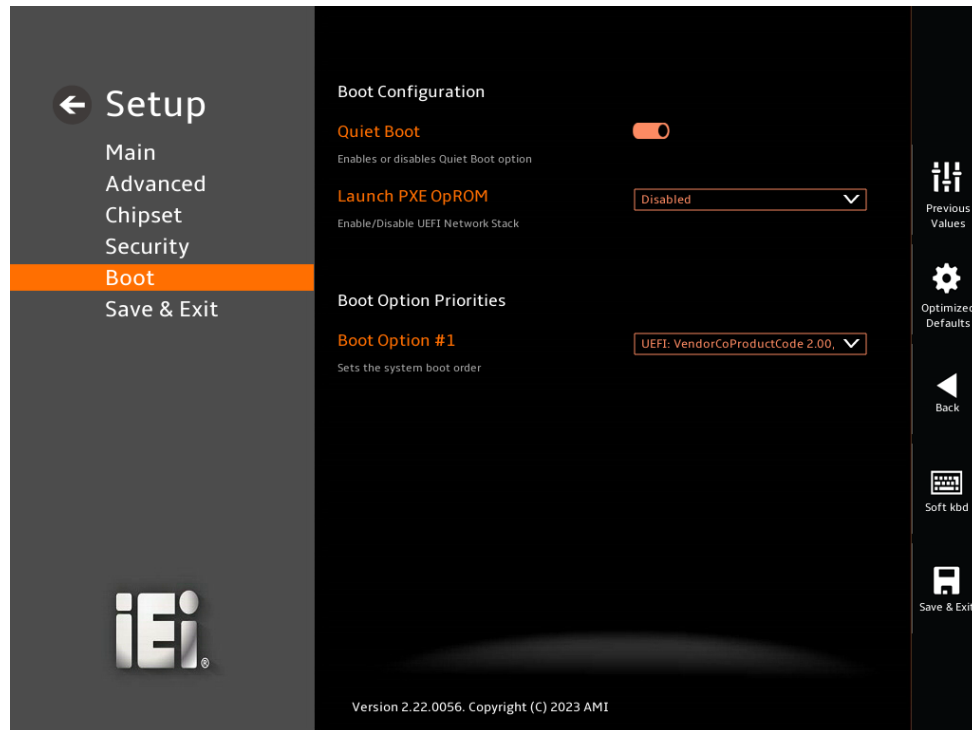
➔ **User Password**

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

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5.6 Boot

Use the **Boot** menu (**BIOS Menu 44**) to configure system boot options.



BIOS Menu 44: Boot

5.6.1 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.

5.6.2 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**

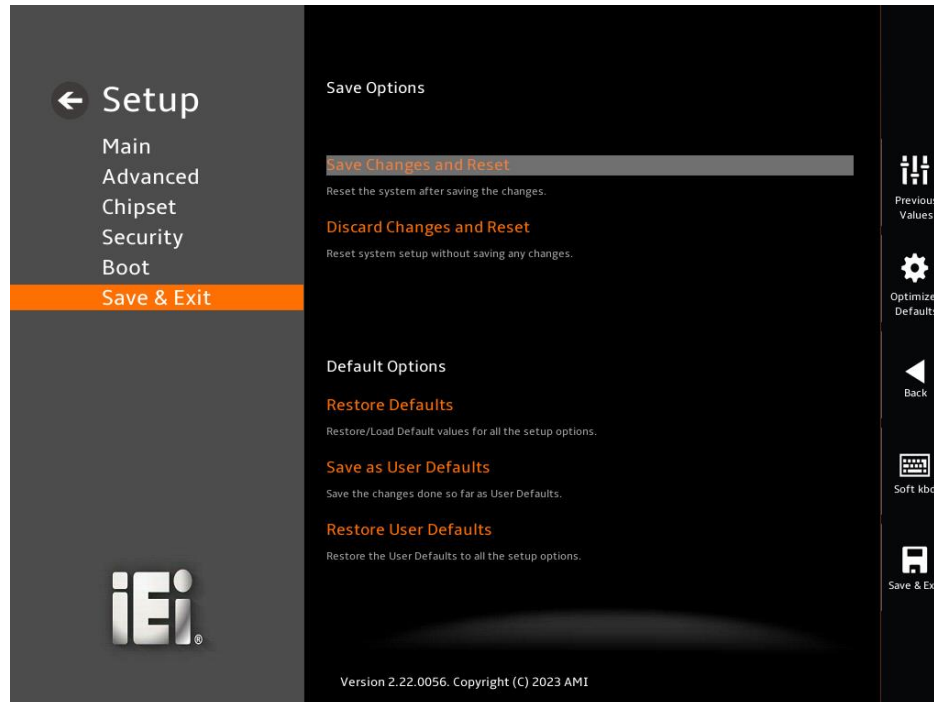
Sets the system boot order **USB Partition 1** as the second priority.

- **UEFI: VendorCo Product Code 2.00, Partititon 1 (VendorCo Product Code 2.00)**
- **Disabled**

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5.7 Save & Exit

Use the **Safe & Exit** menu (**BIOS Menu 45**) to load default BIOS values, optimal failsafe values and to save configuration changes.



BIOS Menu 45: 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

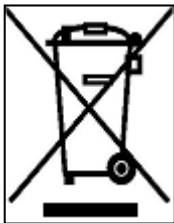
Product Disposal

**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.

➔ BIOS Information	92
➔ Processor Information.....	92
➔ PCH Information.....	92
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➔ System Time [xx:xx:xx].....	93
➔ Intel (VMX) Virtualization Technology [Disabled].....	97
➔ Active Processor Cores [All]	97
➔ Active Efficient-cores [All]	97
➔ Hyper-Threading [Enabled].....	98
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➔ C states [Disabled].....	98
➔ Power Limit 1 Override [Disabled]	98
➔ Power Limit 1 Time Window	99
➔ Power Limit 2 Override [Disabled]	99
➔ Security Device Support [Disable].....	101
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Use the Pending Operation option to schedule an operation for the security device.	101
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➔ Serial Port [Enabled].....	109
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➔ Device Settings	111
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➔ SYS_FAN2 Off Temperature	117
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➔ Terminal Type [ANSI].....	119
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➔ Data Bits [8]	120
➔ Parity [None].....	120
➔ Stop Bits [1].....	121
➔ VT-d [Enabled].....	123
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➔ DVMT Pre-Allocated [160M]	126
➔ DVMT Total Gfx Mem [MAX].....	126
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➔ Detect Non-Compliance Device [Enabled]	128
➔ PEG1 Slot [Enabled]	129
➔ PCIe Speed [Auto].....	129
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➔ USB Power SW1(LAN2_USB2B) [S0/S3/S4/S5 ON]	131
➔ USB Power SW2(LAN1_USB1B) [S0/S3/S4/S5 ON]	132

→ USB Power SW3(USB2_1_C2) [S0/S3/S4/S5 ON]	132
→ USB Power SW4(USB2_1_C3) [S0/S3/S4/S5 ON]	132
→ USB Power SW5(USB2_CN1_C4) [S0/S3/S4/S5 ON]	132
→ USB Power SW7(USB2_CN1_C6) [S0/S3/S4/S5 ON]	132
→ PCIe Speed [Auto].....	134
→ Detect Non-Compliance Device [Disabled]	135
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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.

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**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

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E.1 PEI Beep Codes

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

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

IMBA-ADL-H610 ATX Motherboard

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

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

Please refer to the following table.

Part Name	Toxic or Hazardous Substances and Elements									
	Lead (Pb)	Mercury (Hg)	Cadmium (Cd)	Hexavalent Chromium (CR(VI))	Polybrominated Biphenyls (PBB)	Polybrominated Diphenyl Ethers (PBDE)	Bis(2-ethylhexyl) phthalate (DEHP)	Butyl benzyl phthalate (BBP)	Dibutyl phthalate (DBP)	Diisobutyl phthalate (DIBP)
Housing	O	O	O	O	O	O	O	O	O	O
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
<p>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.</p> <p>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.</p>										

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	○	○	○	○	○	○
印刷电路板	○	○	○	○	○	○
金属螺帽	○	○	○	○	○	○
电缆组装	○	○	○	○	○	○
风扇组装	○	○	○	○	○	○
电力供应组装	○	○	○	○	○	○
电池	○	○	○	○	○	○

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。