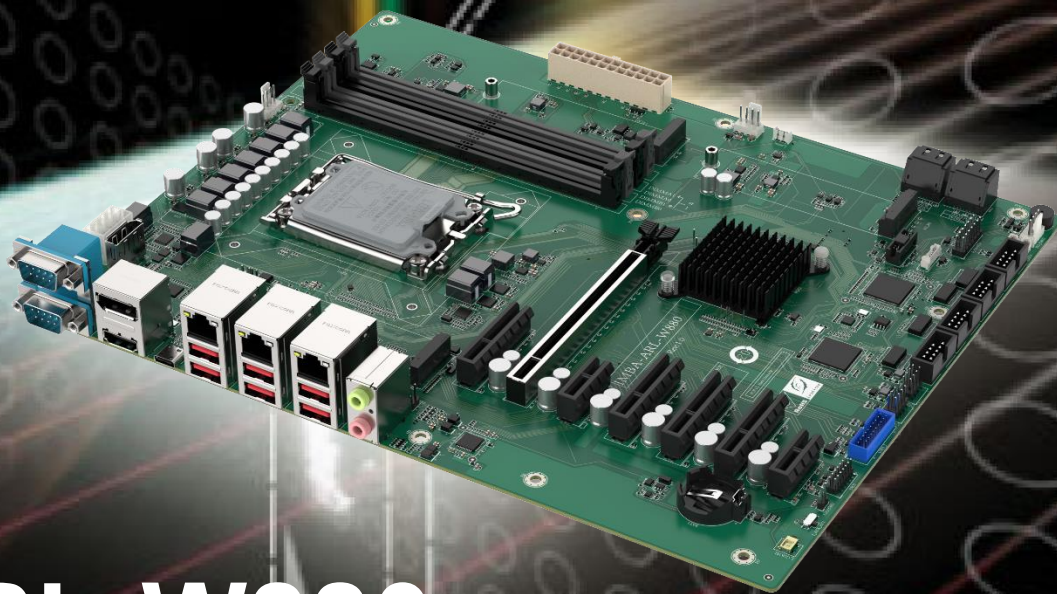




**MODEL:**  
**IMBA-ARL-W880**

**ATX motherboard supports LGA1851 high-Performance  
Intel® Core™ Ultra Processors (Series 2), DDR5,  
Quad independent displays, dual 2.5GbE LAN,  
M.2, USB 3.2, SATA 6Gb/s, HD Audio and RoHS**

## **User Manual**



# Revision



| Date               | Version | Changes         |
|--------------------|---------|-----------------|
| September 17, 2025 | 1.00    | Initial release |



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# Manual Conventions

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**WARNING**

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

**CAUTION**

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

**NOTE**

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

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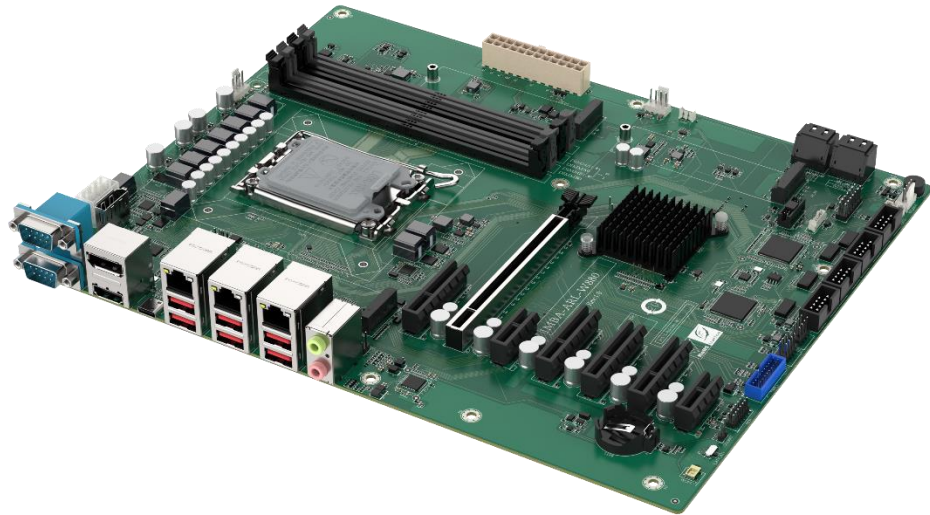
Chapter

1

# Introduction

---

## 1.1 Introduction



**Figure 1-1: IMBA-ARL-W880**

The IMBA-ARL-W880 is an ATX motherboard. It accepts a Socket LGA1851 high-Performance Intel® Core™ Ultra Processors (Series 2) and supports four 288-pin dual-channel DIMM DDR5 SDRAM unbuffered clocked DIMM modules up to 192 GB. The Intel® W880chipset supports four SATA 6Gb/s drives. Moreover, the IMBA-ARL-W880 includes two DP, HDMI and USB4 for quad independent displays.

The IMBA-ARL-W880 provides two 2.5GbE interfaces through the Intel® I226V and Intel® I226-LM controllers. Expansion and I/O includes one PCIe x16 slot, four PCIe x4 slots, two PCIe x1 slots, two M.2 M key, IPMI, six COM ports, two USB 3.2 Gen 1, six USB 3.2 Gen 2, and four USB 2.0.

## IMBA-ARL-W880 ATX Motherboard

### 1.2 Features

Some of the IMBA-ARL-W880 motherboard features are listed below:

- ATX form factor
- LGA1851 supports High-Performance Intel® Core™ Ultra Processors (Series 2) (up to 125W)
- Four 288-pin 5600 MHz Dual-Channel DDR5 UDIMM&CUDIMM, supported up to 192GB, ECC & non-ECC
- Intel® I226-LM and Intel® I226V 2.5GbE controller
- Quad independent display by DP, HDMI, DP internal and USB4
- Four SATA 6Gb/s connectors support RAID 0, 1, 5, 10
- Four USB 2.0, Two USB 3.2 Gen 1 ports and six USB 3.2 Gen 2 ports
- Two M.2 M-key slot for SSD; one M.2 B-key slot for IRIS2-2600
- One PCIe Gen5 x16 slot
- Four PCIe Gen4 x4 open-end slot
- Two PCIe Gen4 x1 slot
- Six serial ports
- TPM 2.0 security function
- RoHS compliant

1.3 Connectors

The connectors on the IMBA-ARL-W880 are shown in the figure below.

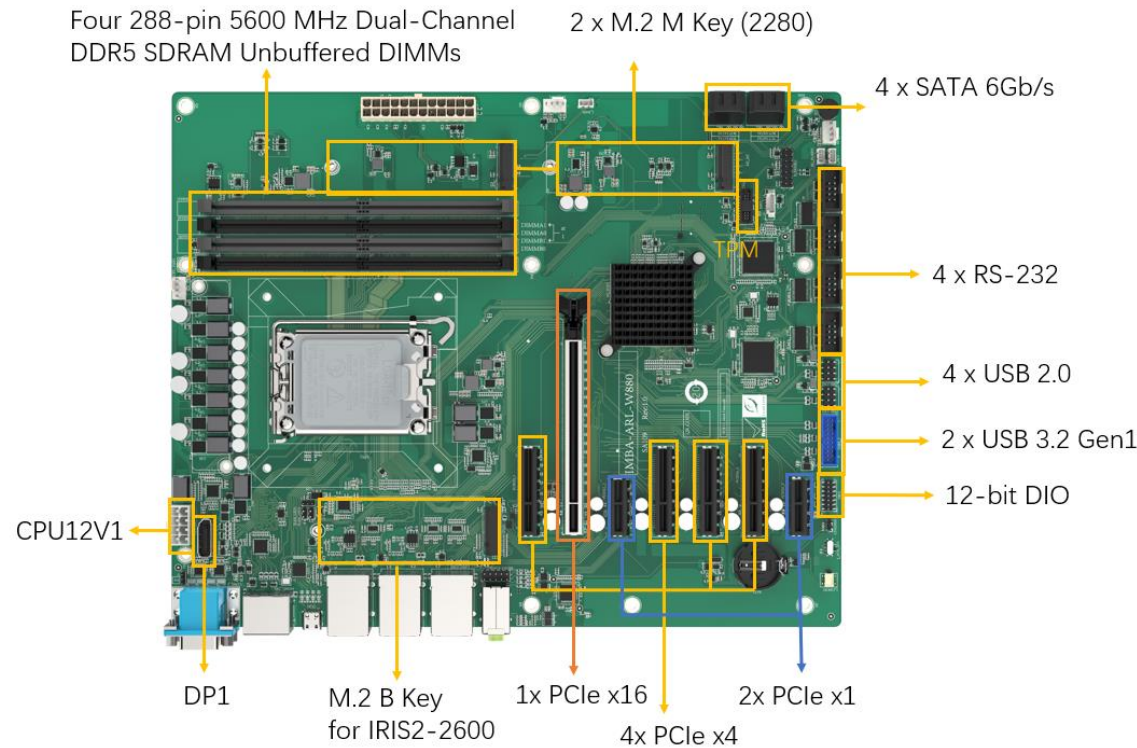


Figure 1-2: Connectors

## IMBA-ARL-W880 ATX Motherboard

### 1.4 Dimensions

The main dimensions of the IMBA-ARL-W880 are shown in the diagram below.

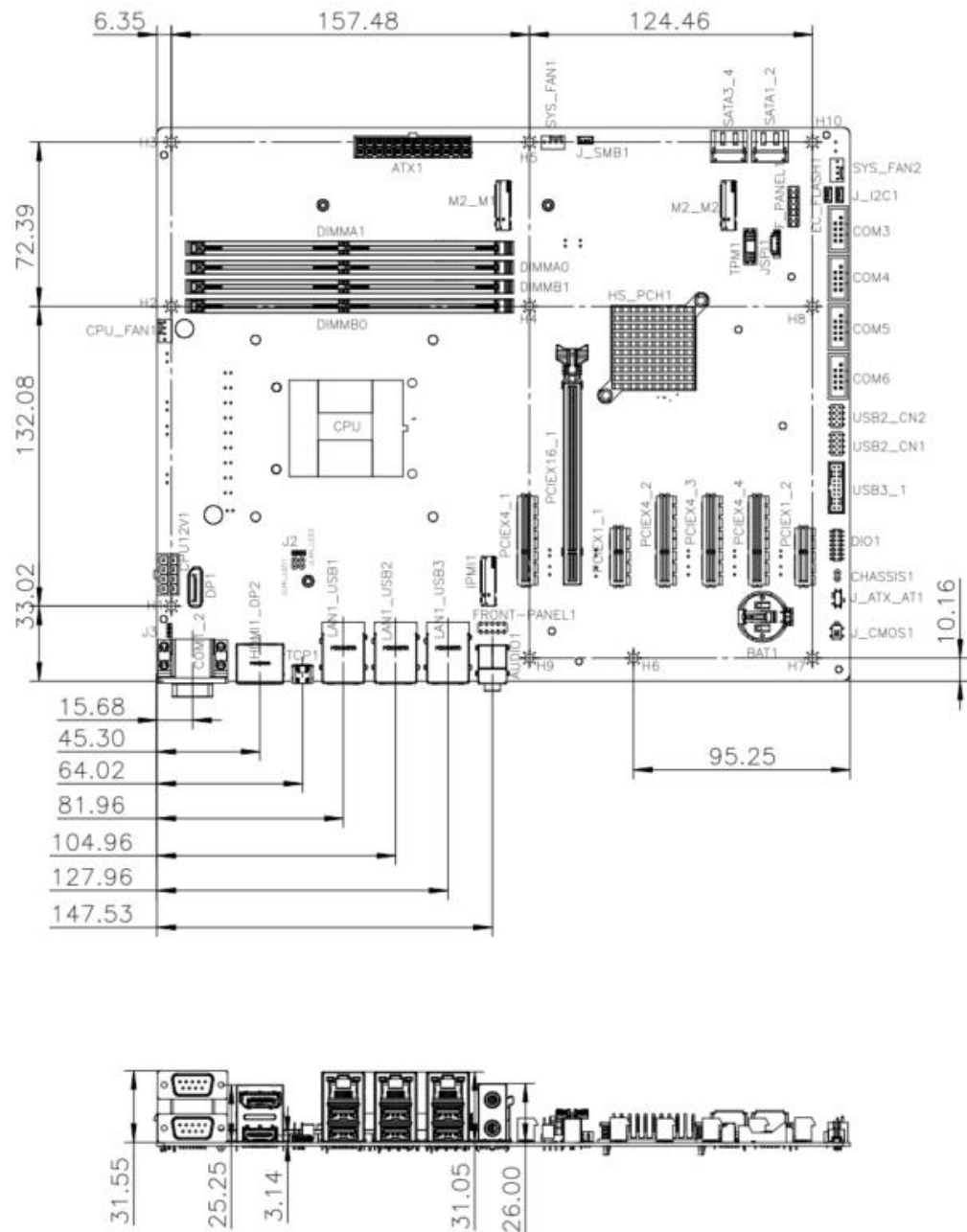


Figure 1-3: IMBA-ARL-W880 Dimensions (mm)



1.5 Data Flow

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

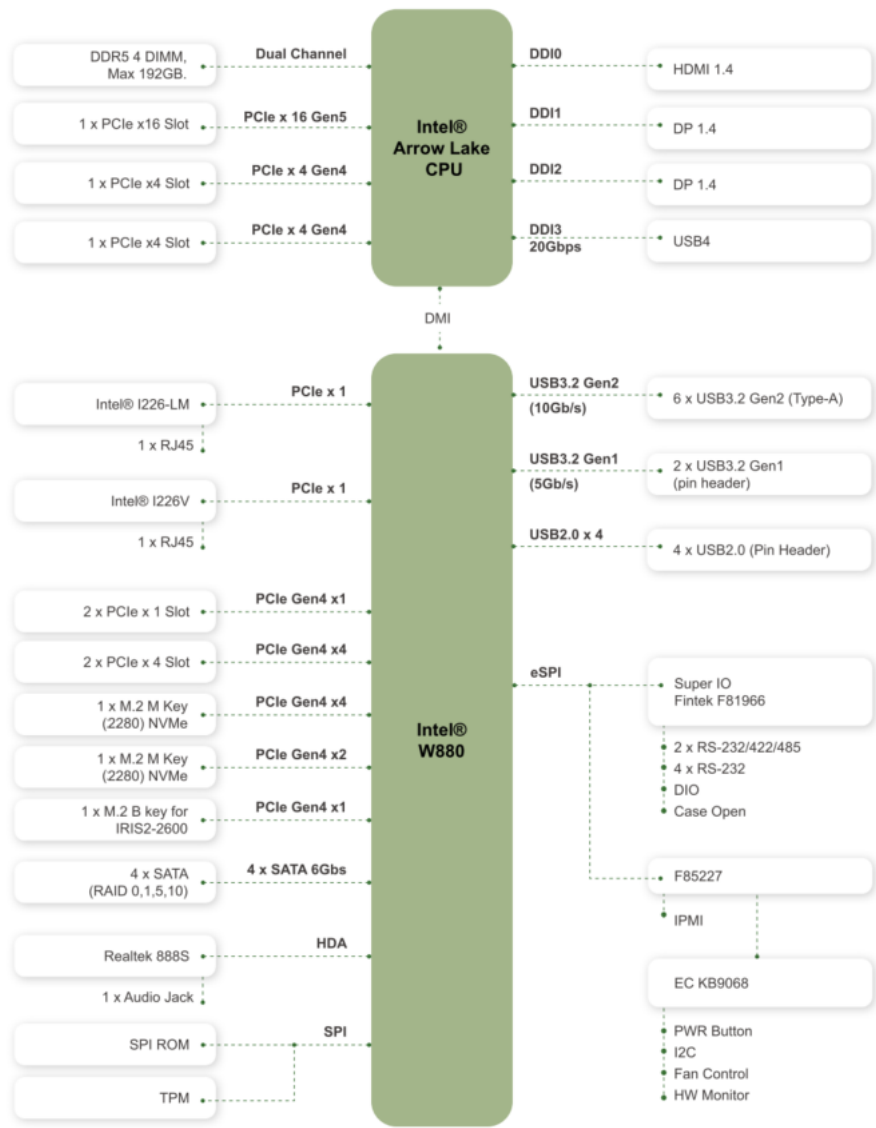


Figure 1-4: Data Flow Diagram

## IMBA-ARL-W880 ATX Motherboard

### 1.6 Technical Specifications

The IMBA-ARL-W880 technical specifications are listed below.

| Specification/Model  | IMBA-ARL-W880                                                                                                                                                                                                              |
|----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Form Factor          | ATX                                                                                                                                                                                                                        |
| CPU Supported        | High-Performance Intel® Core™ Ultra Processors (Series 2)<br>(up to 125W)                                                                                                                                                  |
| Chipset              | Intel® W880                                                                                                                                                                                                                |
| Memory               | Four 288-pin 5600 MHz Dual-Channel DDR5 SDRAM<br>Unbuffered Clocked<br>Unbuffered DIMM(UDIMM&CUDIMM) supported up to 192GB,<br>ECC & non-ECC support (1DIMM per channel 1R/2R<br>5600MHz, 2DIMM per channel 1R/2R 4400MHz) |
| Graphics Engine      | New Intel® Xe Graphics architecture with SRIOV, Genlock                                                                                                                                                                    |
| Display Output       | Quad independent display<br>1 x DP1.4 (up to 4K@60Hz)<br>1 x HDMI1.4 (up to 4K@30Hz)<br>1 x USB4 (up to 4K@60Hz)<br>1 x DP1.4 (up to 4K@60Hz) internal                                                                     |
| Ethernet Controllers | LAN1: Intel® I226-LM 2.5GbE controller<br>LAN2: Intel® I226V 2.5GbE controller                                                                                                                                             |
| Audio                | Realtek ALC888S HD codec<br>2 x Audio Jack (Line-out, Mic-in) on rear IO<br>1 x Analog audio (2x5 pin)                                                                                                                     |
| BIOS                 | AMI UEFI BIOS                                                                                                                                                                                                              |
| Watchdog Timer       | Software programmable supports 1~255 sec. system reset                                                                                                                                                                     |



**IMBA-ARL-W880 ATX Motherboard**

| Specification/Model                    | IMBA-ARL-W880                                                                                                                                                                                              |
|----------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Expansions                             | 1 x PCIe x16 with Signal Gen5<br>4 x PCIe x4 open-end Gen4<br>2 x PCIe x1 Gen4<br>1 x M.2 M Key (2280, PCIe x4) NVMe support<br>1 x M.2 M Key (2280, PCIe x2) NVMe support<br>1 x M.2 B key for IRIS2-2600 |
| I/O Interface Connectors               |                                                                                                                                                                                                            |
| Audio Connectors                       | One internal audio connector (10-pin header)                                                                                                                                                               |
| Chassis Intrusion                      | One 2-pin header                                                                                                                                                                                           |
| Digital I/O                            | 12-bit digital I/O                                                                                                                                                                                         |
| Ethernet                               | Two RJ-45 GbE ports                                                                                                                                                                                        |
| Fan                                    | 1 x CPU fan connector (1x4 pin)<br>2 x System fan connector (1x4 pin)                                                                                                                                      |
| Front Panel                            | One 7-pin header (power LED, HDD LED, speaker, power button, reset button)                                                                                                                                 |
| I <sup>2</sup> C                       | One 4-pin wafer connector                                                                                                                                                                                  |
| LAN LED                                | Two 2-pin headers for LAN1 LED and LAN2 LED                                                                                                                                                                |
| Serial ATA                             | Four SATA 6Gb/s connectors (support RAID 0, 1, 5, 10)                                                                                                                                                      |
| Serial Ports                           | 2x RS-232/422/485 via DB-9 (RS-485 support AFC)<br>4x RS-232 via internal box header                                                                                                                       |
| SMBus                                  | One 4-pin wafer connector                                                                                                                                                                                  |
| USB Ports                              | 4 x USB 2.0 (2x4 pin, P=2.54)<br>2 x USB 3.2 Gen1 (2 X 10 pin P=2.00 pin wafer) (5Gb/s)<br>6 x USB 3.2 Gen2 (Type-A) (10Gb/s)                                                                              |
| Environmental and Power Specifications |                                                                                                                                                                                                            |
| Power Supply                           | AT/ATX power supply                                                                                                                                                                                        |



**IMBA-ARL-W880 ATX Motherboard**

| Specification/Model     | IMBA-ARL-W880                                                                                          |
|-------------------------|--------------------------------------------------------------------------------------------------------|
| Power Consumption       | 3.3V@4.39A, 5V@12.57A, 12V@7.21A, 5Vsb@0.36A<br>(Intel 15th Q4A9 with DDR5 4800MHz U-DIMM 16GB memory) |
| Operating Temperature   | -10°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)          | GW:1200g / NW:700g                                                                                     |
| Certification           | CE/FCC compliant                                                                                       |

**Table 1-1: IMBA-ARL-W880 Specifications**



Chapter

2

# Packing List

---



## IMBA-ARL-W880 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-ARL-W880 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-ARL-W880 was purchased from or contact an IEI sales representative directly by sending an email to [sales@ieiworld.com](mailto:sales@ieiworld.com).

The IMBA-ARL-W880 is shipped with the following components:

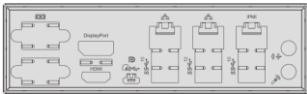
| Quantity | Item and Part Number                | Image                                                                                 |
|----------|-------------------------------------|---------------------------------------------------------------------------------------|
| 1        | IMBA-ARL-W880 single board computer |    |
| 2        | SATA cable                          |  |
| 1        | I/O shielding                       |  |
| 1        | Quick installation guide            |  |

Table 2-1: Packing List

## IMBA-ARL-W880 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, 30mm, P=2.54<br>(P/N: 19800-003100-100-RS)                                    |    |
| Dual port USB 3.0 cable 457mm with bracket, P=2.00<br>(P/N: 19800-010500-200-RS)                                |    |
| RS-232 cable, 500mm, P=2.54<br>(P/N: 19800-010900-200-RS)                                                       |    |
| IPMI 2.0 adapter card with AST2600 BMC chip for iEi<br>iRIS2 Connector IPMI 2.0 module<br>(P/N: iRIS2-2600-R10) |   |
| High-performance cooler, 80W, 72*48.5*73.5mm<br>(P/N: 19100-000333-00-RS)                                       |  |
| Cooler module, 125W<br>(P/N: 19100-000326-00-RS)                                                                |  |
| Cooler module, 65W<br>(P/N: 19100-000323-00-RS)                                                                 |  |

Table 2-2: Optional Items

Chapter

**3**

# Connectors

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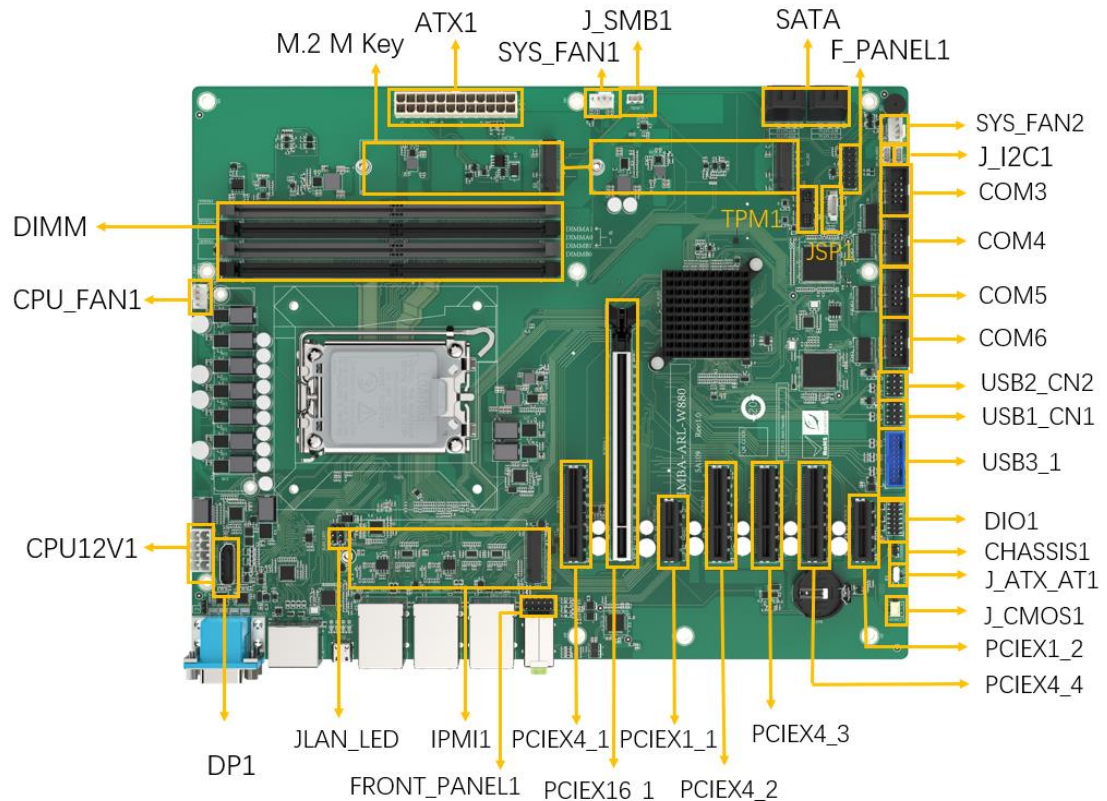
## IMBA-ARL-W880 ATX Motherboard

### 3.1 Peripheral Interface Connectors

This chapter details all the peripheral interface connectors.

#### 3.1.1 IMBA-ARL-W880 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                                         |
| ATX power connector                     | 24-pin connector            | ATX1                                            |
| Chassis intrusion connector             | 2-pin header                | CHASSIS1                                        |
| AT/ATX power mode setting               | 3-pin switch                | J_ATX_AT1                                       |
| Digital I/O connector                   | 14-pin header               | DIO1                                            |
| Clear CMOS jumper                       | Button                      | J_CMOS1                                         |
| Fan connectors                          | 4-pin wafer                 | CPU_FAN1,<br>SYS_FAN1,<br>SYS_FAN12             |
| Audio connector for iEi AC-KIT-888S kit | 10-pin header               | FRONT_PANEL1                                    |
| Front panel connector                   | 14-pin header               | F_PANEL1                                        |
| I <sup>2</sup> C connector              | 4-pin wafer                 | J_I2C1                                          |
| SMBus connector                         | 4-pin wafer                 | J_SMB1                                          |
| LAN1 link LED connector                 | 2-pin header                | JLAN_LED1,<br>JLAN_LED2                         |
| M.2 M key slots                         | M-key slot                  | M2_M1, M2_M2                                    |
| iEi iDPM slot                           | M-key slot                  | IPMI1                                           |
| PCIe x1 slots                           | PCIe x1 slot                | PCIEX1_1,<br>PCIEX1_2                           |
| PCIe x4 slots                           | PCIe x4 slot                | PCIEX4_1,<br>PCIEX4_2,<br>PCIEX4_3,<br>PCIEX4_4 |
| PCIe x16 slots                          | PCIe x16 slot               | PCIEX16_1                                       |



**IMBA-ARL-W880 ATX Motherboard**

| Connector                        | Type                 | Label                             |
|----------------------------------|----------------------|-----------------------------------|
| DDR5 DIMM slots                  | 288-pin socket       | DIMMA0, DIMMA1,<br>DIMMB0, DIMMB1 |
| RS-232 serial port connectors    | 10-pin box header    | COM3, COM4,<br>COM5, COM6         |
| SATA 6Gb/s connectors            | 8-pin SATA connector | SATA1_2, SATA3_4                  |
| Flash SPI ROM connector          | 6-pin header         | JSPI1                             |
| Internal USB 2.0 connectors      | 8-pin header         | USB1_CN1,<br>USB2_CN2             |
| Internal USB 3.2 Gen 1 connector | 20-pin box header    | USB3_1                            |
| DP Connector                     | DP                   | DP1                               |

**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 dual RS-232/422/485 connector                       | Dual DB-9         | COM1_2                                |
| External HDMI and DP combo connector                         | HDMI, DisplayPort | HDMI1_DP2                             |
| External USB4 connector                                      | USB4              | TCP1                                  |
| External 2.5GbE RJ-45 and dual USB 3.2 Gen 2 combo connector | USB 3.2, RJ45     | LAN1_USB1,<br>LAN2_USB2,<br>LAN3_USB3 |
| External dual USB 3.2 Gen 2 connector                        | USB 3.2           | USB3_1                                |
| Audio Jack Connector                                         | Audio jack        | AUDIO1                                |

**Table 3-2: Rear Panel Connectors**

### 3.2 Internal Peripheral Connectors

The section describes all of the connectors on the IMBA-ARL-W880.

#### 3.2.1 CPU 12V Power Connector

- CN Label:

CPU12V1
- CN Type:

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

See Figure 3-2
- CN Pinouts:

See Table 3-3

This connector provides power to the CPU.

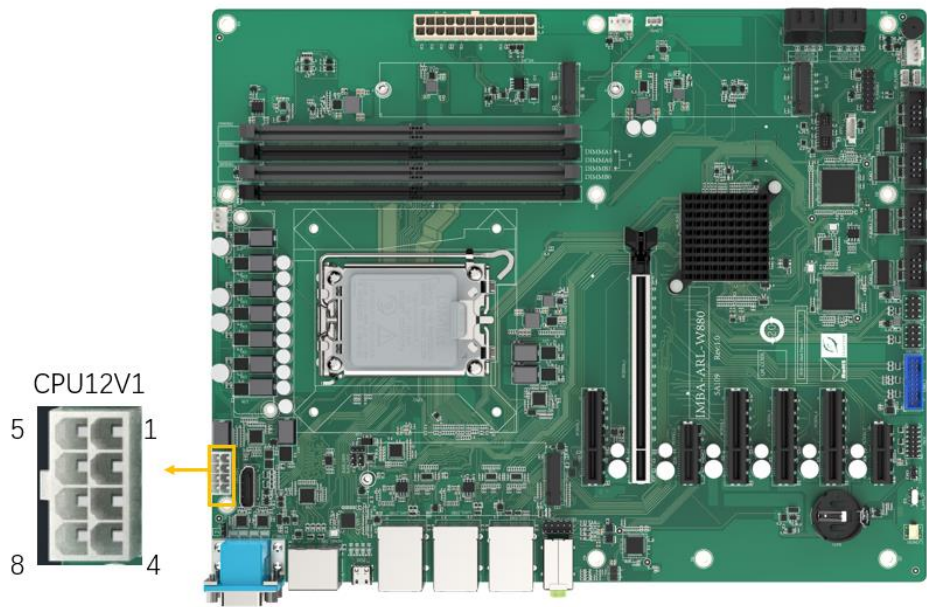


Figure 3-2: CPU 12V Power Connector Location

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

Table 3-3: CPU 12V Power Connector Pinouts

## IMBA-ARL-W880 ATX Motherboard

### 3.2.2 ATX Power Connector

- CN Label:** ATX1
- CN Type:** 24-pin connector, p=4.2 mm
- CN Location:** See Figure 3-3
- CN Pinouts:** See Table 3-4

The ATX power connector connects to an ATX power supply.

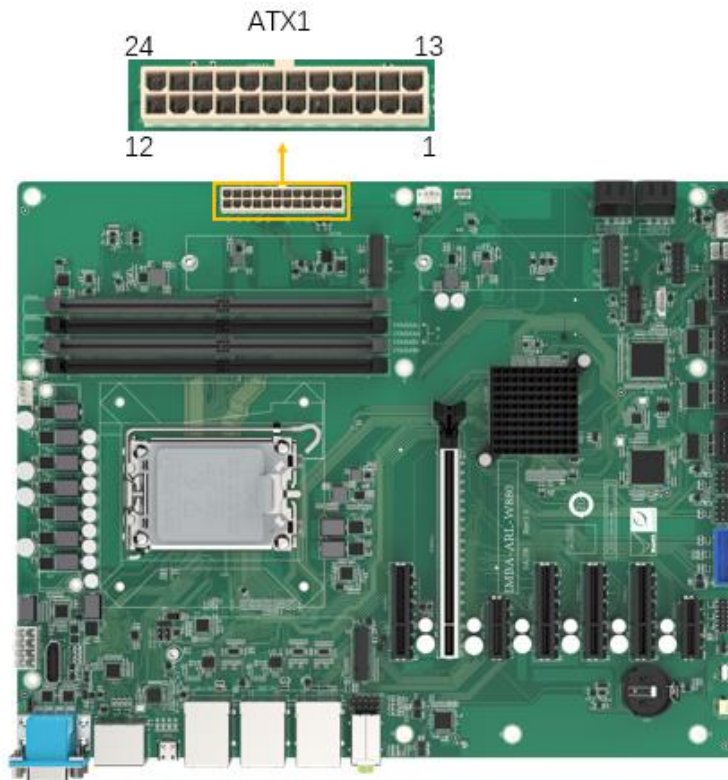


Figure 3-3: ATX Power Connector Location

| 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         |

| Pin | Description | Pin | Description |
|-----|-------------|-----|-------------|
| 7   | GND         | 19  | GND         |
| 8   | PWRGD_PS    | 20  | NC          |
| 9   | +5V         | 21  | +5V         |
| 10  | +12V        | 22  | +5V         |
| 11  | +12V        | 23  | +5V         |
| 12  | +3.3V       | 24  | GND         |

Table 3-4: ATX Power Connector Pinouts

3.2.3 Chassis Intrusion Connector

- CN Label:**CHASSIS1
- CN Type:**2-pin header, p=2.54 mm
- CN Location:**See Figure 3-4
- CN Pinouts:**See Table 3-5

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

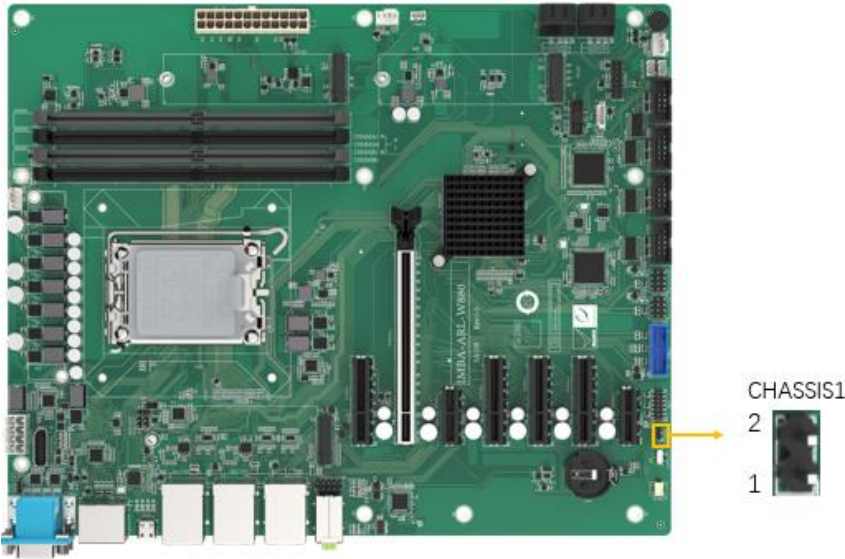


Figure 3-4: Chassis Intrusion Connector Location

## IMBA-ARL-W880 ATX Motherboard

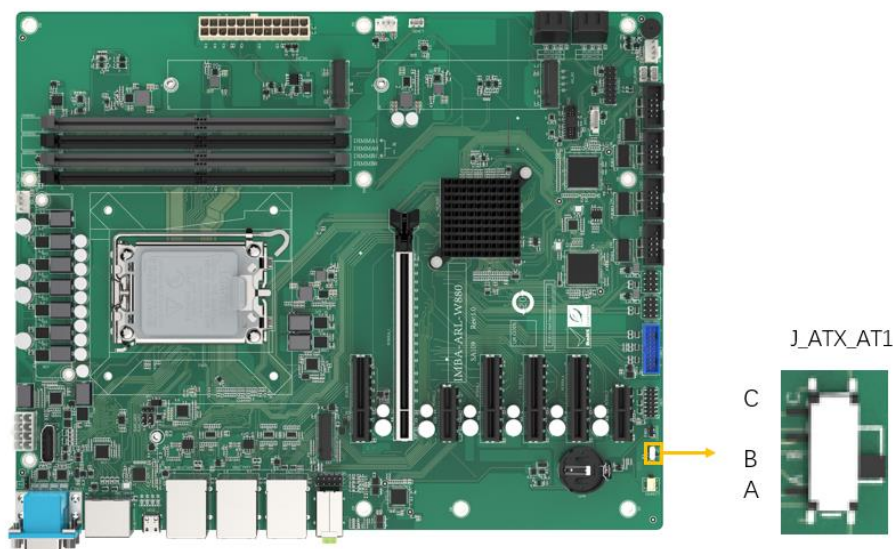
| Pin | Description | Pin | Description |
|-----|-------------|-----|-------------|
| 1   | CASEOPEN_N  | 2   | GND         |

**Table 3-5: Chassis Intrusion Connector Pinouts**

### 3.2.4 AT/ATX Power Mode Setting

|                     |                       |
|---------------------|-----------------------|
| <b>CN Label:</b>    | <b>J_ATX_AT1</b>      |
| <b>CN Type:</b>     | 3-pin switch          |
| <b>CN Location:</b> | See <b>Figure 3-5</b> |
| <b>CN Pinouts:</b>  | See <b>Table 3-6</b>  |

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



**Figure 3-5: AT/ATX Power Mode Switch Locations**

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

**Table 3-6: AT/ATX Power Mode Switch Settings**

3.2.5 Digital I/O Connector

- CN Label:

DIO1
- CN Type:

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

See Figure 3-6
- CN Pinouts:

See Table 3-7

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

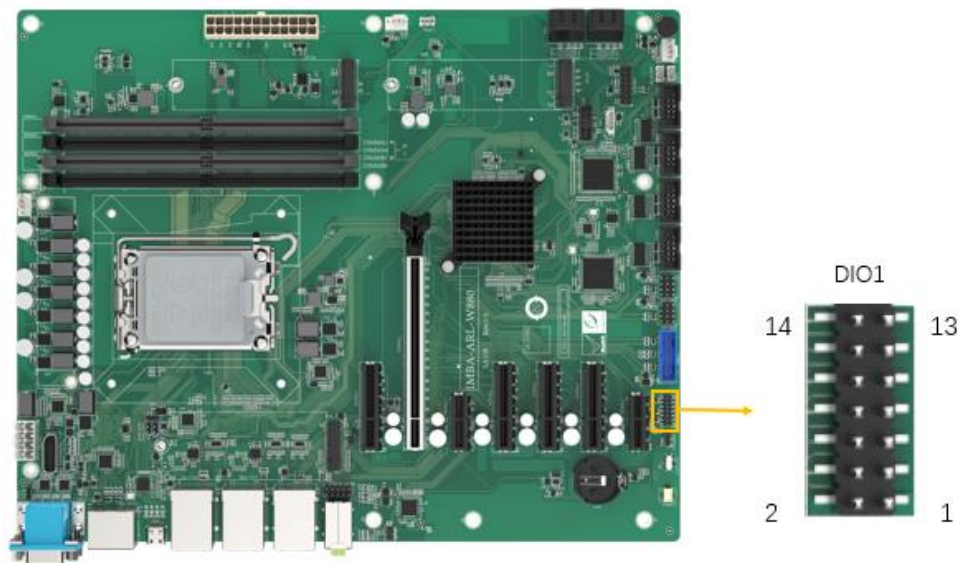


Figure 3-6: Digital I/O Connector Location

| Pin | Description | Pin | Description |
|-----|-------------|-----|-------------|
| 1   | GND         | 2   | +5V         |
| 3   | DOUT5       | 4   | DOUT4       |
| 5   | DOUT3       | 6   | DOUT2       |
| 7   | DOUT1       | 8   | DOUT0       |
| 9   | DIN5        | 10  | DIN4        |
| 11  | DIN3        | 12  | DIN2        |
| 13  | DIN1        | 14  | DIN0        |

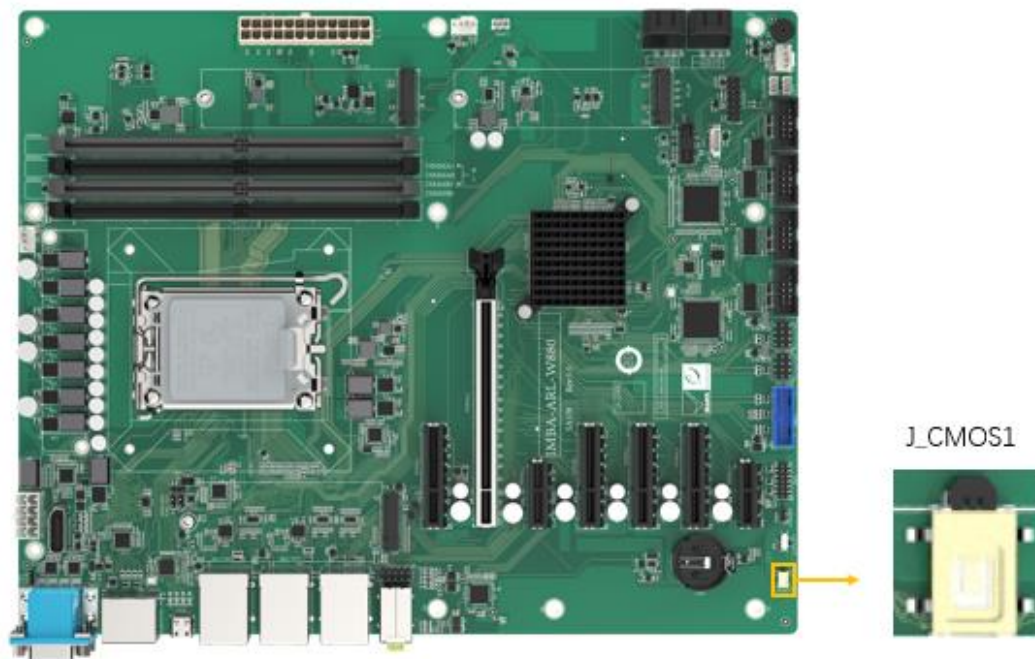
Table 3-7: Digital I/O Connector Pinouts

## IMBA-ARL-W880 ATX Motherboard

### 3.2.6 Clear CMOS Button

|                     |                       |
|---------------------|-----------------------|
| <b>CN Label:</b>    | <b>J_CMOS1</b>        |
| <b>CN Type:</b>     | Button                |
| <b>CN Location:</b> | See <b>Figure 3-7</b> |
| <b>CN Pinouts:</b>  | See <b>Table 3-8</b>  |

The J\_CMOS1 is used to Clear CMOS Setup.



**Figure 3-7: Clear CMOS Jumper Location**

| <b>Pin</b>   | <b>Description</b>                    |
|--------------|---------------------------------------|
| NC           | Keep CMOS Setup<br>(Normal Operation) |
| Press button | Clear CMOS Setup                      |

**Table 3-8: Clear CMOS Jumper Pinouts**

3.2.7 Fan Connector (CPU)

- CN Label:

CPU\_FAN1
- CN Type:

4-pin wafer, p=2.54 mm
- CN Location:

See Figure 3-8
- CN Pinouts:

See Table 3-9

The fan connector attaches to a CPU cooling fan.

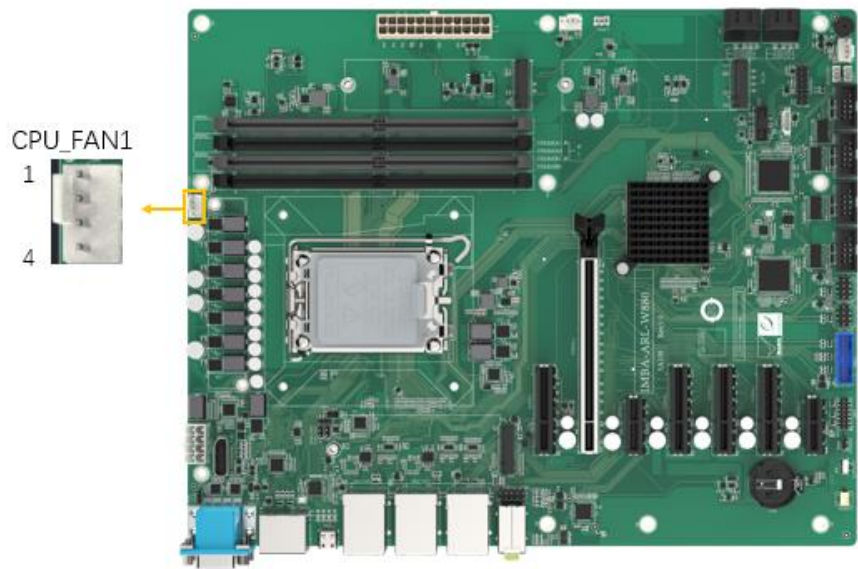


Figure 3-8: CPU Fan Connector Location

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

Table 3-9: CPU Fan Connector Pinouts

## IMBA-ARL-W880 ATX Motherboard

### 3.2.8 Fan Connectors (System)

**CN Label:** SYS\_FAN1, SYS\_FAN2

**CN Type:** 4-pin wafer, p=2.54 mm

**CN Location:** See Figure 3-9

**CN Pinouts:** See Table 3-10

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

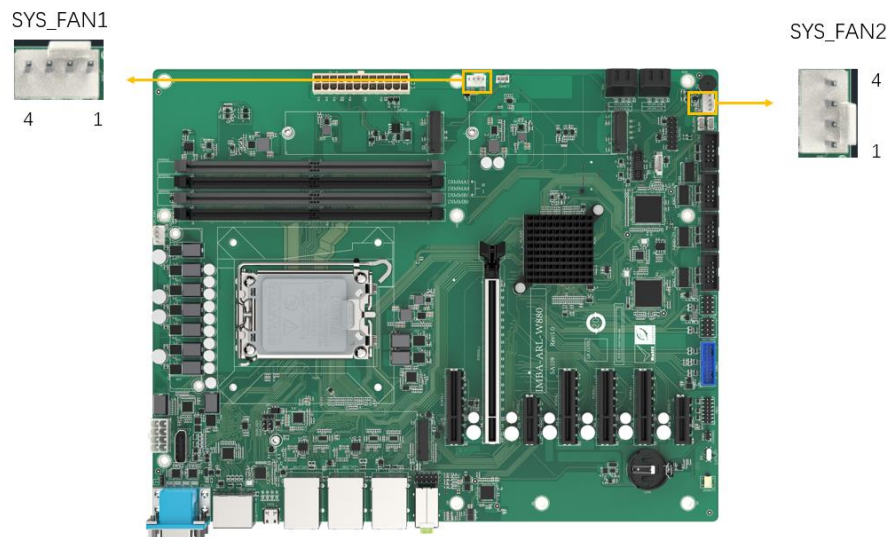


Figure 3-9: System Fan Connector Locations

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

Table 3-10: System Fan Connector Pinouts

3.2.9 Audio Connector for iEi AC-KIT-888S kit

- CN Label:

FRONT\_PANEL1
- CN Type:

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

See Figure 3-10
- CN Pinouts:

See Table 3-11

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

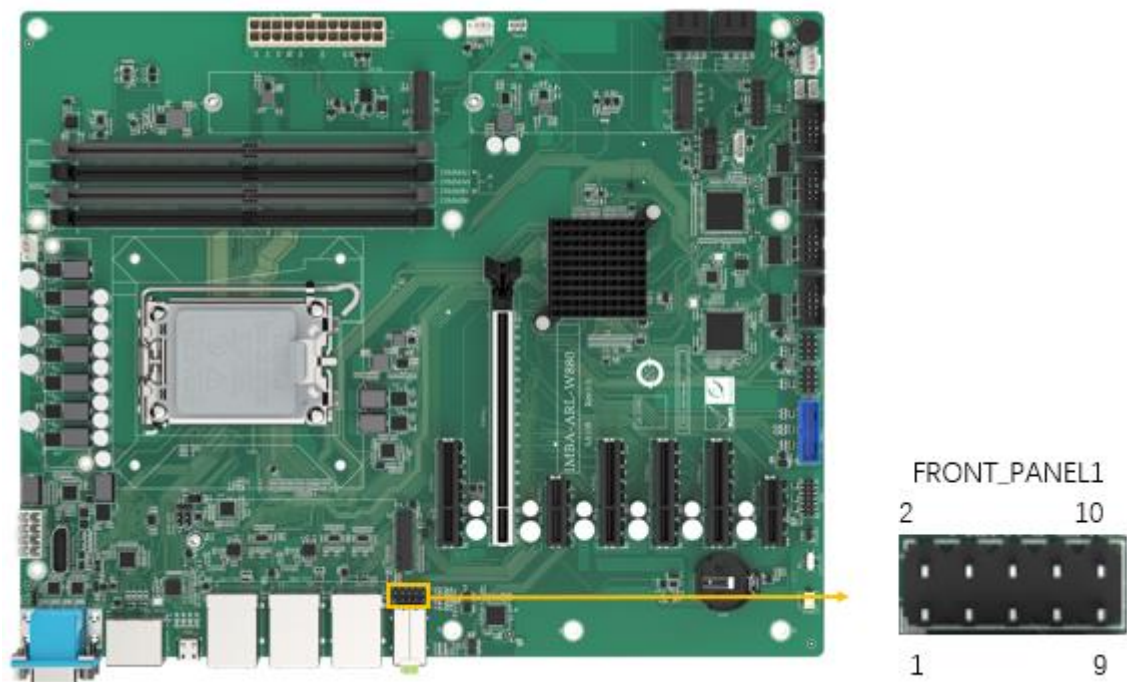


Figure 3-10: Audio Connector Location

| Pin | Description | Pin | Description |
|-----|-------------|-----|-------------|
| 1   | LMIC2-L     | 2   | GND         |
| 3   | LMIC2-R     | 4   | PRESENCE#   |
| 5   | LLINE2-R    | 6   | MIC2-JD     |
| 7   | FRONT-IO    | 8   |             |
| 9   | LLINE2-L    | 10  | GND         |

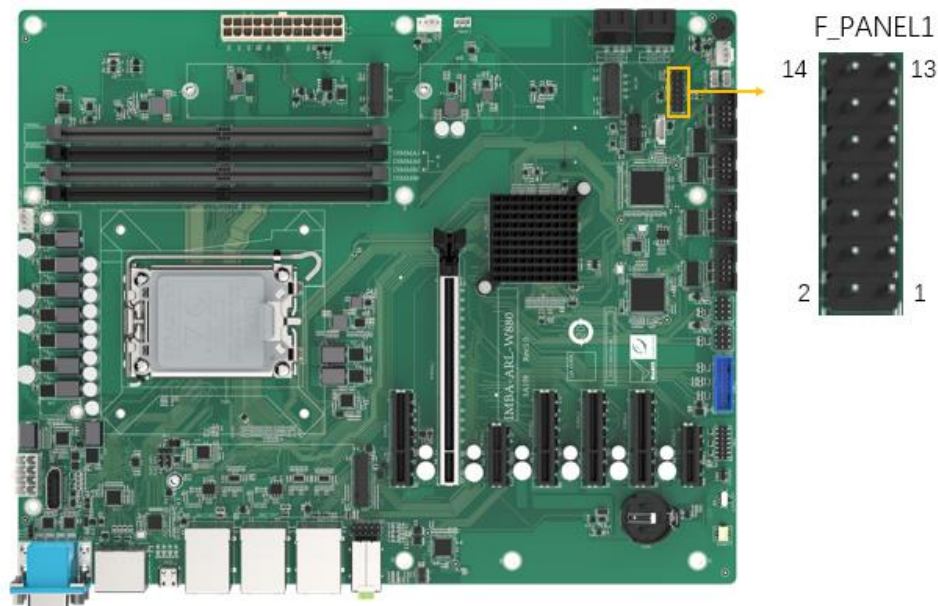
Table 3-11: Audio Connector Pinouts

## IMBA-ARL-W880 ATX Motherboard

### 3.2.10 Front Panel Connector

|                     |                          |
|---------------------|--------------------------|
| <b>CN Label:</b>    | <b>F_PANEL1</b>          |
| <b>CN Type:</b>     | 14-pin header, p=2.54 mm |
| <b>CN Location:</b> | See <b>Figure 3-11</b>   |
| <b>CN Pinouts:</b>  | See <b>Table 3-12</b>    |

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



**Figure 3-11: Front Panel Connector Location**

| Function | Pin | Description | Function | Pin | Description |
|----------|-----|-------------|----------|-----|-------------|
| PWR LED  | 1   | +5V         | SPKR     | 2   | PC_BEEP_P   |
|          | 3   | NC          | IPMI LED | 4   | NC          |
|          | 5   | GND         |          | 6   | NC-         |
| PWR BTN  | 7   | PWR_BTN_N   | SPKR     | 8   | PC_BEEP_N   |
|          | 9   | GND         |          | 10  | NC          |
| HDD LED  | 11  | HD_LED_P    | RESET    | 12  | PM_SYSRST_N |
|          | 13  | HD_LED_N    |          | 14  | GND         |

Table 3-12: Front Panel Connector Pinouts

3.2.11 I²C Connector

- CN Label: J\_I2C1
- CN Type: 4-pin wafer, p=1.25 mm
- CN Location: See Figure 3-12
- CN Pinouts: See Table 3-13

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

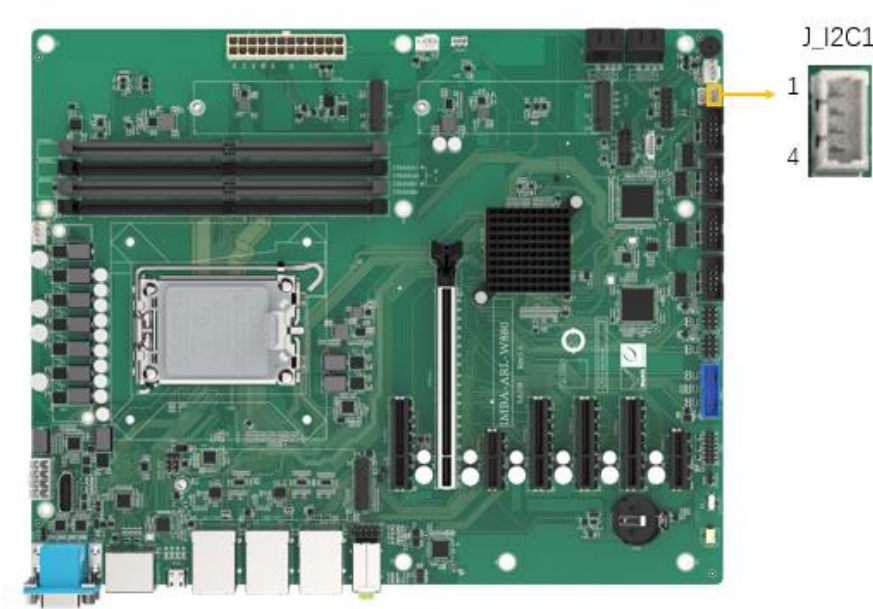


Figure 3-12: I²C Connector Location

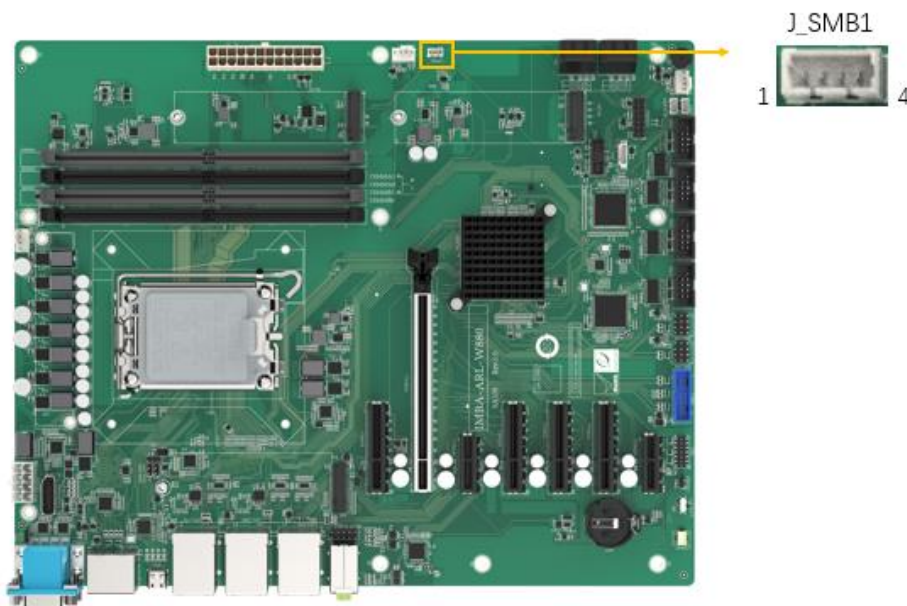
**IMBA-ARL-W880 ATX Motherboard**

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

**Table 3-13: I<sup>2</sup>C Connector Pinouts****3.2.12 SMBus Connector**

- CN Label:** J\_SMB1
- CN Type:** 4-pin wafer, p=1.25 mm
- CN Location:** See **Figure 3-13**
- CN Pinouts:** See **Table 3-14**

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

**Figure 3-13: SMBus Connector Location**

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

Table 3-14: SMBus Connector Pinouts

3.2.13 LAN Link LED connector

- CN Label:

JLAN\_LED1, JLAN\_LED2
- CN Type:

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

See Figure 3-14
- CN Pinouts:

See Table 3-15 and Table 3-16

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.

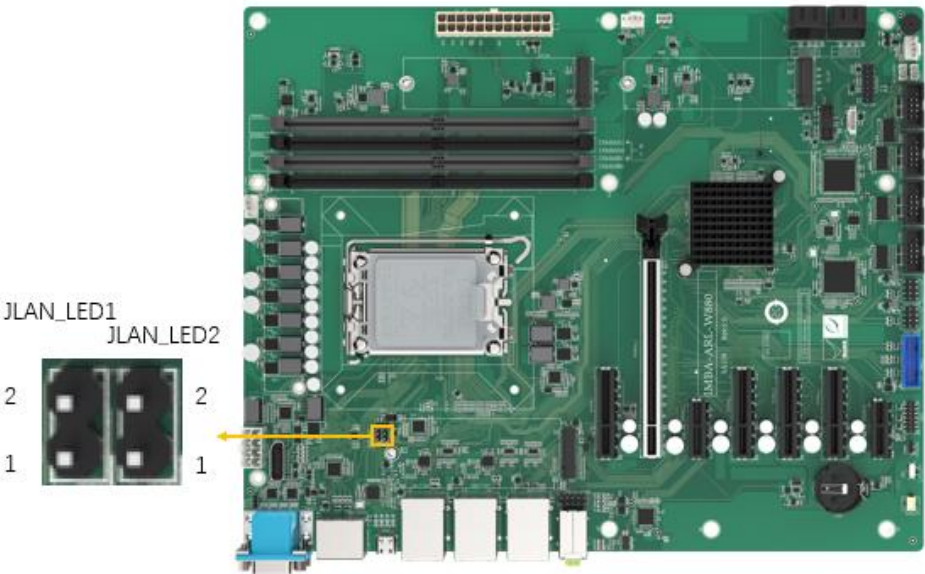


Figure 3-14: LAN LED Connector Locations

| Pin | Description |
|-----|-------------|
| 1   | +3.3V       |

**IMBA-ARL-W880 ATX Motherboard**

|   |                 |
|---|-----------------|
| 2 | I226_LINK_ACT_N |
|---|-----------------|

**Table 3-15: LAN1 LED Connector (JLAN\_LED1) Pinouts**

| Pin | Description     |
|-----|-----------------|
| 1   | +3.3V           |
| 2   | I226_LINK_ACT_N |

**Table 3-16: LAN2 LED Connector (JLAN\_LED 2) Pinouts****3.2.14 M.2 M-key Slot**

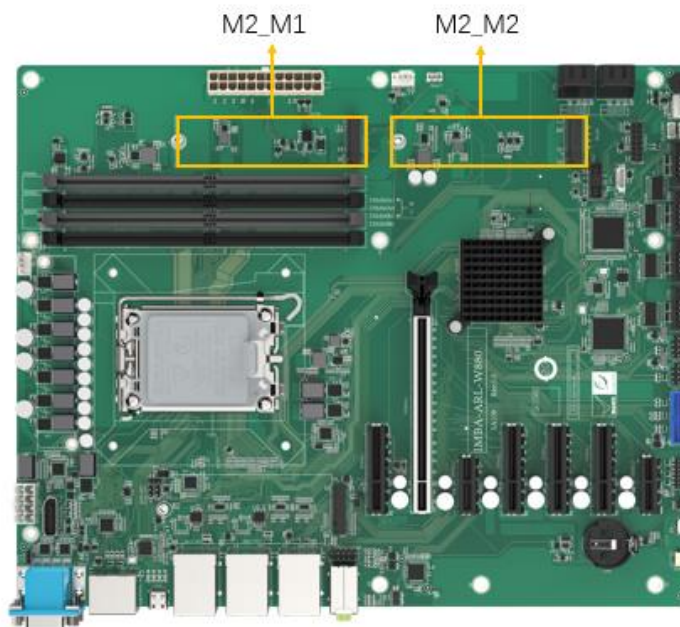
**CN Label:** M2\_M1, M2\_M2

**CN Type:** M-key slot

**CN Location:** See **Figure 3-15**

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

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

**Figure 3-15: M.2 M-key Slot Location**



IMBA-ARL-W880 ATX Motherboard

| Pin | Description   | Pin | Description     |
|-----|---------------|-----|-----------------|
| 1   | GND           | 2   | +3.3V           |
| 3   | GND           | 4   | +3.3V           |
| 5   | PCIE_4_RX_DN  | 6   | N/C             |
| 7   | PCIE_4_RX_DP  | 8   | N/C             |
| 9   | GND           | 10  | NGFF1_ACT_N     |
| 11  | PCIE_TX_DN4   | 12  | +3.3V           |
| 13  | PCIE_TX_DP4   | 14  | +3.3V           |
| 15  | GND           | 16  | +3.3V           |
| 17  | PCIE_3_RX_DN  | 18  | +3.3V           |
| 19  | PCIE_3_RX_DP  | 20  | N/C             |
| 21  | GND           | 22  | N/C             |
| 23  | PCIE_TX_DN3   | 24  | N/C             |
| 25  | PCIE_TX_DP3   | 26  | N/C             |
| 27  | GND           | 28  | N/C             |
| 29  | PCIE_2_RX_DN  | 30  | N/C             |
| 31  | PCIE_2_RX_DP  | 32  | N/C             |
| 33  | GND           | 34  | N/C             |
| 35  | PCIE_TX_DN2   | 36  | N/C             |
| 37  | PCIE_TX_DP2   | 38  | M_2_SSD_SLP     |
| 39  | GND           | 40  | N/C             |
| 41  | PCIE_1_RX_DN  | 42  | N/C             |
| 43  | PCIE_1_RX_DP  | 44  | N/C             |
| 45  | GND           | 46  | N/C             |
| 47  | PCIE_TX_DN1   | 48  | N/C             |
| 49  | PCIE_TX_DP1   | 50  | PLT_RST_N       |
| 51  | GND           | 52  | SRCCLKREQB_17_N |
| 53  | PCIE_CLK_DN17 | 54  | NC              |
| 55  | PCIE_CLK_DP17 | 56  | N/C             |
| 57  | GND           | 58  | N/C             |
| 59  | N/C           | 60  | N/C             |
| 61  | N/C           | 62  | N/C             |
| 63  | N/C           | 64  | N/C             |



## IMBA-ARL-W880 ATX Motherboard

| Pin | Description | Pin | Description |
|-----|-------------|-----|-------------|
| 65  | N/C         | 66  | N/C         |
| 67  | N/C         | 68  | NC          |
| 69  | PEDET       | 70  | +3.3V       |
| 71  | GND         | 72  | +3.3V       |
| 73  | GND         | 74  | +3.3V       |
| 75  | GND         |     |             |

Table 3-17: M.2 M-key Connector Pinouts

## 3.2.15 IPMI (Intelligent Platform Management Interface) Slot

- CN Label:** IPMI1
- CN Type:** IPMI slot
- CN Location:** See Figure 3-16
- CN Pinouts:** See Table 3-18

The IPMI slot is an Intelligent Platform Management Interface. If connected to IPMI, select IGFX in the Graphics Configuration in BIOS Setup.

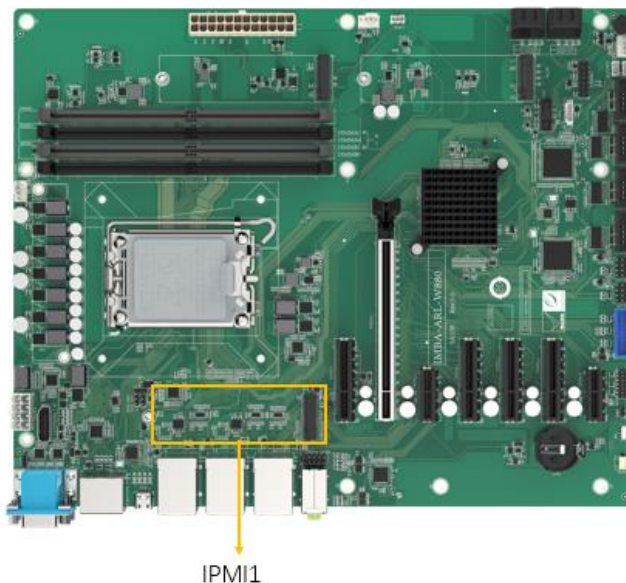


Figure 3-16: IPMI Slot Location



IMBA-ARL-W880 ATX Motherboard

| Pin | Description   | Pin | Description             |
|-----|---------------|-----|-------------------------|
| 1   | GND           | 2   | +3.3V                   |
| 3   | GND           | 4   | +3.3V                   |
| 5   | GND           | 6   | IPMI_LINK_LED_1G_<br>N  |
| 7   | USB2_DP       | 8   | IPMI_LED_ACT_N          |
| 9   | USB2_DN       | 10  | N/C                     |
| 11  | GND           | 12  | N/C                     |
| 13  | N/C           | 14  | N/C                     |
| 15  | N/C           | 16  | N/C                     |
| 17  | N/C           | 18  | N/C                     |
| 19  | N/C           | 20  | IPMI_MDI3_N             |
| 21  | N/C           | 22  | IPMI_MDI3_P             |
| 23  | N/C           | 24  | IPMI_MDI2_N             |
| 25  | N/C           | 26  | IPMI_MDI2_P             |
| 27  | GND           | 28  | IPMI_MDI1_N             |
| 29  | N/C           | 30  | IPMI_MDI1_P             |
| 31  | N/C           | 32  | IPMI_MDI0_N             |
| 33  | GND           | 34  | IPMI_MDI0_P             |
| 35  | N/C           | 36  | IPMI_LINK_LED_100_<br>N |
| 37  | N/C           | 38  | N/C                     |
| 39  | GND           | 40  | BMC2EC_1V8_SCL          |
| 41  | PCIE_1_RX_DN  | 42  | BMC2EC_1V8_SDA          |
| 43  | PCIE_1_RX_DP  | 44  | SPI_BMC_BIOS_CS_<br>N   |
| 45  | GND           | 46  | SPI_BMC_BIOS_CLK        |
| 47  | PCIE_TX_DN1   | 48  | SPI_BMC_BIOS_MOS<br>I   |
| 49  | PCIE_TX_DP1   | 50  | PLT_RST_N               |
| 51  | GND           | 52  | NC                      |
| 53  | PCIE_CLK_DN17 | 54  | IPMI_WAKE               |



## IMBA-ARL-W880 ATX Motherboard

| Pin | Description    | Pin | Description           |
|-----|----------------|-----|-----------------------|
| 55  | PCIE_CLK_DP17  | 56  | SPI_BMC_BIOS_MIS<br>O |
| 57  | GND            | 58  | EPI_IO0_LPC_AD0       |
| 59  | ESPI_LPC_RST   | 60  | EPI_IO1_LPC_AD1       |
| 61  | ESPI_CS_FRAME  | 62  | EPI_IO2_LPC_AD2       |
| 63  | ESPI_CLK_RST   | 64  | EPI_IO3_LPC_AD3       |
| 65  | ESPI_ALERT_IRQ | 66  | ESPI_LPC_SEL          |
| 67  | IPMI_RX        | 68  | IPMI_TX               |
| 69  | N/C            | 70  | +3.3V                 |
| 71  | IPMI_DETECT_N2 | 72  | +3.3V                 |
| 73  | GND            | 74  | +3.3V                 |
| 75  | NC             |     |                       |

Table 3-18: IPMI Connector Pinouts

3.2.16 PCIe x1 Slots

- CN Label:

PCIEX1\_1, PCIEX1\_2
- CN Type:

PCIe x1 Slot
- CN Location:

See Figure 3-17

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

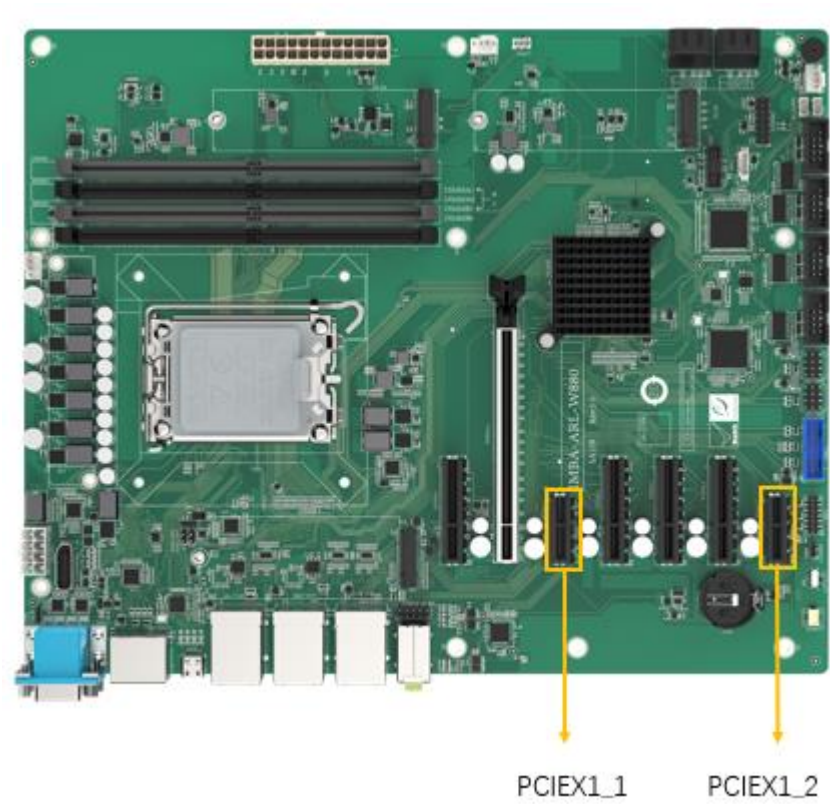


Figure 3-17: PCIe x1 Slot Locations

## IMBA-ARL-W880 ATX Motherboard

### 3.2.17 PCIe x4 Slots

**CN Label:** PCIEX4\_1, PCIEX4\_2, PCIEX4\_3, PCIEX4\_4

**CN Type:** PCIe x4 slot

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

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

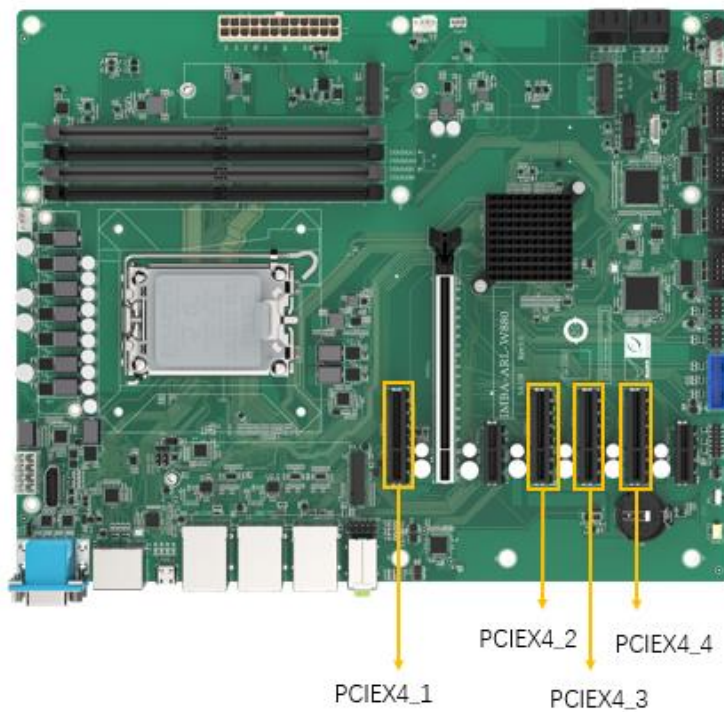
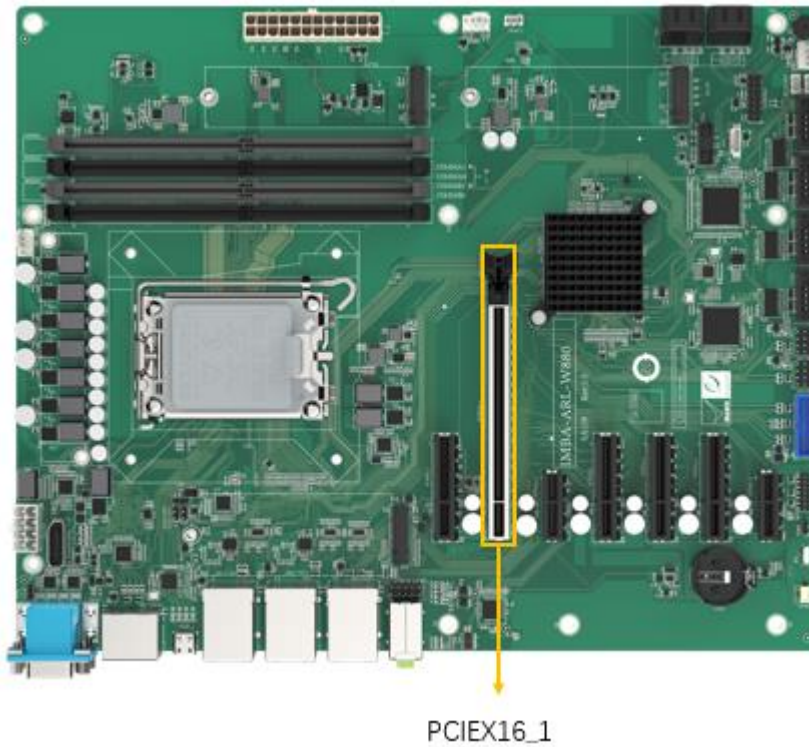


Figure 3-18: PCIe x4 Slot Locations

### 3.2.18 PCIe x16 slots

**CN Label:** PCIEX16\_1  
**CN Type:** PCIe x16 slot  
**CN Location:** See **Figure 3-19**

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



**Figure 3-19: PCIe x16 Slot Locations**

## IMBA-ARL-W880 ATX Motherboard

### 3.2.19 DDR5 DIMM sockets

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

**CN Type:** 288-pin socket

**CN Location:** See Figure 3-20

The DIMM slots are for DDR5 DIMM memory modules

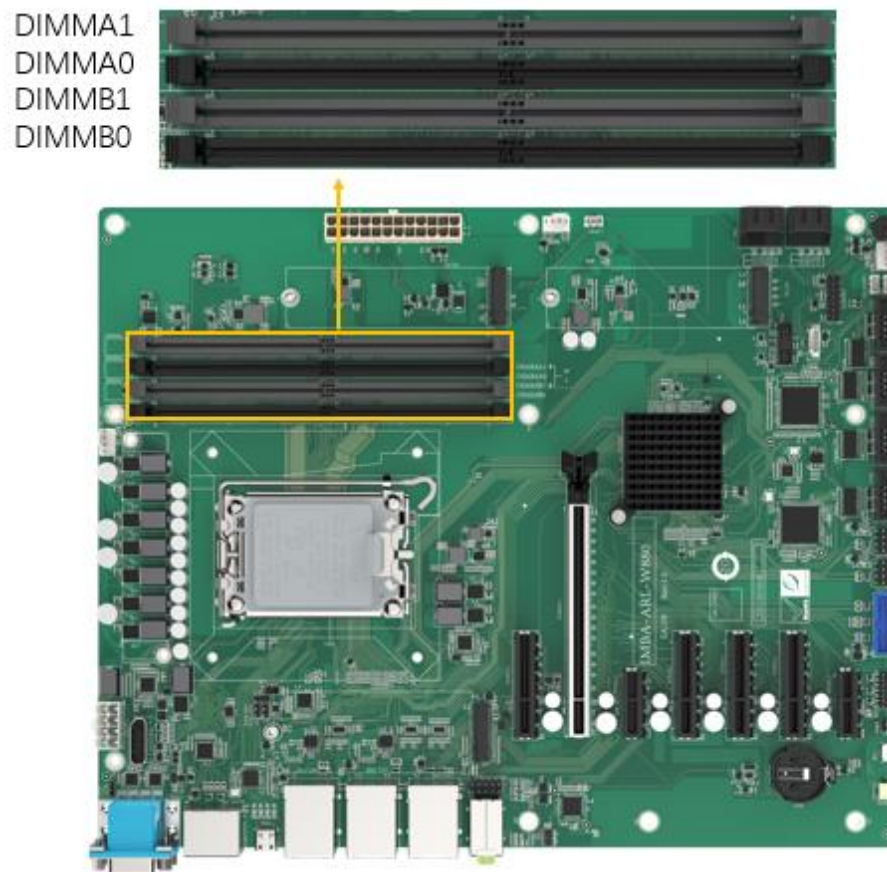


Figure 3-20: DDR5 DIMM Sockets Location

3.2.20 SATA 6Gb/s Connectors

- CN Label:

SATA1\_2, SATA3\_4
- CN Type:

8-pin SATA connector
- CN Location:

See Figure 3-21
- CN Pinouts:

See Table 3-19

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

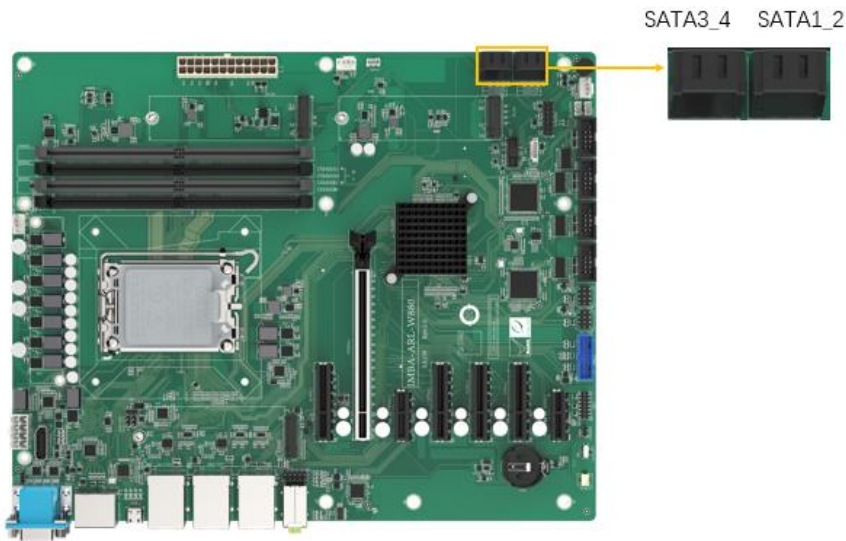


Figure 3-21: SATA 6Gb/s Connector Locations

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

Table 3-19: SATA 6Gb/s Connector Pinouts

## IMBA-ARL-W880 ATX Motherboard

### 3.2.21 RS-232 Serial Port Connectors

**CN Label:** COM3, COM4, COM5, COM6

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

**CN Location:** See Figure 3-22

**CN Pinouts:** See Table 3-20

Each of these connectors provides RS-232 communications.

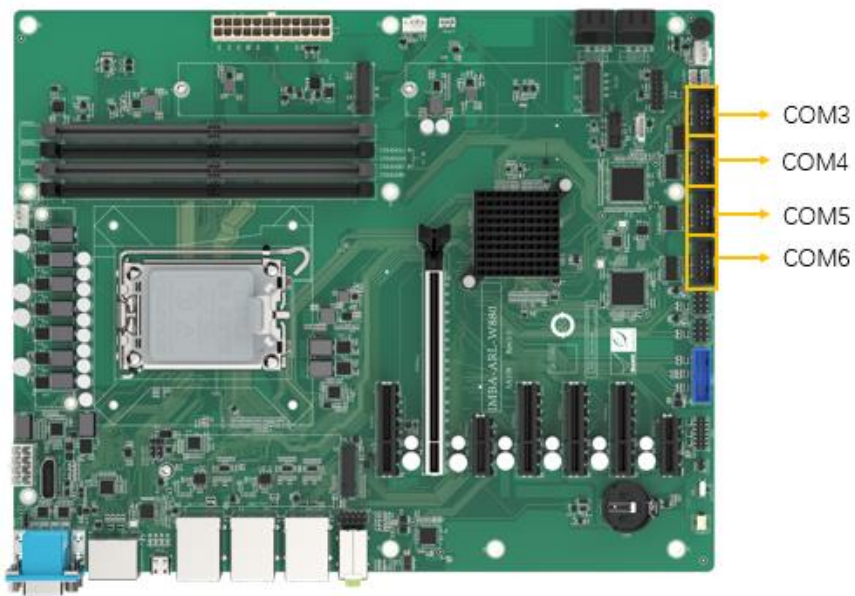


Figure 3-22: RS-232 Connector Location

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

Table 3-20: RS-232 Connector Pinouts

3.2.22 Flash SPI ROM Connector

- CN Label:JSPI1
- CN Type:6-pin header, p=1.25 mm
- CN Location:See Figure 3-23
- CN Pinouts:See Table 3-21

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

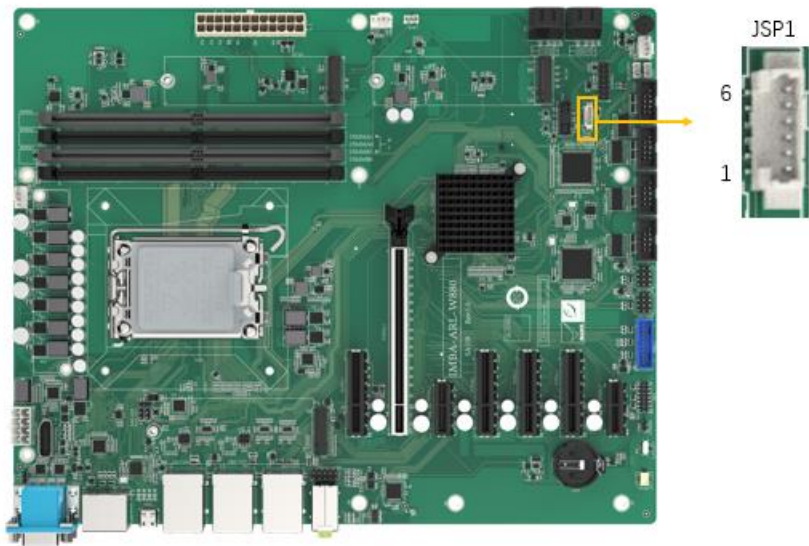


Figure 3-23: Flash SPI ROM Connector Location

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

Table 3-21: Flash SPI ROM Connector Pinouts

## IMBA-ARL-W880 ATX Motherboard

### 3.2.23 Internal USB 2.0 Connectors

**CN Label:** USB1\_CN1, USB2\_CN2

**CN Type:** 8-pin header, p=2.54 mm

**CN Location:** See Figure 3-24

**CN Pinouts:** See Table 3-22

The Internal USB 2.0 connectors connect to USB 2.0 devices. Each pin header provides two USB 2.0 ports.

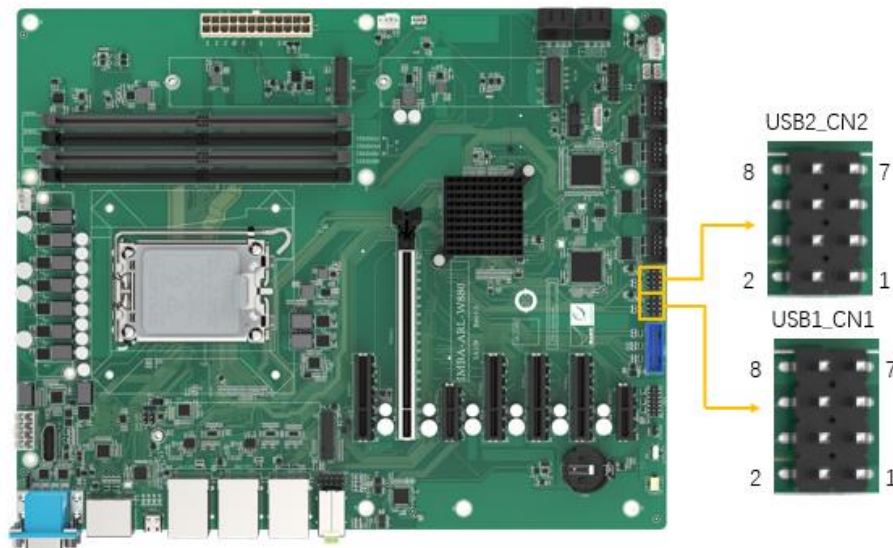


Figure 3-24: Internal USB 2.0 Connector Locations

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

Table 3-22: Internal USB 2.0 Connector Pinouts

3.2.24 Internal USB 3.2 Gen 1 Connector

- CN Label:

USB3\_1
- CN Type:

20-pin box header, p=2.00 mm
- CN Location:

See Figure 3-25
- CN Pinouts:

See Table 3-23

The Internal USB 3.2 Gen 1 connector connects to USB 3.2 devices. This connector provides two USB 3.2 Gen 1 (5Gb/s) ports.

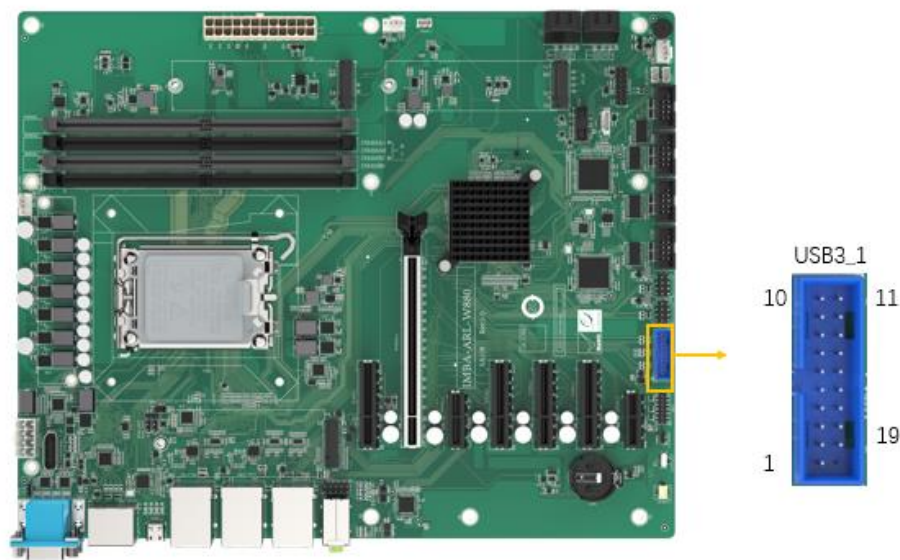


Figure 3-25: Internal USB 3.2 Gen 1 Connector Location

| Pin | Description | Pin | Description |
|-----|-------------|-----|-------------|
| 1   | +5V         | 13  | GND         |
| 2   | USB_D1N     | 14  | USB3_RX2_N  |
| 3   | USB_D1P     | 15  | USB3_RX2_P  |
| 4   | GND         | 16  | GND         |
| 5   | USB3_RX1_N  | 17  | USB3_TX2_N  |
| 6   | USB3_RX1_P  | 18  | USB3_TX2_P  |
| 7   | GND         | G1  | GND         |
| 8   | USB3_TX1_N  | G2  | GND         |

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| Pin | Description | Pin | Description |
|-----|-------------|-----|-------------|
| 9   | USB3_TX1_P  | G3  | GND         |
| 10  | +5V         | G4  | GND         |
| 11  | USB_D2N     |     |             |
| 12  | USB_D2P     |     |             |

Table 3-23: Internal USB 3.2 Gen 1 Connector Pinouts

### 3.2.25 DP Connector

**CN Label:** DP1

**CN Type:** DisplayPort

**CN Location:** See Figure 3-26

The DP1 connector connects to a display device with DisplayPort interface.

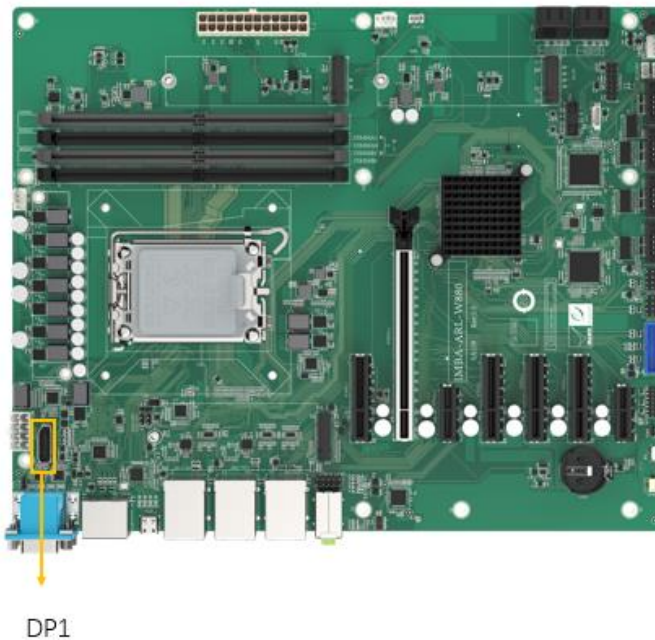


Figure 3-26: DP Connector Location

### 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:

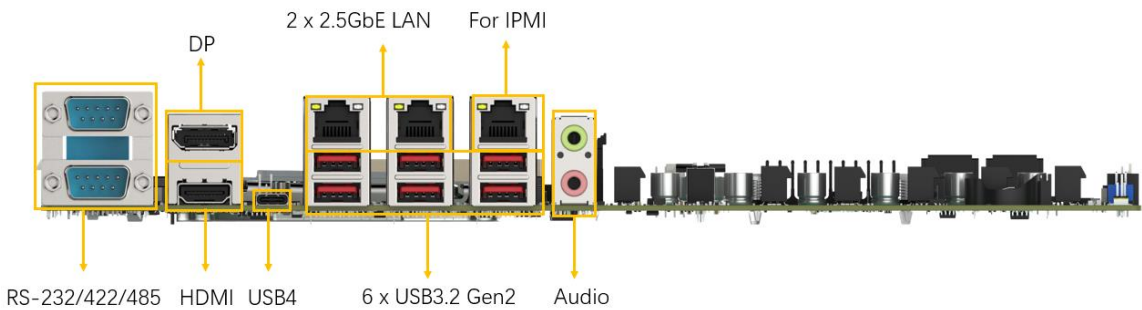


Figure 3-27: External Peripheral Interface Connector

#### 3.3.1 External RS-232 /422/485 Connector

- CN Label:** COM1\_2
- CN Type:** Dual DB-9
- CN Pinouts:** See Table 3-24 and Table 3-25

The COM connector connects to a serial device that supports RS-232/422/485 communication.

|   | 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 3-24: External RS-232/422/485 Connector Pinouts

## IMBA-ARL-W880 ATX Motherboard

Use the optional RS-232/422/485 cable to connect to a serial device. The pinouts of the DB-9 connector are listed below.

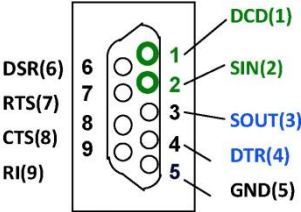
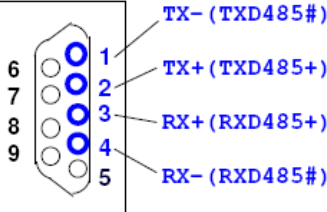
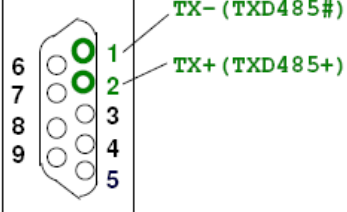
| RS-232 Pinouts                                                                                                   | RS-422 Pinouts                                                                                                    | RS-485 Pinouts                                                                                                        |
|------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------|
|  <p>D-SUB 9PIN MALE MODE 01</p> |  <p>D-SUB 9PIN MALE MODE 00</p> |  <p>D-SUB 9PIN MALE MODE 10/11</p> |

Table 3-25: DB-9 RS-232/422/485 Pinouts

### 3.3.2 External HDMI And DP Combo Connector

**CN Label:** HDMI\_DP1

**CN Type:** HDMI, DisplayPort

**CN Location:** See **Figure 3-29** and **Figure 3-28**

**CN Pinouts:** See **Table 3-27** and **Table 3-26**

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  | AUX_CTRL_DET_C |
| 4   | LANE1P      | 14  | GND            |
| 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 3-26: DP++ Connector Pinouts

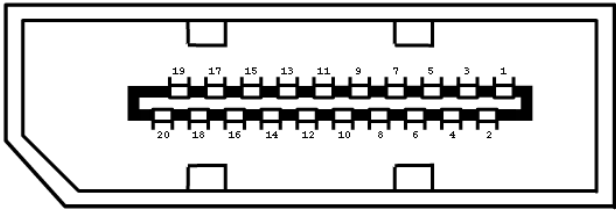


Figure 3-28: DP++ Connector

The HDMI connector can connect to an HDMI device.

| Pin | Description | Pin | Description |
|-----|-------------|-----|-------------|
| 21  | HDMI_DATA2  | 33  | N/C         |
| 22  | GND         | 34  | N/C         |
| 23  | HDMI_DATA2# | 35  | HDMI_SCL    |
| 24  | HDMI_DATA1  | 36  | HDMI_SDA    |
| 25  | GND         | 37  | GND         |
| 26  | HDMI_DATA1# | 38  | +5V         |
| 27  | HDMI_DATA0  | 39  | HDMI_HPD    |
| 28  | GND         |     |             |
| 29  | HDMI_DATA0# |     |             |
| 30  | HDMI_CLK    |     |             |
| 31  | GND         |     |             |
| 32  | HDMI_CLK#   |     |             |

Table 3-27: HDMI Connector Pinouts



Figure 3-29: HDMI Connector

## IMBA-ARL-W880 ATX Motherboard

### 3.3.3 External USB4 connector

|                     |                        |
|---------------------|------------------------|
| <b>CN Label:</b>    | <b>TCP1</b>            |
| <b>CN Type:</b>     | <b>USB4</b>            |
| <b>CN Location:</b> | <b>See Figure 3-30</b> |
| <b>CN Pinouts:</b>  | <b>See Table 3-28</b>  |

The external USB4 connectors on the IMBA-ARL-W880.



**Figure 3-30: USB4 Connector**

| <b>Pin</b> | <b>Description</b> | <b>Pin</b> | <b>Description</b> |
|------------|--------------------|------------|--------------------|
| A1         | GND                | B4         | +VBUS_USBC0        |
| A2         | TCP0_CN_TX0_DP     | B5         | CC2_CN             |
| A3         | TCP0_CN_TX0_DN     | B6         | USB2_P10_L_DP      |
| A4         | +VBUS_USBC0        | B7         | USB2_P10_L_DN      |
| A5         | CC1_CN             | B8         | SUB2_CN            |
| A6         | USB2_P10_L_DP      | B9         | +VBUS_USBC0        |
| A7         | USB2_P10_L_DN      | B10        | TCP0_RT_TXRX0_C_DN |
| A8         | SUB1_CN            | B11        | TCP0_RT_TXRX0_C_DP |
| A9         | +VBUS_USBC0        | B12        | GND                |
| A10        | TCP0_RT_TXRX1_C_DN | G1         | GND                |
| A11        | TCP0_RT_TXRX1_C_DP | G2         | GND                |
| A12        | GND                | G3         | GND                |
| B1         | GND                | G4         | GND                |
| B2         | TCP0_RT_TX1_C_DP   | N1         |                    |
| B3         | TCP0_RT_TX1_C_DN   | N2         |                    |

**Table 3-28: USB4 Port Pinouts**

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

- CN Label:

LAN1\_USB1, LAN2\_USB2, LAN3\_USB3
- CN Type:

USB 3.2 RJ45
- CN Location:

See Figure 3-31
- CN Pinouts:

See Table 3-29

The LAN2\_USB2 connector includes dual USB 3.2 Gen 2 (10Gb/s) and one 2.5GbE RJ-45.



Figure 3-31: RJ-45 and dual USB 3.2 Connector

| Pin | Description | Pin | Description         |
|-----|-------------|-----|---------------------|
| 1   | +5V         | 21  | i225_MDI0_N_2       |
| 2   | USB2_7_N    | 22  | i225_MDI1_P_2       |
| 3   | USB2_7_P    | 23  | i225_MDI1_N_2       |
| 4   | GND         | 24  | i225_MDI2_P_2       |
| 5   | USB3_RX7_N  | 25  | i225_MDI2_N_2       |
| 6   | USB3_RX7_P  | 26  | i225_MDI3_P_2       |
| 7   | GND         | 27  | i225_MDI3_N_2       |
| 8   | USB3_TX7_N  | 28  | GND                 |
| 9   | USB3_TX7_P  | 29  | +3.3V               |
| 10  | +5V         | 30  | I225_LINK_ACT_N_2   |
| 11  | USB2_8_N    | 31  | I225_SPEED_2500_N_2 |
| 12  | USB2_8_P    | 32  | I225_SPEED_1000_N_2 |
| 13  | GND         | G1  | LAN2_GND            |
| 14  | USB3_RX8_N  | G2  | LAN2_GND            |
| 15  | USB3_RX8_P  | G3  | LAN2_GND            |
| 16  | GND         | G4  | LAN2_GND            |

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| Pin | Description   | Pin | Description |
|-----|---------------|-----|-------------|
| 17  | USB3_TX8_N    | G5  | LAN2_GND    |
| 18  | USB3_TX8_P    | G6  | LAN2_GND    |
| 19  | GND           | G7  | LAN2_GND    |
| 20  | i225_MDIO_P_2 | G8  | LAN2_GND    |

**Table 3-29: USB 3.2 Port and RJ45 Pinouts**

### 3.3.5 Audio Jack Connector

|                     |                        |
|---------------------|------------------------|
| <b>CN Label:</b>    | <b>AUDIO1</b>          |
| <b>CN Type:</b>     | Audio jacks            |
| <b>CN Location:</b> | See <b>Figure 3-32</b> |
| <b>CN Pinouts:</b>  | See <b>Table 3-30</b>  |

The audio jacks connect to external audio devices.



**Figure 3-32: USB 3.2 Connector**

| Pin               | Description                               |
|-------------------|-------------------------------------------|
| FRONT-OUT (Green) | Connect this port to headphone or speaker |
| MIC-IN (Pink)     | Connect this port to microphone           |

**Table 3-30: Audio jack Connector Pinouts**

Chapter

4

# Installation

---

## IMBA-ARL-W880 ATX Motherboard

### 4.1 Anti-static Precautions



#### WARNING:

Failure to take ESD precautions during the installation of the IMBA-ARL-W880 may result in permanent damage to the IMBA-ARL-W880 and severe injury to the user.

Electrostatic discharge (ESD) can cause serious damage to electronic components, including the IMBA-ARL-W880. Dry climates are especially susceptible to ESD. It is therefore critical that whenever the IMBA-ARL-W880 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-ARL-W880, place it on an anti-static pad. This reduces the possibility of ESD damaging the IMBA-ARL-W880.
- ***Only handle the edges of the PCB:*** When handling the PCB, hold the PCB by the edges.

### 4.2 Internal Peripheral Device Connections

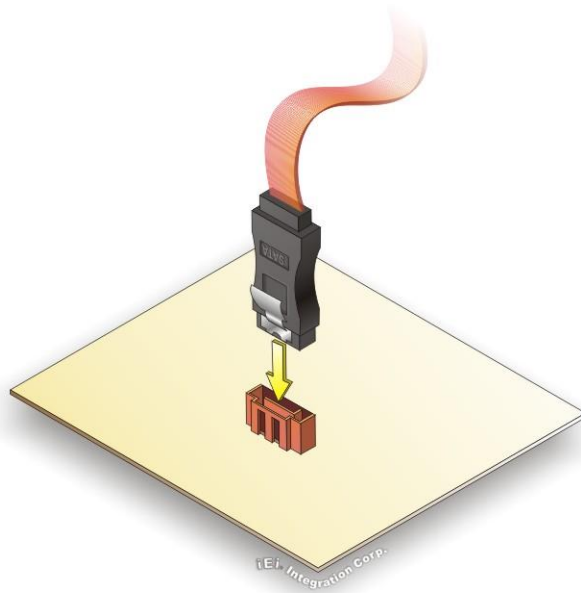
This section outlines the installation of peripheral devices to the onboard connectors.

#### 4.2.1 SATA Drive Connection

The IMBA-ARL-W880 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**.

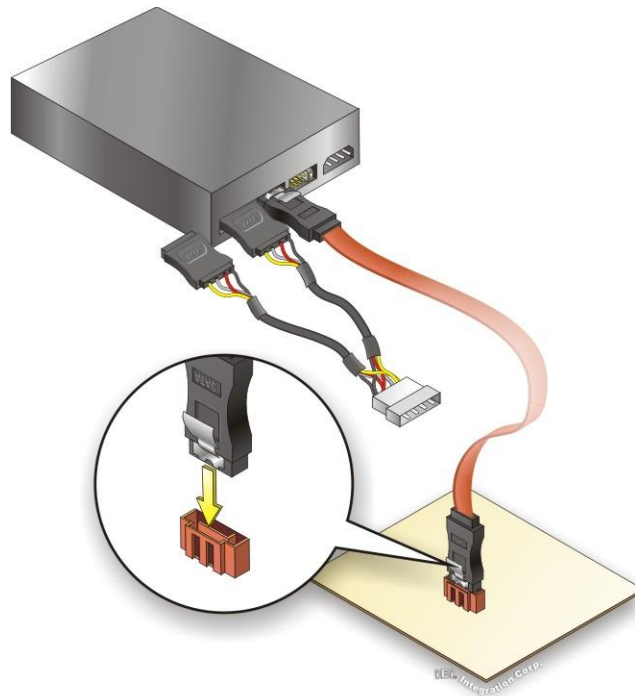
**Step 2:** **Insert the cable connector.** Insert the cable connector into the on-board SATA drive connector until it clips into place. See **Figure 4-1**.



**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-ARL-W880 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-ARL-W880 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-ARL-W880 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-ARL-W880 off:
  - When working with the IMBA-ARL-W880, 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-ARL-W880, **DO NOT**:

## IMBA-ARL-W880 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 LGA1851 CPU Installation

---



#### **WARNING:**

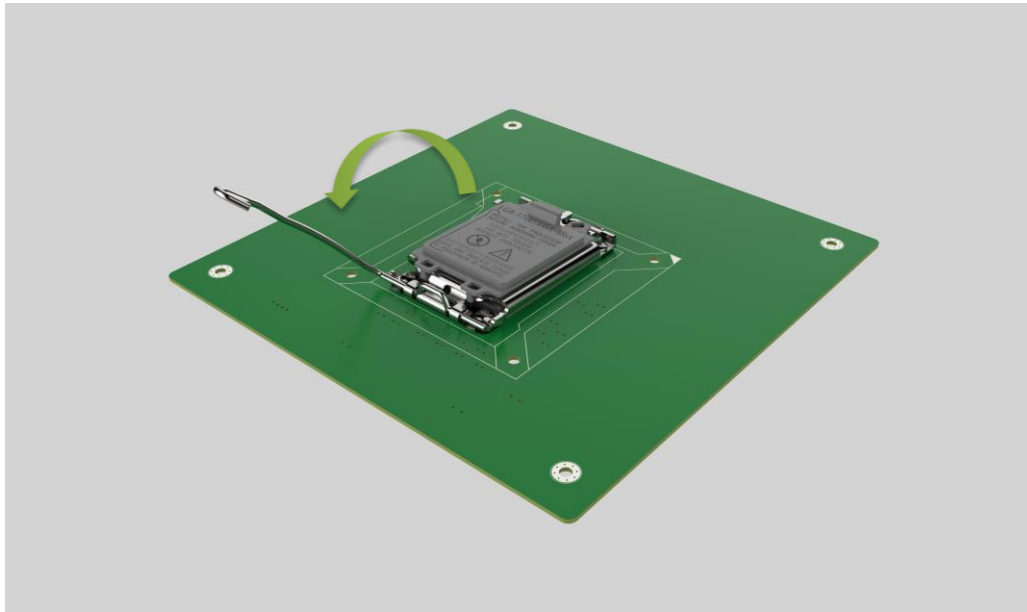
CPUs are expensive and sensitive components. When installing the CPU please be careful not to damage it in anyway. Make sure the CPU is installed properly and ensure the correct cooling kit is properly installed.

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

---

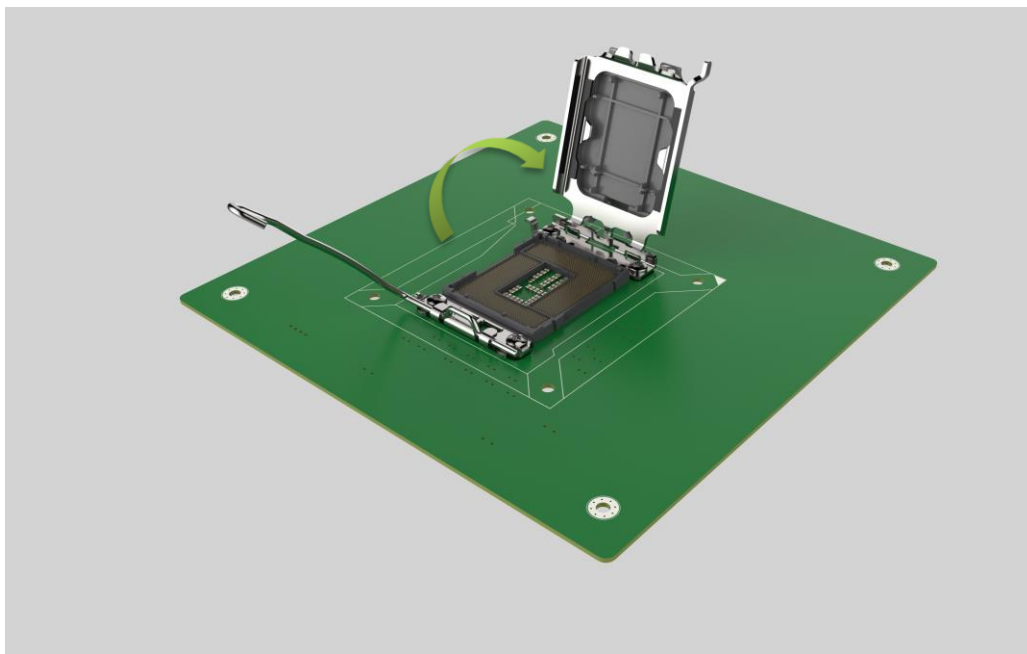
To install the CPU, follow the steps below.

**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**

## IMBA-ARL-W880 ATX Motherboard

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

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



### **WARNING:**

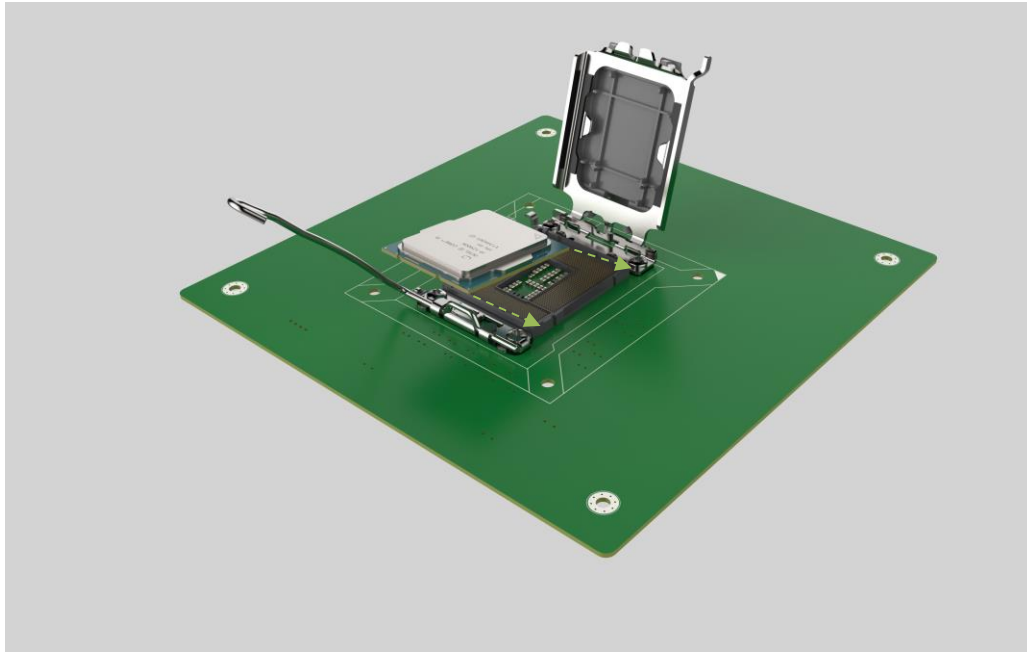
DO NOT touch the pins at the bottom of the CPU. When handling the CPU, only hold it on the sides.

---

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

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

**Step 7: Insert the CPU.** Gently insert the CPU into the socket. If the CPU pins are properly aligned, the CPU should slide into the CPU socket smoothly. See **Figure 4-5**.



**Figure 4-5: Insert The Socket LGA1851 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.

## IMBA-ARL-W880 ATX Motherboard

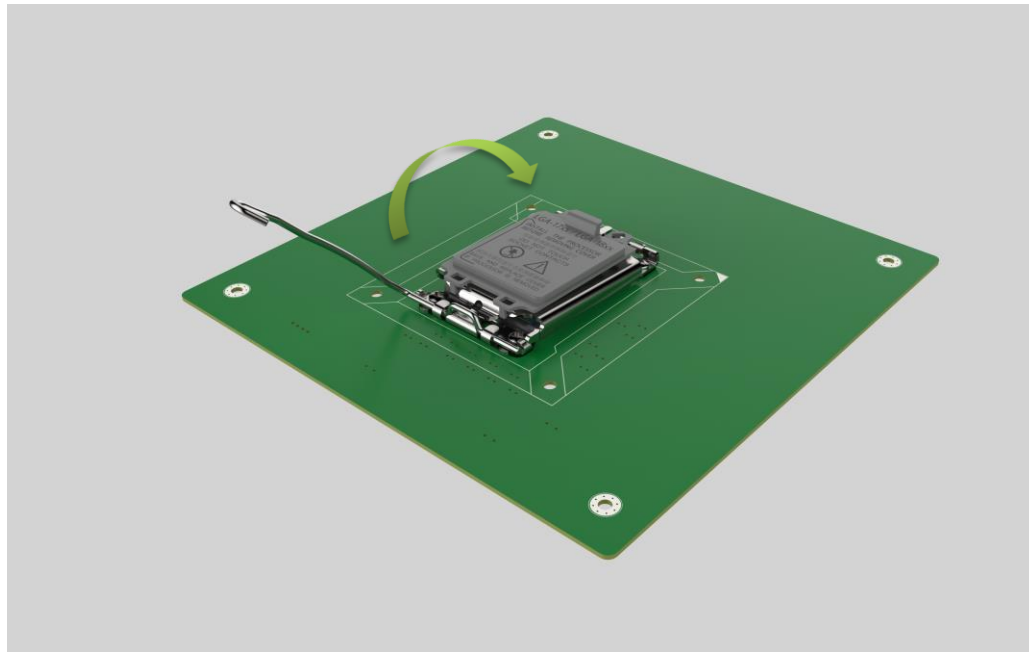


Figure 4-6: Close the Socket LGA1851

**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 LGA1851 Cooling Kit Installation



#### **WARNING:**

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

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

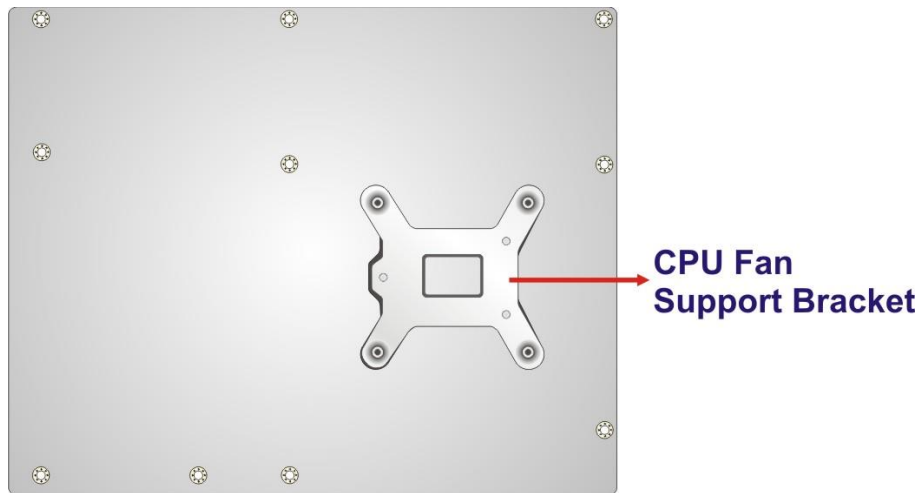
The cooling kit can be bought from IEI. The cooling kit has a heat sink and fan.

**WARNING:**

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

To install the cooling kit, follow the instructions below.

**Step 1:** A cooling kit bracket is pre-installed on the rear of the motherboard. See **Figure 4-7**.



**Figure 4-7: Cooling Kit Support Bracket**

**Step 2:** Place the cooling kit onto the socket LGA1700 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.

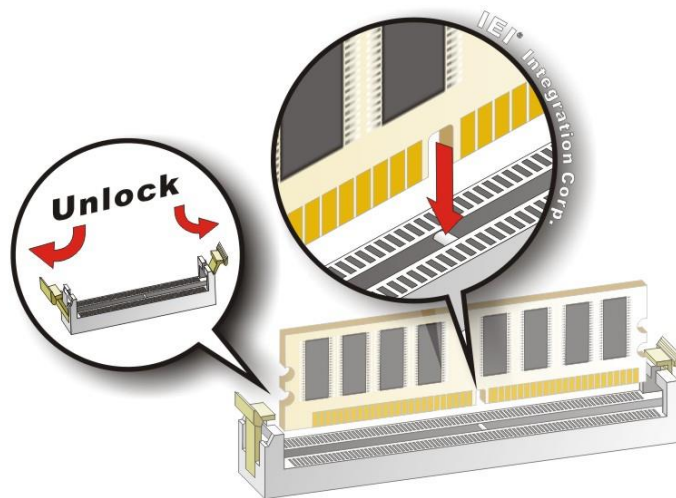
## IMBA-ARL-W880 ATX Motherboard

**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-ARL-W880. 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.

**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

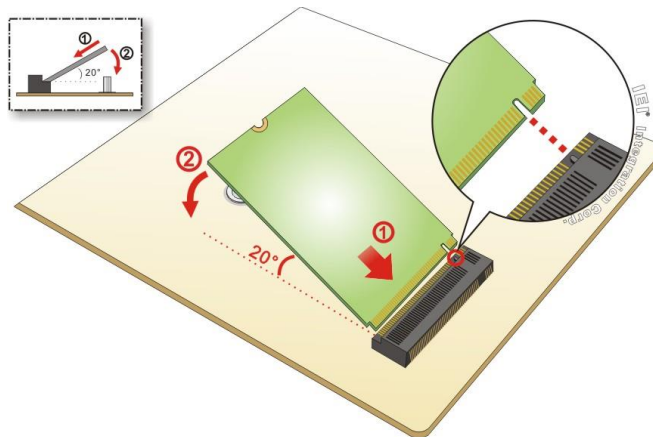
The IMBA-ARL-W880 provide two ways to install the M.2 expansion card. One is using screw, and the other is using the retainer. Please follow the steps below.

### Using screw

**Step 1:** Locate the M.2 module slot.

**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**).

## IMBA-ARL-W880 ATX Motherboard

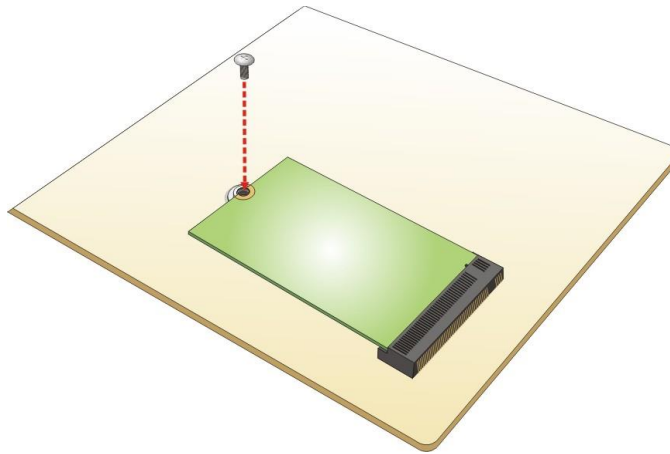


Figure 4-10: Securing the M.2 Module

### 4.8 Software Installation

All the drivers for the IMBA-ARL-W880 are available on IEI Resource Download Center (<https://download.ieiworld.com>). Type IMBA-ARL-W880 and press Enter to find all the relevant software, utilities, and documentation.

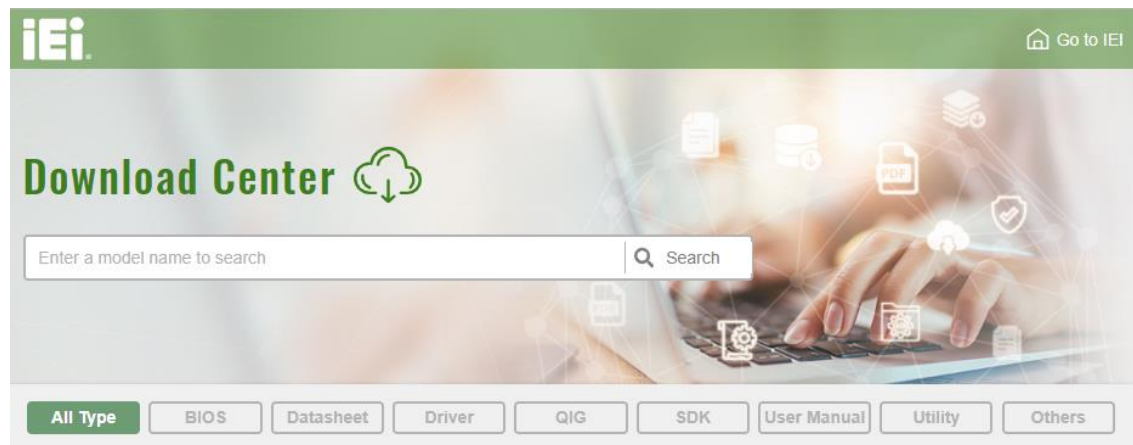


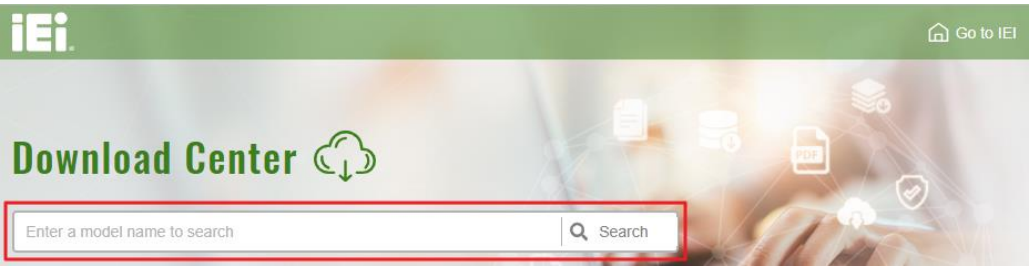
Figure 4-11: IEI Resource Download Center



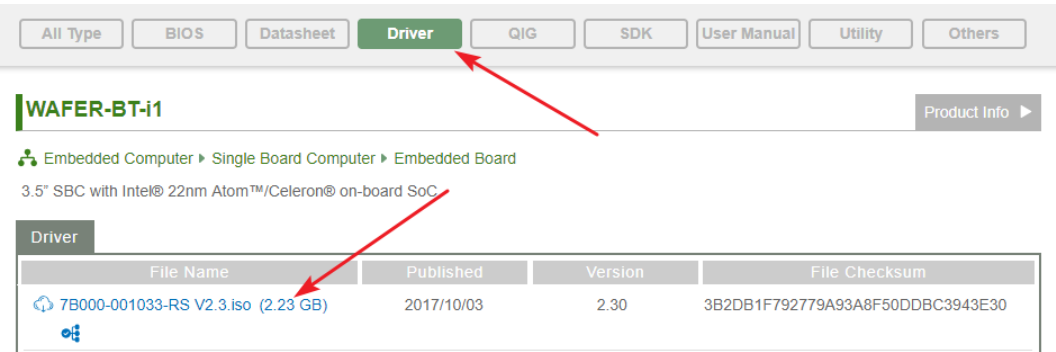
### 4.9 Driver Download

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

**Step 1:** Go to <https://download.ieiworld.com>. Type IMBA-ARL-W880 and press Enter.



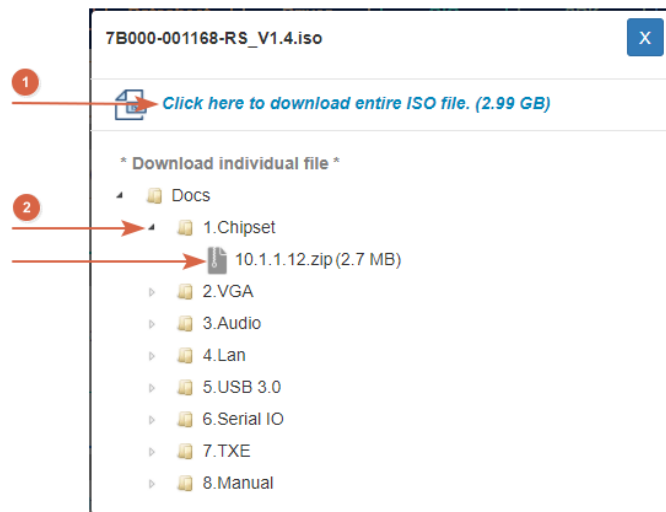
**Step 2:** All product-related software, utilities, and documentation will be listed. You can choose **Driver** to filter the result.



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



## IMBA-ARL-W880 ATX Motherboard



### NOTE:

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

Chapter

5

# BIOS

---

## IMBA-ARL-W880 ATX Motherboard

### 5.1 Introduction

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



#### NOTE:

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

#### 5.1.1 Starting Setup

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

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

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

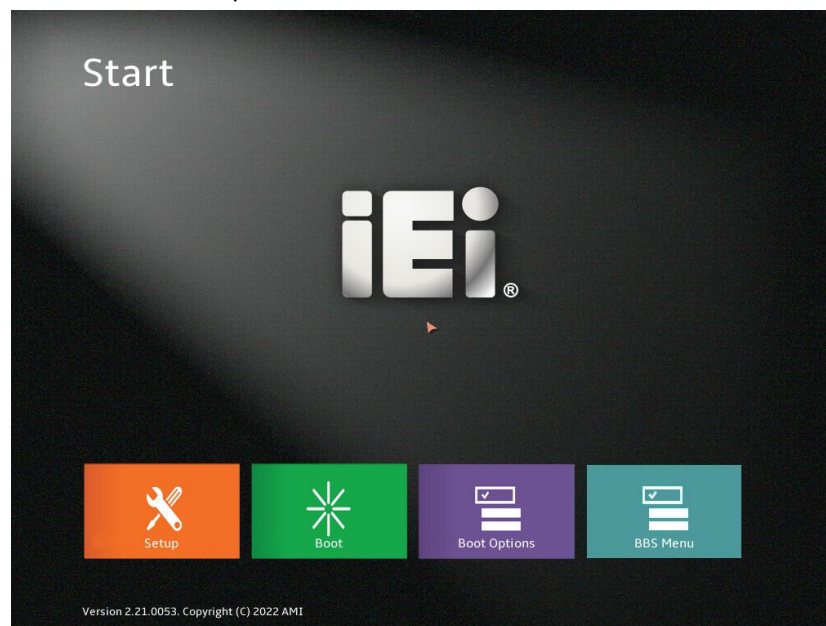


Figure 5-1: BIOS Starting Menu



5.1.2 Using Setup

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

5.1.2.1 Keyboard Navigation

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

| Key         | Function                                                                                                                                             |
|-------------|------------------------------------------------------------------------------------------------------------------------------------------------------|
| Up arrow    | Move to previous item                                                                                                                                |
| Down arrow  | Move to next item                                                                                                                                    |
| Left arrow  | Move to the item on the left hand side                                                                                                               |
| Right arrow | Move to the item on the right hand side                                                                                                              |
| +           | Increase the numeric value or make changes                                                                                                           |
| -           | Decrease the numeric value or make changes                                                                                                           |
| Page Up     | Move to the previous page                                                                                                                            |
| Page Dn     | Move to the next page                                                                                                                                |
| Esc         | Main Menu – Quit and not save changes into CMOS<br>Status Page Setup Menu and Option Page Setup Menu --<br>Exit current page and return to Main Menu |
| F1          | General help, only for Status Page Setup Menu and<br>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                                                                                                                           |

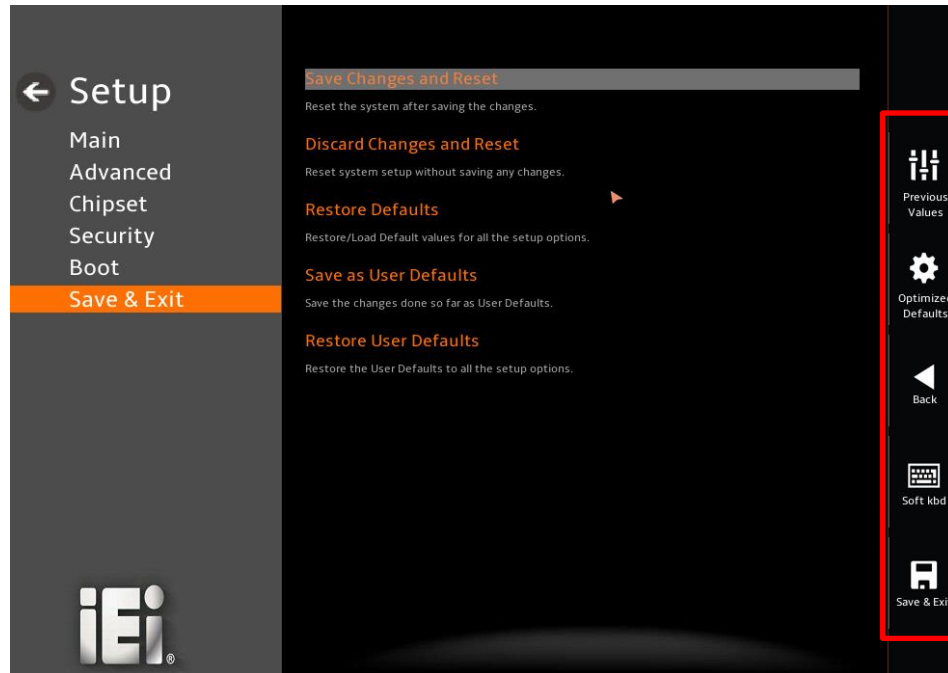
Table 5-1: BIOS Navigation Keys



## IMBA-ARL-W880 ATX Motherboard

### 5.1.2.2 Touch Navigation

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



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

**Table 5-2: BIOS On-screen Navigation Keys**

### 5.1.3 Getting Help

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

### 5.1.4 Unable to Reboot after Configuration Changes

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

### 5.1.5 BIOS Menu Bar

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

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

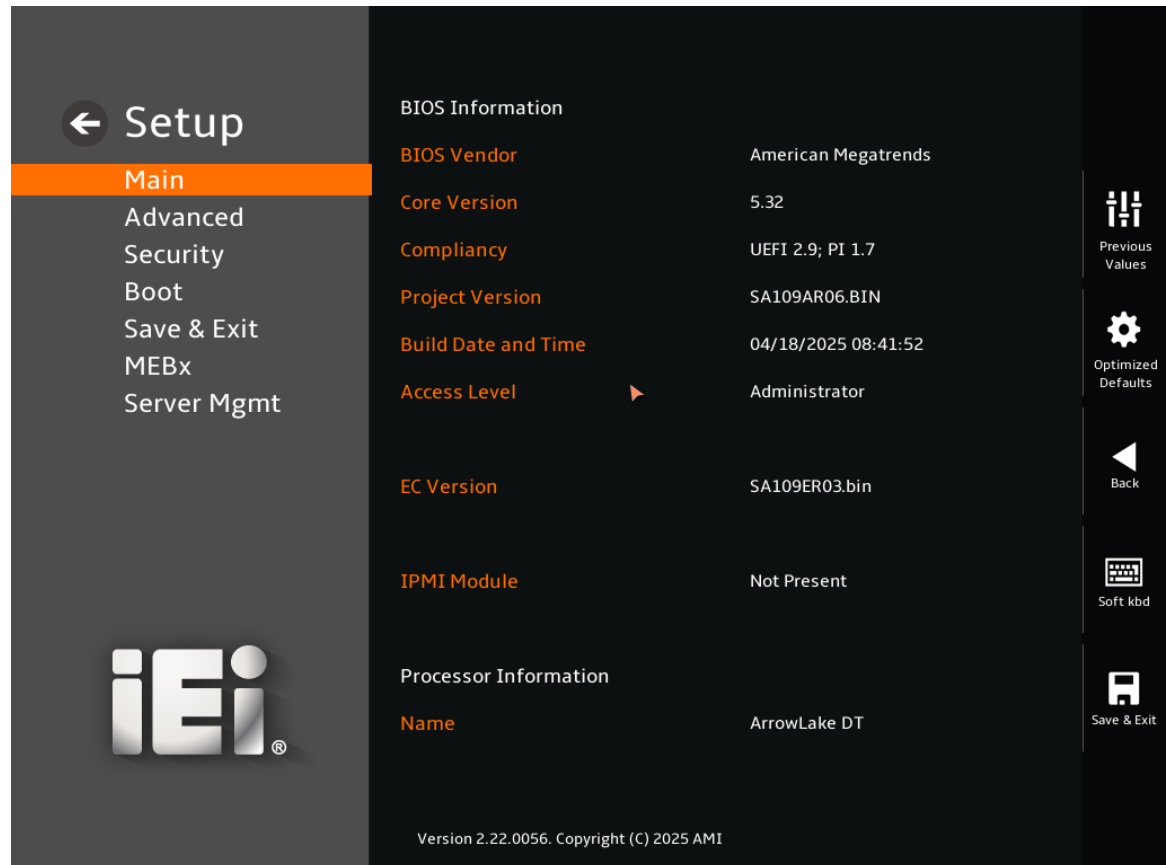
The following sections completely describe the configuration options found in the menu items at the top of the BIOS screen and listed above.

## IMBA-ARL-W880 ATX Motherboard

## 5.2 Main

The **Main** BIOS menu (**BIOS Menu 2**) appears when the **BIOS Setup** program is entered.

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

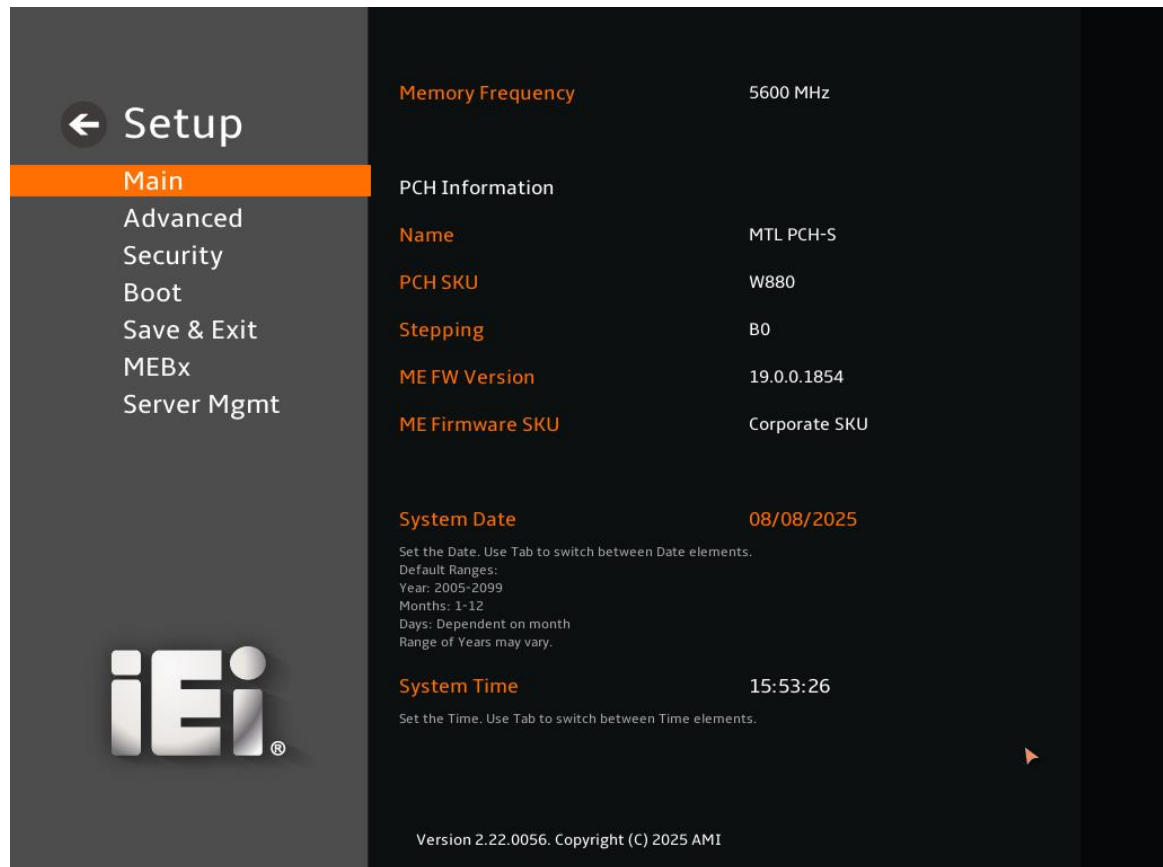


BIOS Menu 1: Main (1/2)



BIOS Menu 2: Main (2/2)

## IMBA-ARL-W880 ATX Motherboard

**BIOS Menu 3: Main (3/3)****→ BIOS Information**

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

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

**→ Processor Information**

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

- **Name:** Displays the Processor Details
- **Type:** Displays the Processor Type
- **Speed:** Displays the Processor Speed
- **ID:** Displays the Processor ID

**→ PCH Information**

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

- **Name:** Displays the PCH Name
- **PCH SKU:** Displays the PCH SKU
- **Stepping:** Displays the PCH Stepping
- **TXT Capability of Platform/PCH:** Displays the TXT Capability
- **Production Type:** Displays 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

**→ 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.

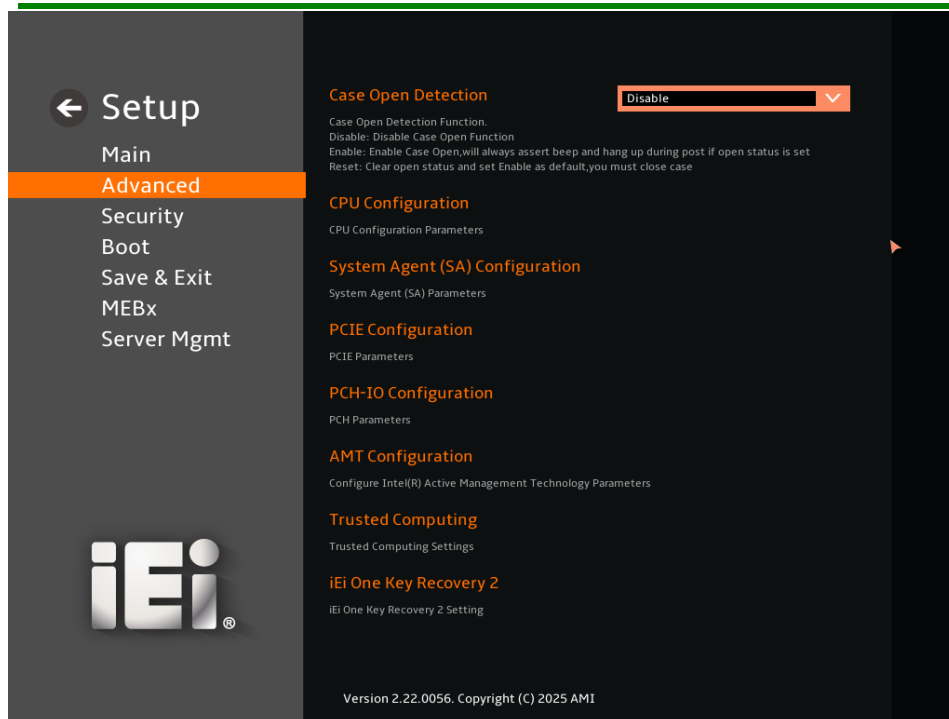
## IMBA-ARL-W880 ATX Motherboard

## 5.3 Advanced

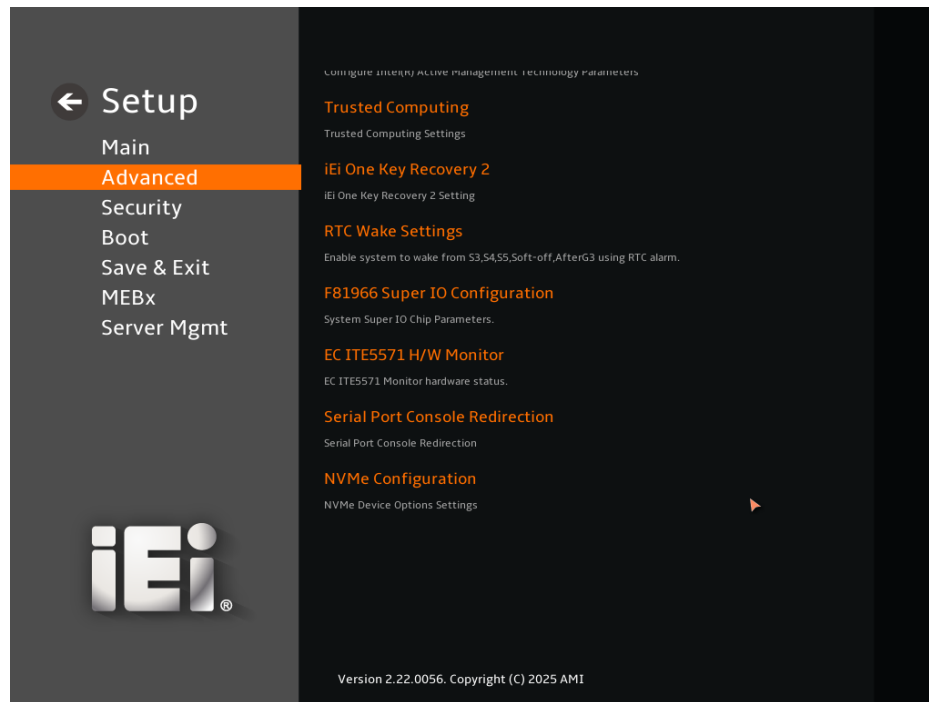
Use the **Advanced** menu (**BIOS Menu 4**) to configure the CPU and peripheral devices through the following sub-menus:

**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 4: Advanced (1/2)

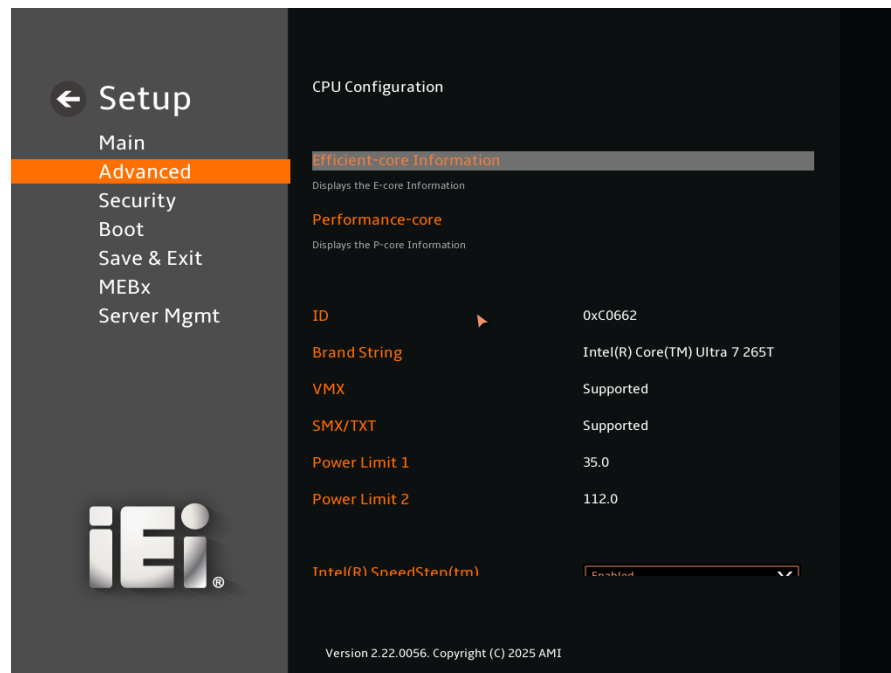


**BIOS Menu 5: Advanced (2/2)**

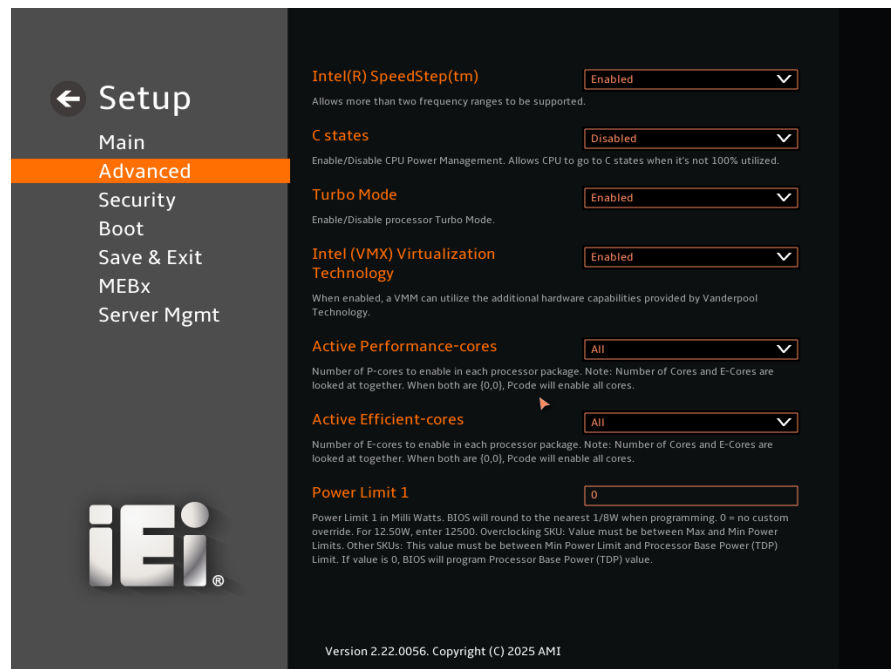
## IMBA-ARL-W880 ATX Motherboard

### 5.3.1 CPU Configuration

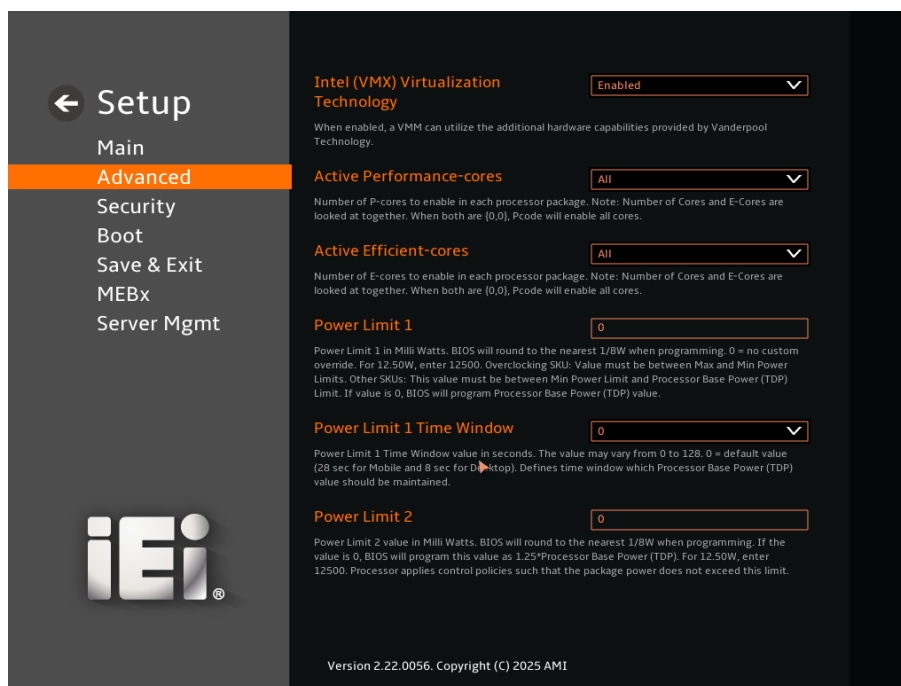
Use the **CPU Configuration** menu (**BIOS Menu 6**) to view detailed CPU specifications or enable the Intel Virtualization Technology.



#### BIOS Menu 6: CPU Configuration (1/3)



#### BIOS Menu 7: CPU Configuration (2/3)



### BIOS Menu 8: CPU Configuration (3/3)

#### → 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.

- |   |                 |                |                                      |
|---|-----------------|----------------|--------------------------------------|
| → | <b>Disabled</b> |                | Disables Intel® SpeedStep Technology |
| → | <b>Enabled</b>  | <b>DEFAULT</b> | Enables Intel® SpeedStep 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.

- |   |                 |                |                               |
|---|-----------------|----------------|-------------------------------|
| → | <b>Disabled</b> | <b>DEFAULT</b> | Disables CPU power management |
| → | <b>Enabled</b>  |                | Enables CPU power management  |

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### → Turbo Mode [Enabled]

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

- |   |                 |                |                                |
|---|-----------------|----------------|--------------------------------|
| → | <b>Disabled</b> |                | Disables Turbo Mode Technology |
| → | <b>Enabled</b>  | <b>DEFAULT</b> | Enables Turbo Mode Technology  |

### → Intel (VMX) Virtualization Technology [Enabled]

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

- |   |                 |                |                                           |
|---|-----------------|----------------|-------------------------------------------|
| → | <b>Disabled</b> |                | Disables Intel Virtualization Technology. |
| → | <b>Enabled</b>  | <b>DEFAULT</b> | Enables Intel Virtualization Technology.  |

### → Active Performance Cores [All]

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

- |   |            |                |                                              |
|---|------------|----------------|----------------------------------------------|
| → | <b>All</b> | <b>DEFAULT</b> | Enable all P-cores in the processor package. |
| → | <b>1</b>   |                | Enable one P-core in the processor package.  |

### → Active Efficient Cores [All]

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

- |   |            |                |                                                |
|---|------------|----------------|------------------------------------------------|
| → | <b>All</b> | <b>DEFAULT</b> | Enable all E-cores in the processor package.   |
| → | <b>0</b>   |                | Enable zero E-core in the processor package.   |
| → | <b>1</b>   |                | Enable one E-cores in the processor package.   |
| → | <b>2</b>   |                | Enable two E-cores in the processor package.   |
| → | <b>3</b>   |                | Enable three E-cores in the processor package. |
| → | <b>4</b>   |                | Enable four E-cores in the processor package.  |

## IMBA-ARL-W880 ATX Motherboard

- ➔ 5 Enable five E-cores in the processor package.
- ➔ 6 Enable six E-cores in the processor package.
- ➔ 7 Enable seven E-cores in the processor package.

### ➔ Power Limit 1 [0]

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

### ➔ Power Limit 1 Time Window [0]

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

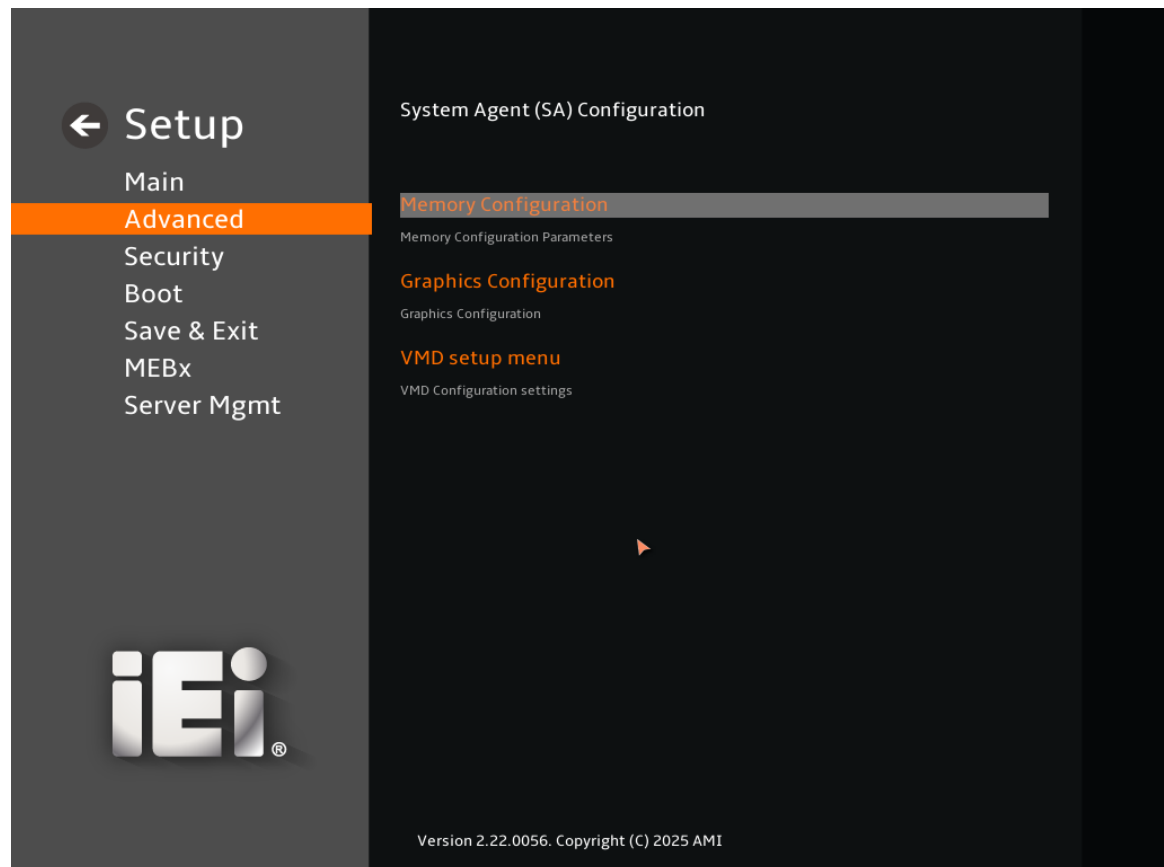
### ➔ Power Limit 2 [0]

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

## IMBA-ARL-W880 ATX Motherboard

### 5.3.2 System Agent (SA) Configuration

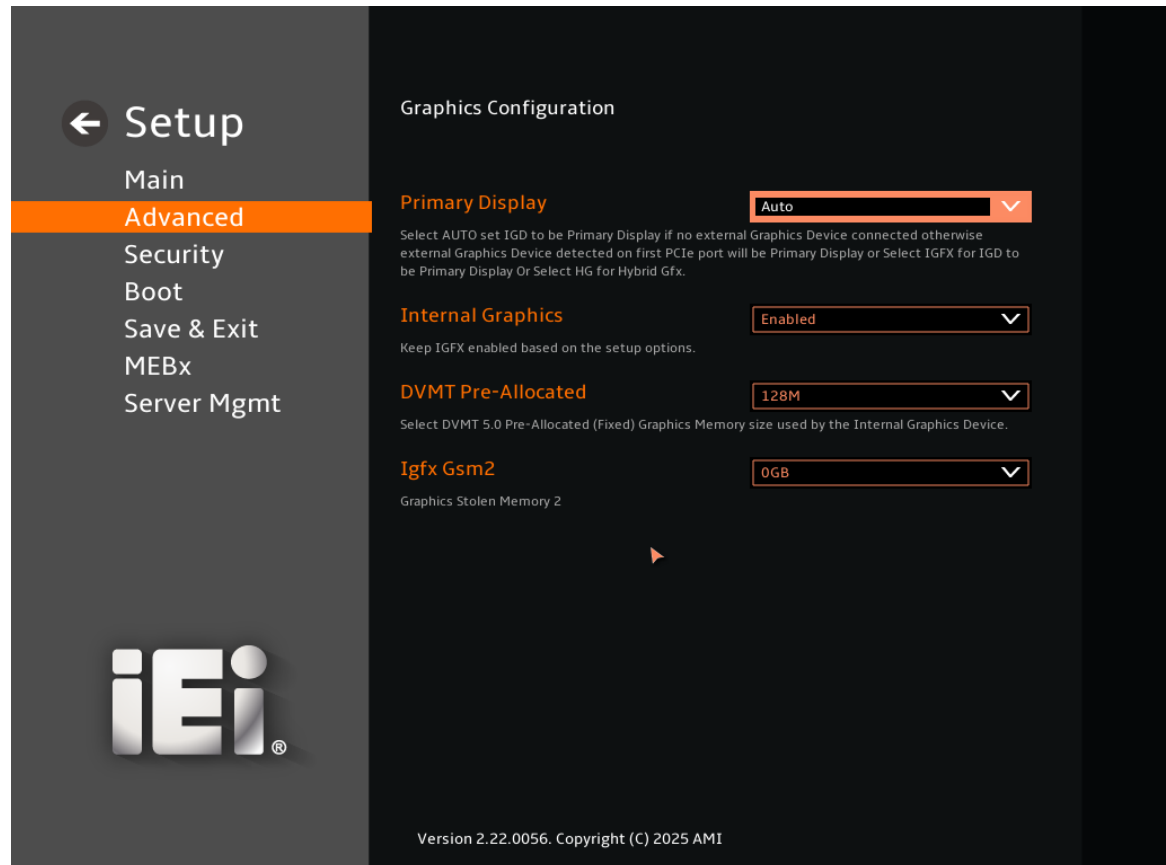
Use the **System Agent (SA) Configuration** menu (**BIOS Menu 9**) to configure the System Agent (SA) parameters.



**BIOS Menu 9: System Agent (SA) Configuration**

### 5.3.2.1 Graphics Configuration

Use the **Graphics Configuration (BIOS Menu 10)** menu to configure the video device connected to the system.



#### BIOS Menu 10: 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

## IMBA-ARL-W880 ATX Motherboard

### → 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.

|   |                 |                |                |
|---|-----------------|----------------|----------------|
| → | <b>Auto</b>     |                | Auto mode      |
| → | <b>Disabled</b> |                | Disables IGFX. |
| → | <b>Enabled</b>  | <b>Default</b> | Enables IGFX.  |

### → DVMT Pre-Allocated [128M]

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

|   |      |                |
|---|------|----------------|
| ▪ | 0M   |                |
| ▪ | 32M  |                |
| ▪ | 64M  |                |
| ▪ | 96M  |                |
| ▪ | 128M | <b>Default</b> |
| ▪ | 4M   |                |
| ▪ | 8M   |                |
| ▪ | 12M  |                |
| ▪ | 16M  |                |
| ▪ | 20M  |                |

### → Igfx Gsm2 [0GB]

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:

|   |      |                |
|---|------|----------------|
| ▪ | 0 GB | <b>Default</b> |
| ▪ | 2 GB |                |
| ▪ | 4 GB |                |
| ▪ | 6 GB |                |
| ▪ | 8 GB |                |

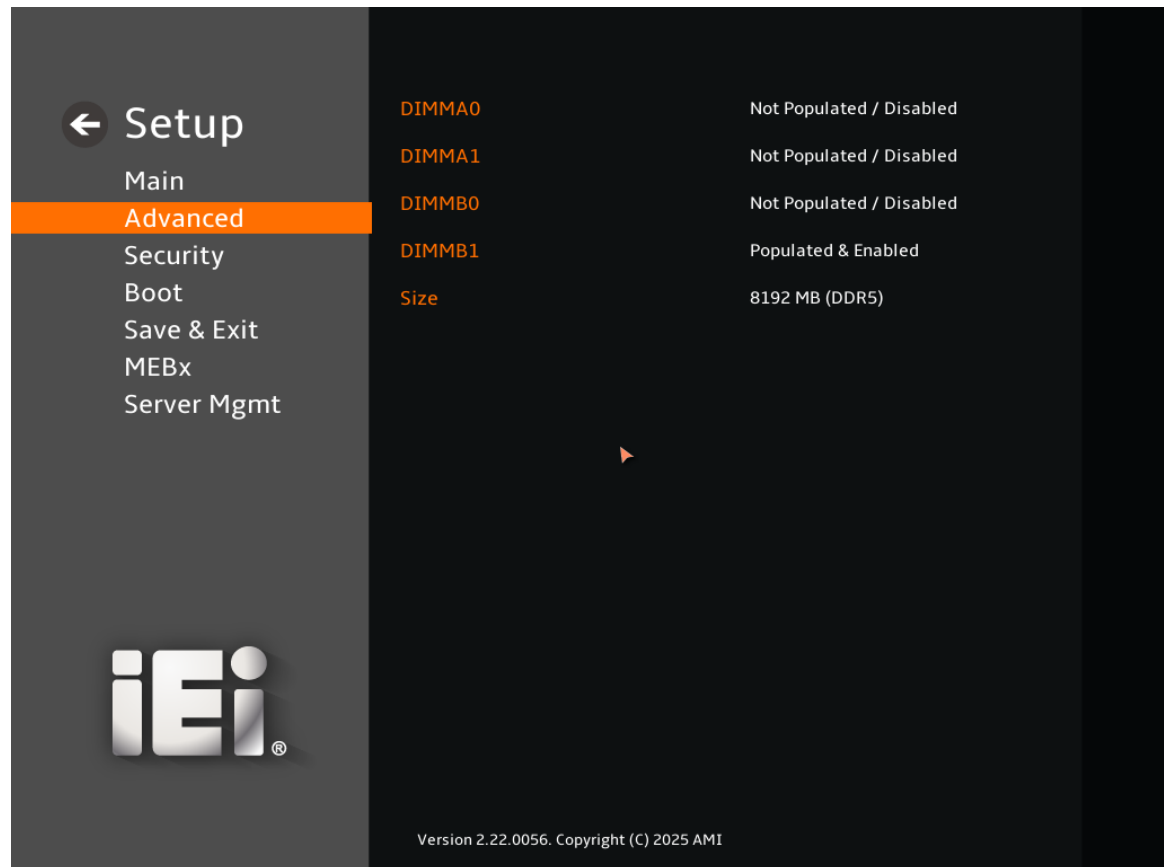
## IMBA-ARL-W880 ATX Motherboard

- 10 GB
- 12 GB
- 14 GB
- 16 GB
- 18 GB

## IMBA-ARL-W880 ATX Motherboard

## 5.3.2.2 Memory Configuration

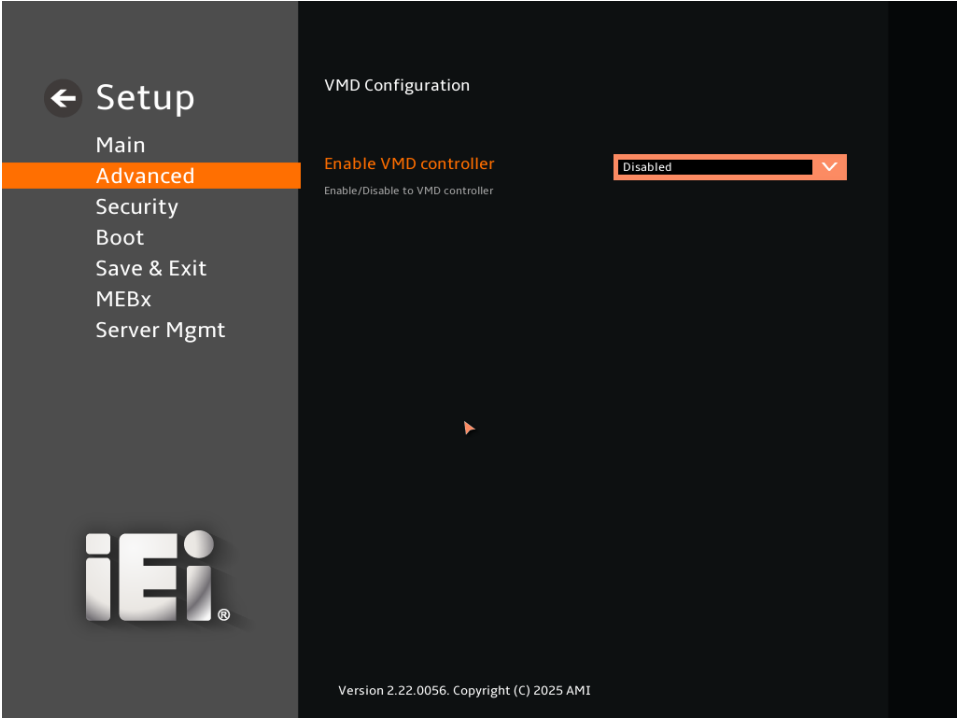
Use the **Memory Configuration** submenu (**BIOS Menu 11**) to view memory information.



BIOS Menu 11: Memory Configuration



5.3.2.3 VMD Configuration



BIOS Menu 12: VMD Configuration

➔ Enable VMD controller [Disabled]

Use the **Enable VMD controller** option to enable or disable VMD controller.

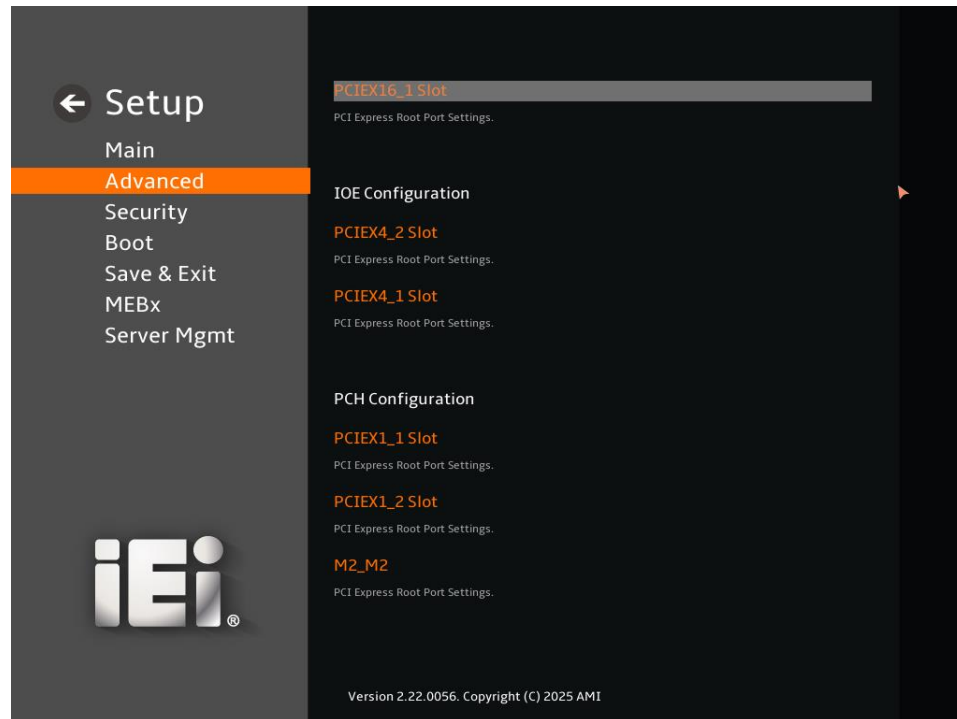
- |   |                 |                |                         |
|---|-----------------|----------------|-------------------------|
| ➔ | <b>Disabled</b> | <b>Default</b> | Disable VMD controller. |
| ➔ | <b>Enabled</b>  |                | Enable VMD controller.  |



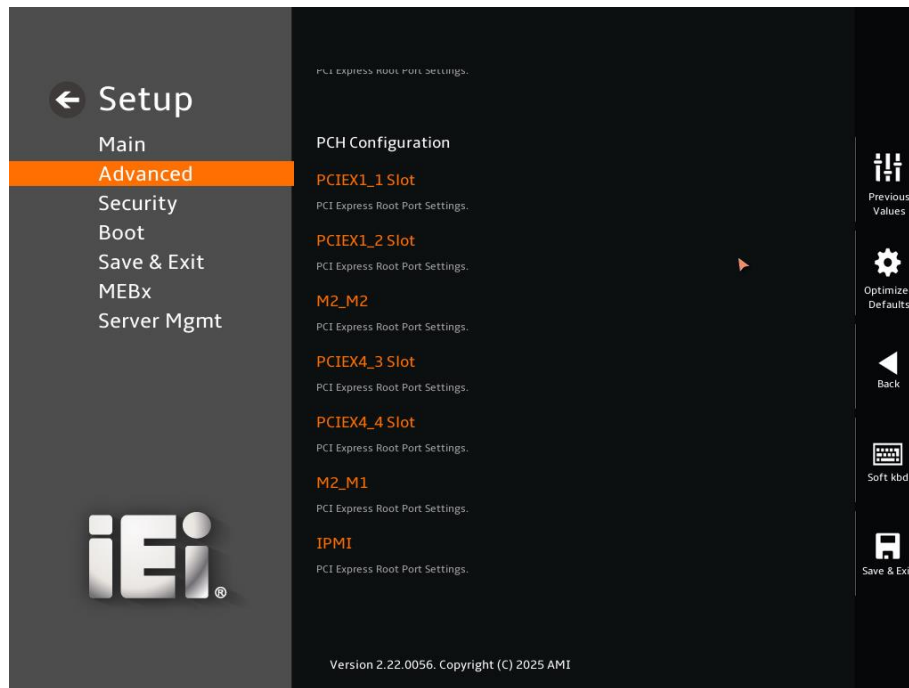
## IMBA-ARL-W880 ATX Motherboard

### 5.3.3 PCI Express Configuration

Use the **PCI Express Configuration** submenu (**BIOS Menu 13**) to configure the PCI Express slots.



**BIOS Menu 13: PCI Express Configuration (1/2)**

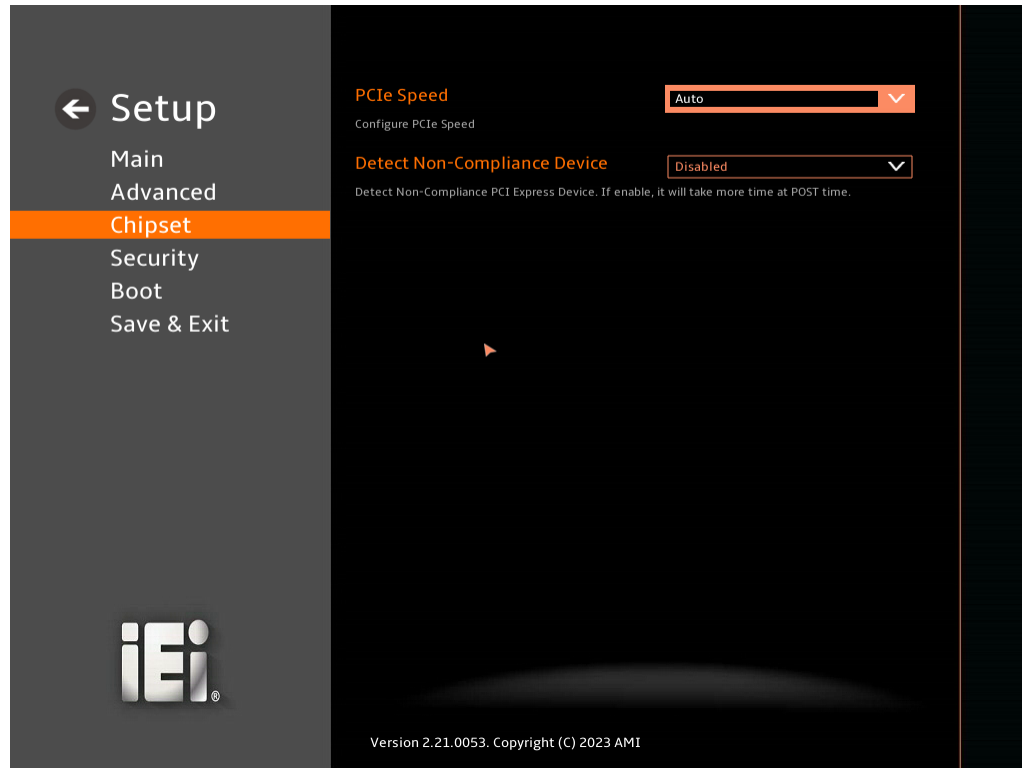


**BIOS Menu 14: PCI Express Configuration (2/2)**

### 5.3.3.1 PCIe Root Port Setting

Use the **M2\_M1**, **PCIEX16\_1**, **PCIEX4\_2**, **PCIEX4\_1**, **PCIEX1\_1**, **PCIEX1\_2**, **M2\_M2**, **IPMI** submenu (**BIOS Menu 15**) to configure the PCI Root Port Setting.

## IMBA-ARL-W880 ATX Motherboard



## BIOS Menu 15: PCIe Slot Configuration Submenu

## → PCIe Speed [Auto]

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

- |   |             |                |                               |
|---|-------------|----------------|-------------------------------|
| → | <b>Auto</b> | <b>DEFAULT</b> | Auto mode.                    |
| → | <b>Gen1</b> |                | Configure PCIe Speed to Gen1. |
| → | <b>Gen2</b> |                | Configure PCIe Speed to Gen2. |
| → | <b>Gen3</b> |                | Configure PCIe Speed to Gen3. |

## → 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.

- |   |                 |                |                                                                                            |
|---|-----------------|----------------|--------------------------------------------------------------------------------------------|
| → | <b>Disabled</b> | <b>DEFAULT</b> | Do not detect if a non-compliance PCI Express device is connected to the PCI Express port. |
|---|-----------------|----------------|--------------------------------------------------------------------------------------------|

## IMBA-ARL-W880 ATX Motherboard

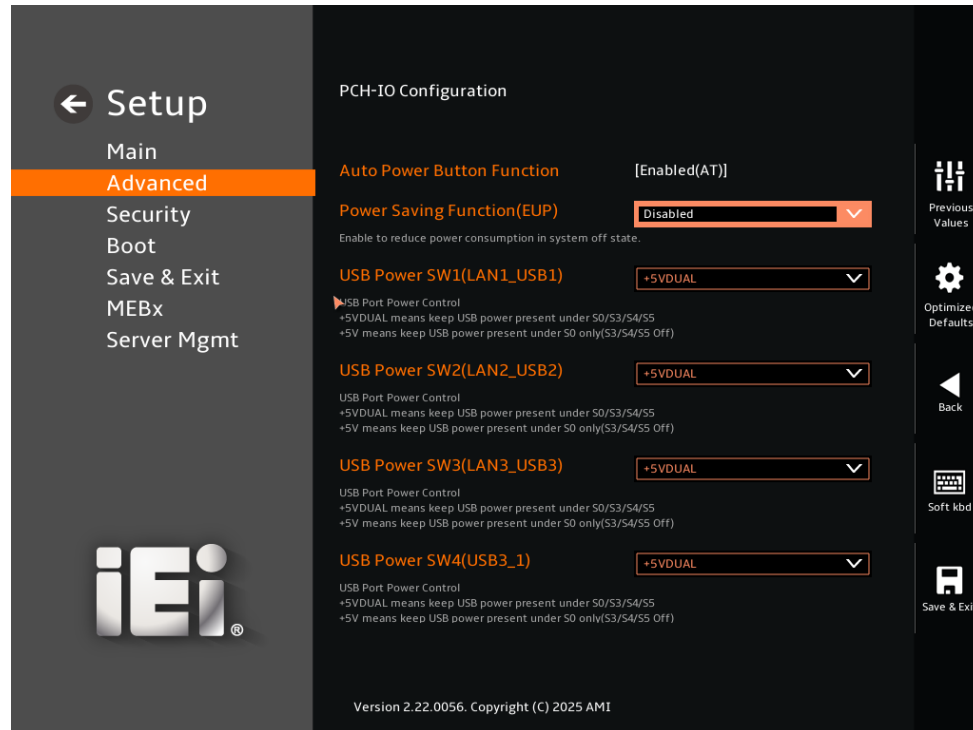
➔ **Enabled**

Detect if a non-compliance PCI Express device is connected to the PCI Express port.

## IMBA-ARL-W880 ATX Motherboard

## 5.3.4 PCH-IO Configuration

Use the **PCH-IO Configuration** menu (**BIOS Menu 16**) to configure the PCH parameters.



## BIOS Menu 16: PCH-IO Configuration (1/2)



BIOS Menu 17: 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.

➔ 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.



## IMBA-ARL-W880 ATX Motherboard

### → USB Power Control [+5VDUAL]

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

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

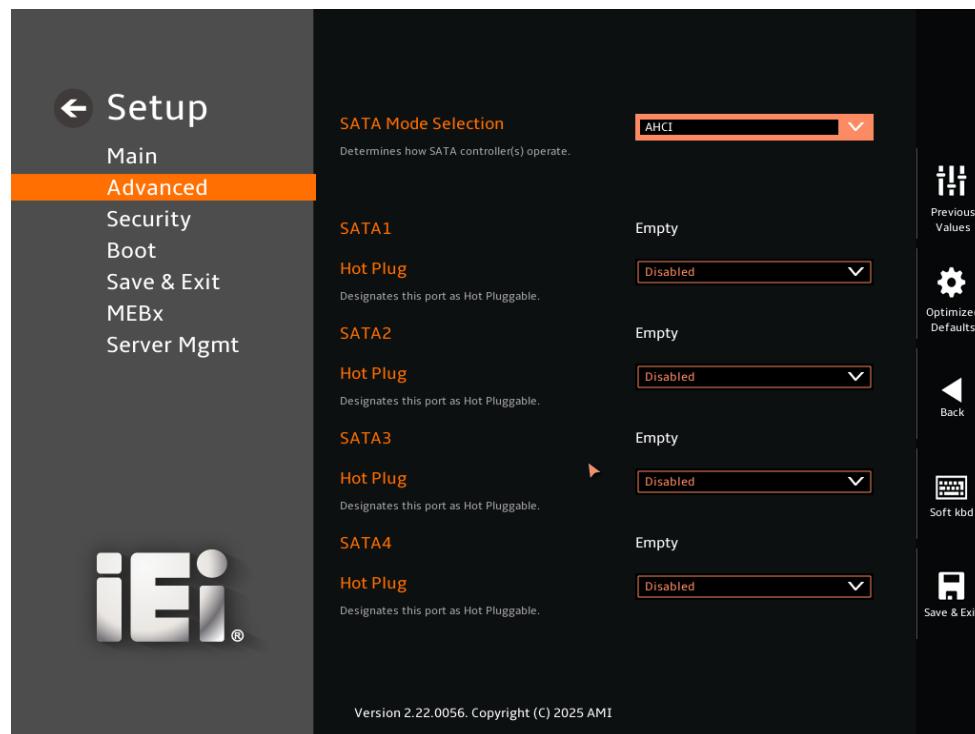
### → ME OVERRIDE [Disabled]

Use the **ME OVERRIDE** BIOS option to enable me override.

- **Disabled**      **DEFAULT**      The me override is disabled
- **Enabled**      The me override is enabled

### 5.3.4.1 SATA Configuration

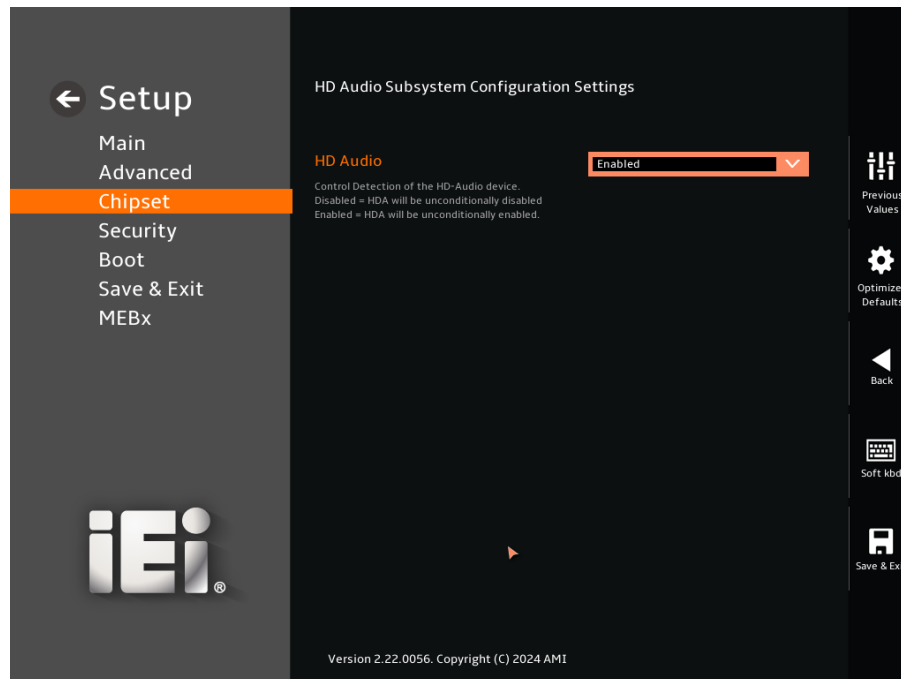
Use the **SATA Configuration** menu (**BIOS Menu 18**) to change and/or set the configuration of the SATA devices installed in the system.



**BIOS Menu 18: SATA Configuration**

### 5.3.4.2 HD Audio Configuration

Use the **HD Audio Configuration** menu (**BIOS Menu 19**) to configure the PCH Azalia settings.



### BIOS Menu 19: HD Audio Configuration

#### → HD Audio [Enabled]

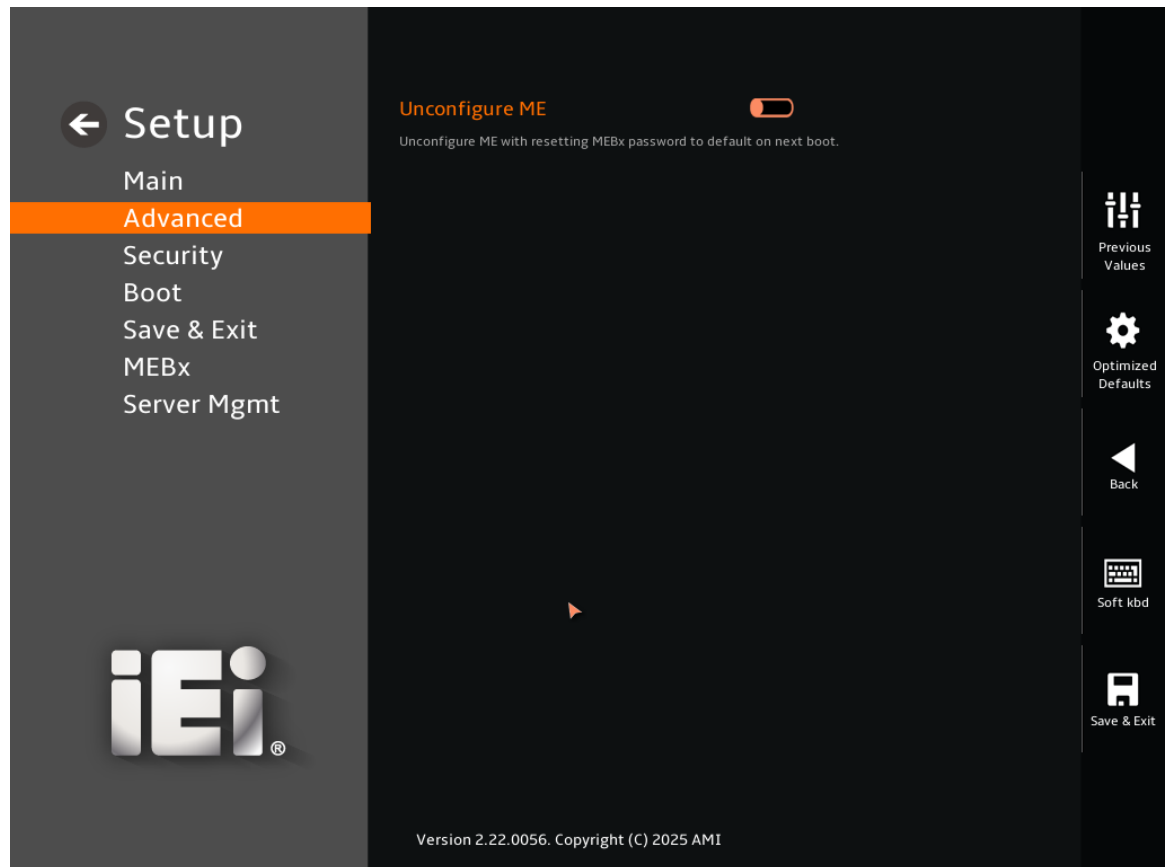
Use the **HD Audio** option to enable or disable the High Definition Audio controller.

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

## IMBA-ARL-W880 ATX Motherboard

### 5.3.5 AMT Configuration

Use the **AMT Configuration** menu (**BIOS Menu 21**) to configure ME with resetting MEBx password.

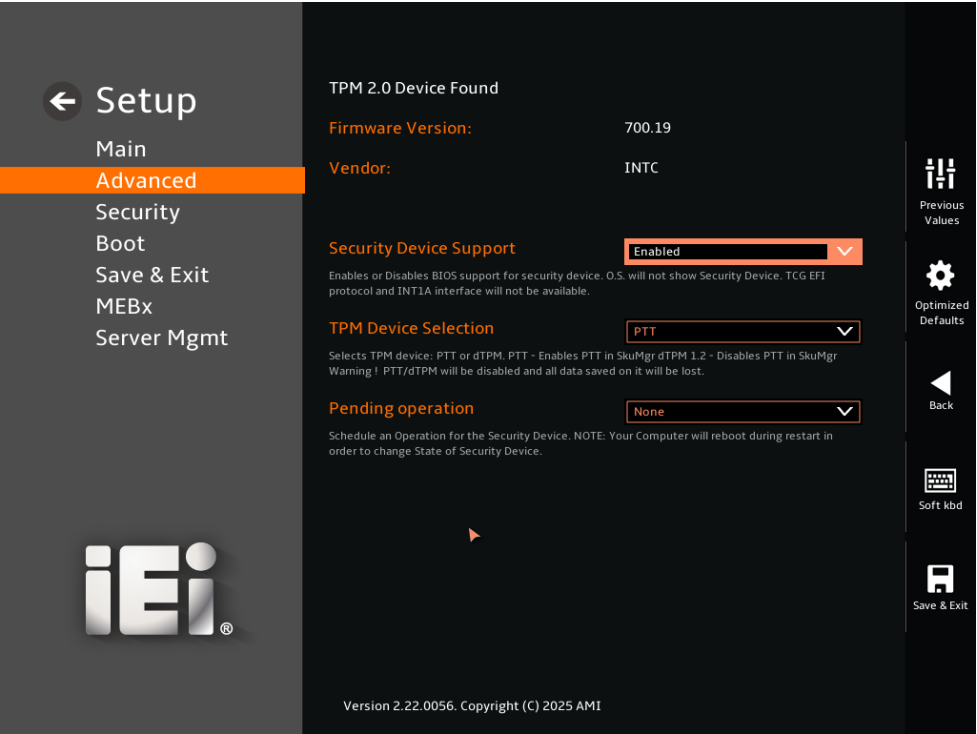


### BIOS Menu 20: AMT Configuration



5.3.6 Trusted Computing

Use the **Trusted Computing** menu (**BIOS Menu 21**) to configure settings related to the Trusted Computing Group (TCG) Trusted Platform Module (TPM).



BIOS Menu 21: PCH-FW Configuration

➔ **Security Device Support [Enabled]**

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

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

➔ **Pending Operation [None]**

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

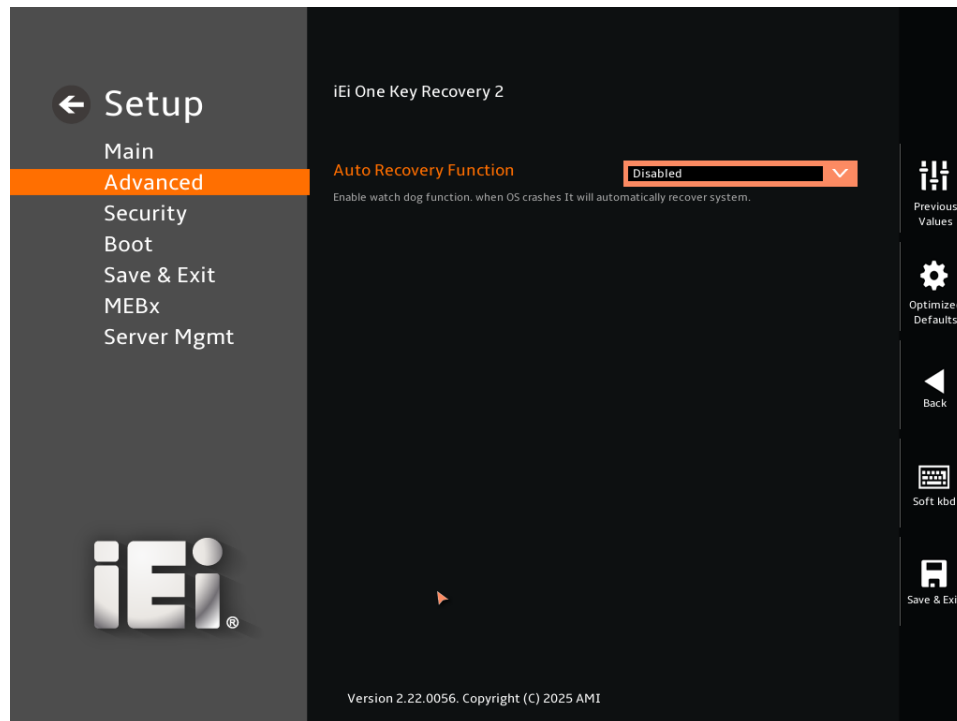
- ➔ **None**                                          **DEFAULT**                          TPM information is previous.S
- ➔ **TPM Clear**                                          TPM information is cleared



## IMBA-ARL-W880 ATX Motherboard

## 5.3.7 iEi One Key Recovery 2

Use the **iEi One Key Recovery 2** menu (**BIOS Menu 21**) to enable watch dog function.  
When OS crashes, it will automatically recover system.



## BIOS Menu 22: iEi One Key Recovery 2 Configuration

## ➔ Auto Recovery Function [Disable]

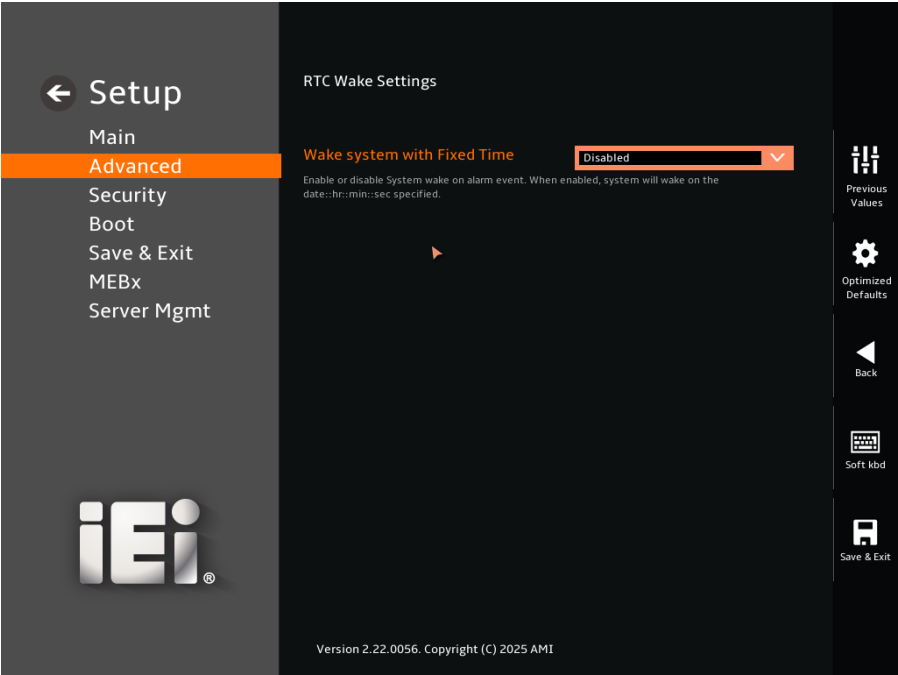
Use the **Auto Recovery Function** option to enable watch dog function

- ➔ **Disable**    **DEFAULT**                      Watch dog function is disabled.
- ➔ **Enable**                                      Watch dog function is enabled.

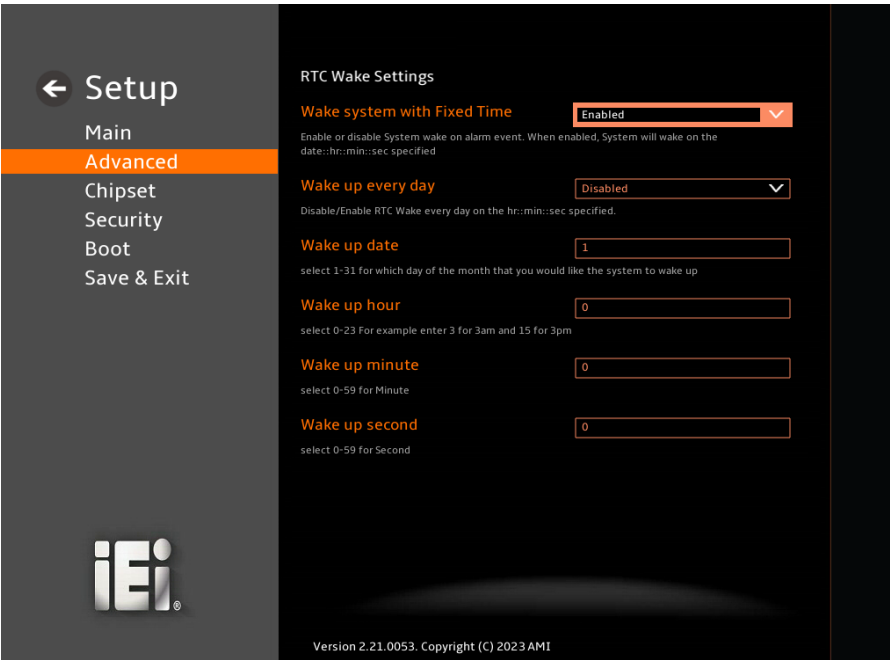


5.3.8 RTC Wake Settings

The **RTC Wake Settings** menu (**BIOS Menu 23**) configures RTC wake event.



BIOS Menu 23: RTC Wake Settings (1/2)



BIOS Menu 24: RTC Wake Settings (2/2)



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### → Wake system with Fixed Time [Enabled]

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

#### → Disabled

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

#### → Enabled      DEFAULT

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

Wake up date

Wake up hour

Wake up minute

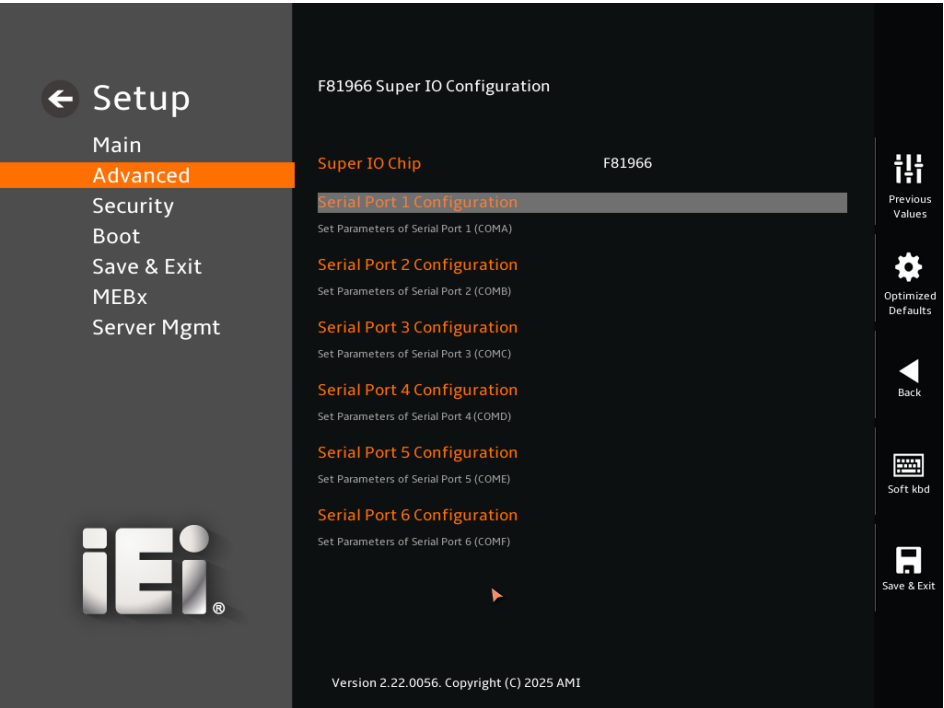
Wake up second

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



5.3.9 F81966 Super IO Configuration

Use the **F81966 Super IO Configuration** menu (**BIOS Menu 25**) to set or change the configurations for serial ports.



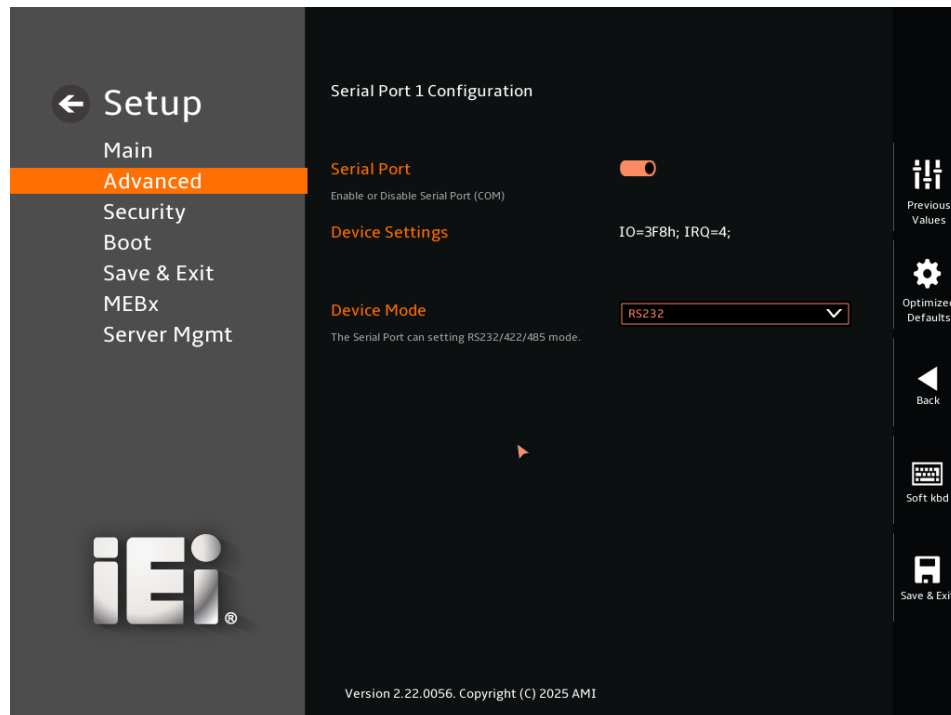
BIOS Menu 25: F81966 Super IO Configuration



## IMBA-ARL-W880 ATX Motherboard

## 5.3.9.1 Serial Port 1 Configuration

Use the **Serial Port 1 Configuration** menu (**BIOS Menu 26**) to configure the serial port n.



## BIOS Menu 26: Serial Port 1 Configuration Menu

## ➔ Serial Port [Enabled]

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

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

## ➔ Device Settings

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

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

## ➔ Device Mode [RS232]

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

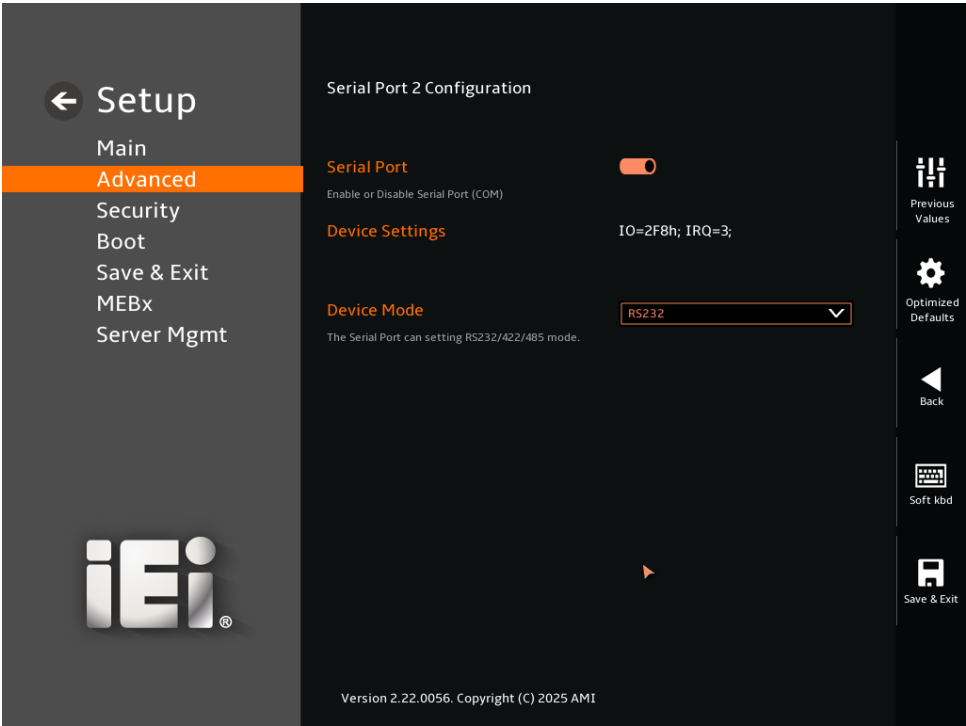


IMBA-ARL-W880 ATX Motherboard

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

5.3.9.2 Serial Port 2 Configuration

Use the **Serial Port 2 Configuration** menu (**BIOS Menu 27**) to configure the serial port n.



BIOS Menu 27: Serial Port 2 Configuration Menu

➔ **Serial Port [Enabled]**

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

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

➔ **Device Settings**

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



## IMBA-ARL-W880 ATX Motherboard

→ **IO=2F8h;  
IRQ=3**

Serial Port I/O port address is 2F8h and the interrupt address is IRQ3

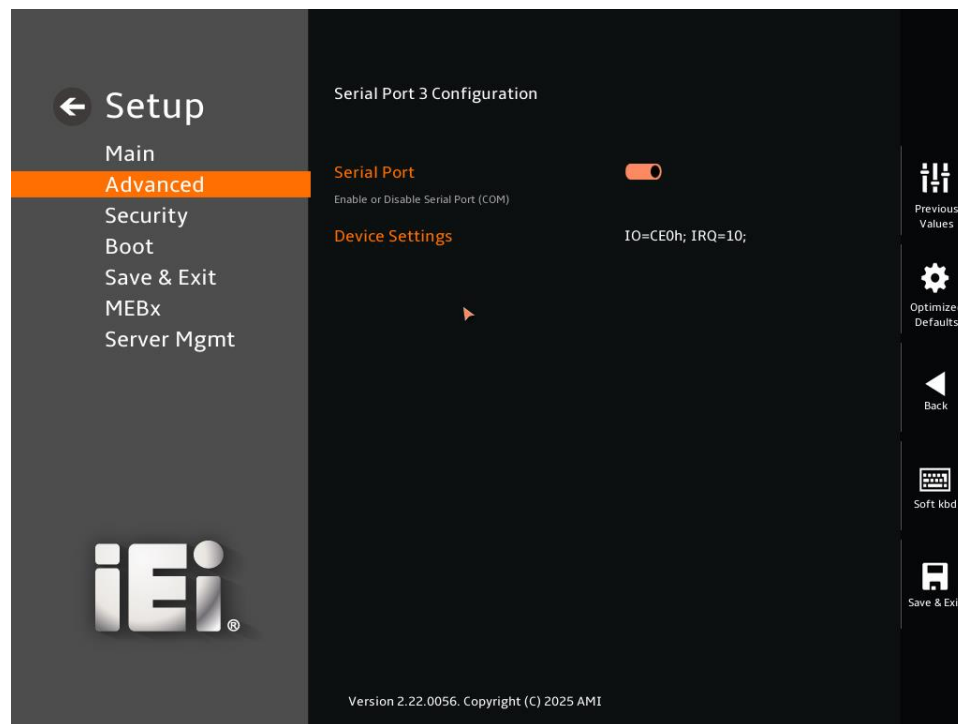
### → **Device Mode [RS232]**

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

|                            |                |                                |
|----------------------------|----------------|--------------------------------|
| → <b>RS232</b>             | <b>DEFAULT</b> | The serial port mode is RS-232 |
| <b>RS422 with Register</b> |                | The serial port mode is RS-422 |
| <b>RS485 with Register</b> |                | The serial port mode is RS-485 |

### 5.3.9.3 Serial Port 3 Configuration

Use the **Serial Port 3 Configuration** menu (**BIOS Menu 28**) to configure the serial port 3.



**BIOS Menu 28: Serial Port 3 Configuration Menu**

### → **Serial Port [Enabled]**

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

→ **Disabled**

Disable the serial port



➔ Enabled      DEFAULT      Enable the serial port

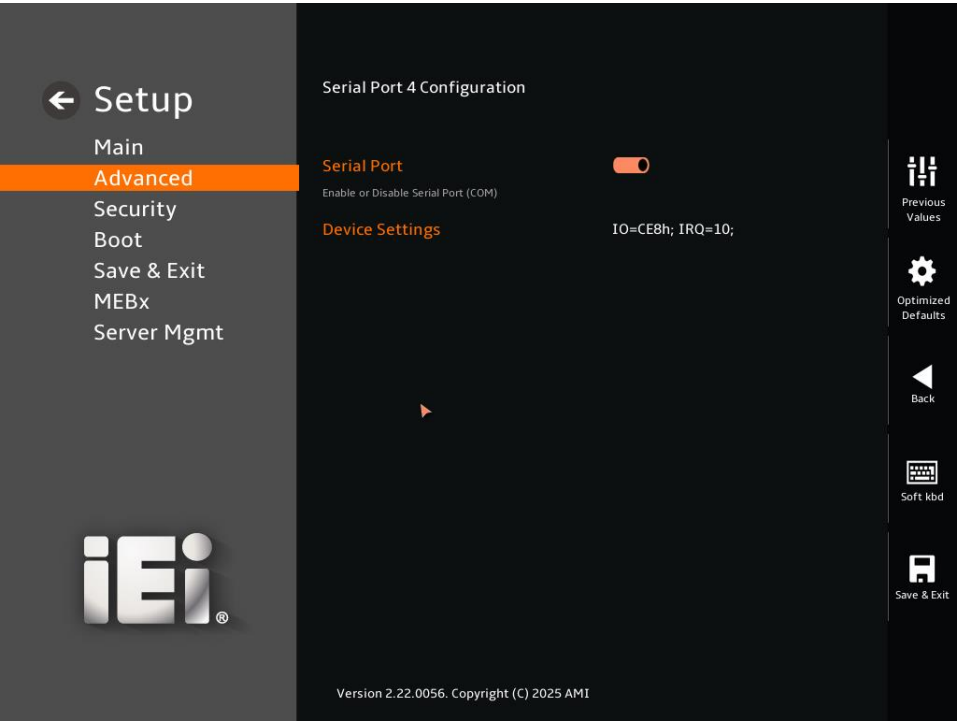
➔ Device Settings

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

➔ IO=CE0h;      Serial Port I/O port address is 2E0h and the interrupt  
    IRQ=10      address is IRQ10

5.3.9.4 Serial Port 4 Configuration

Use the **Serial Port 4 Configuration** menu (**BIOS Menu 29**) to configure the serial port 4.



BIOS Menu 29: 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



## IMBA-ARL-W880 ATX Motherboard

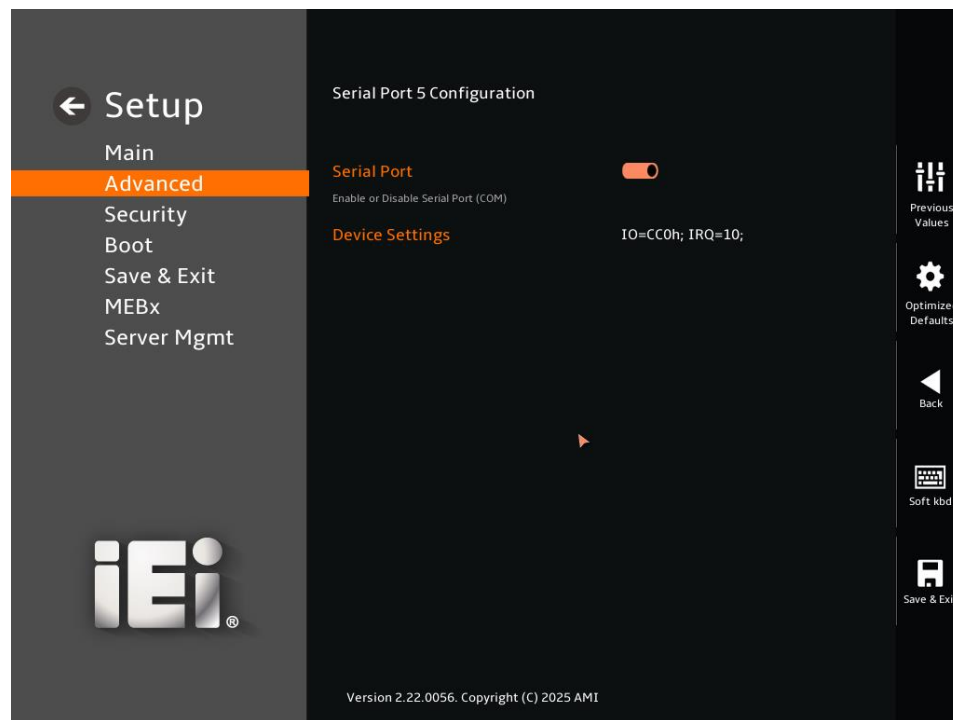
### → Device Settings

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

- |   |                 |                                                        |
|---|-----------------|--------------------------------------------------------|
| → | <b>IO=CE8h;</b> | Serial Port I/O port address is 2E8h and the interrupt |
|   | <b>IRQ=10</b>   | address is IRQ10                                       |

### 5.3.9.5 Serial Port 5 Configuration

Use the **Serial Port 5 Configuration** menu (**BIOS Menu 30**) to configure the serial port 5.



#### BIOS Menu 30: Serial Port 5 Configuration Menu

### → Serial Port [Enabled]

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

- |   |                 |                                       |
|---|-----------------|---------------------------------------|
| → | <b>Disabled</b> | Disable the serial port               |
| → | <b>Enabled</b>  | <b>DEFAULT</b> Enable the serial port |

### → Device Settings

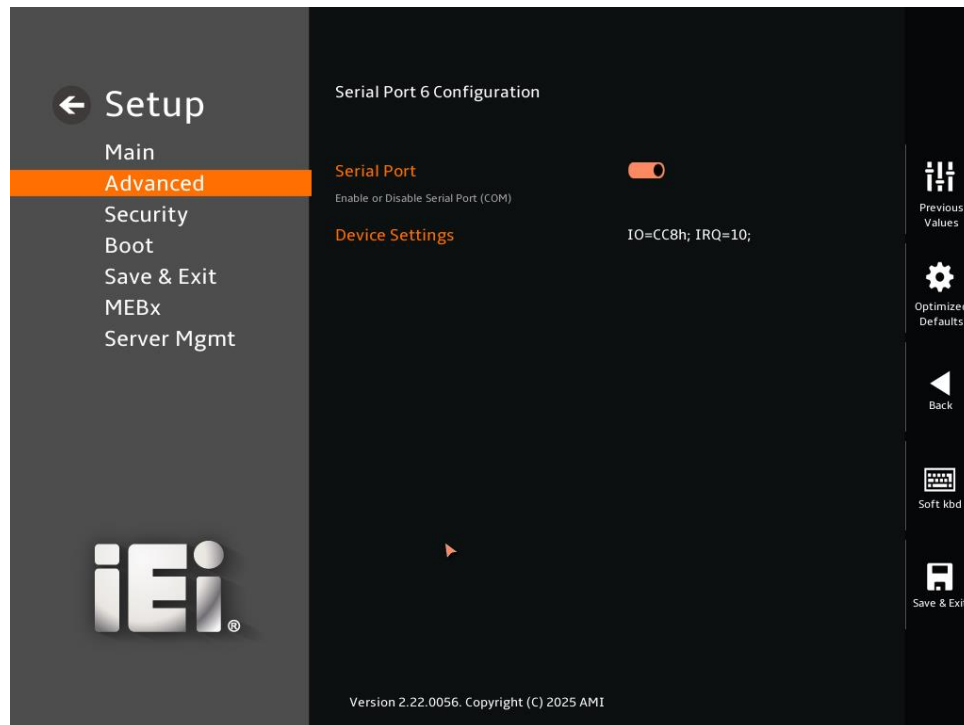
The **Device Settings** option shows the serial port IO port address and interrupt address.

➔ **IO=CC0h;**  
**IRQ=10**

Serial Port I/O port address is 2C0h and the interrupt address is IRQ10

### 5.3.9.6 Serial Port 6 Configuration

Use the **Serial Port 6 Configuration** menu (**BIOS Menu 31**) to configure the serial port 6.



#### BIOS Menu 31: Serial Port 6 Configuration Menu

##### ➔ **Serial Port [Enabled]**

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

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

##### ➔ **Device Settings**

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

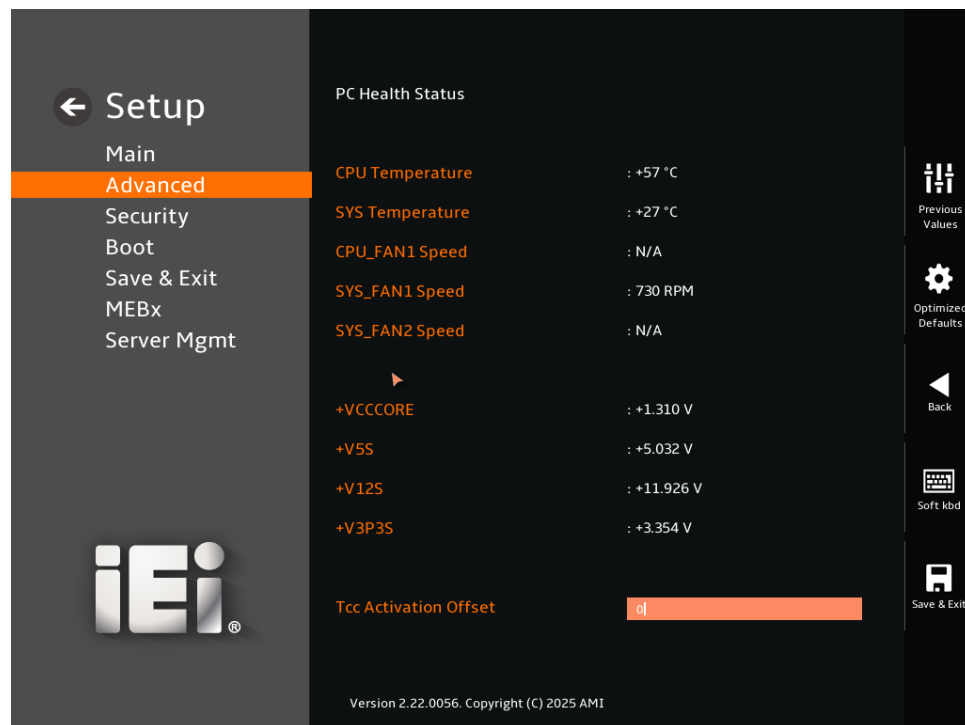
## IMBA-ARL-W880 ATX Motherboard

➔ IO=CC8h;  
IRQ=10

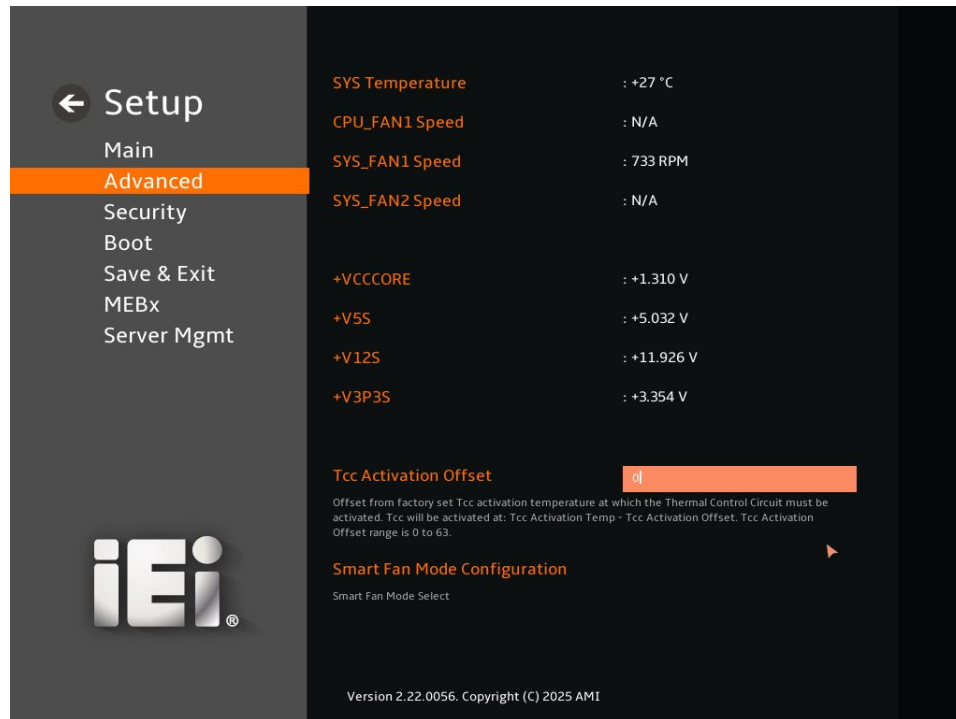
Serial Port I/O port address is 2C8h and the interrupt address is IRQ10

### 5.3.10 EC ITE5571 Monitor

The **EC ITE5571 Monitor** menu (**BIOS Menu 32**) 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 32: EC KB9068 H/W Monitor (1/2)



### BIOS Menu 33: EC KB9068 H/W Monitor (2/2)

#### → PC Health Status

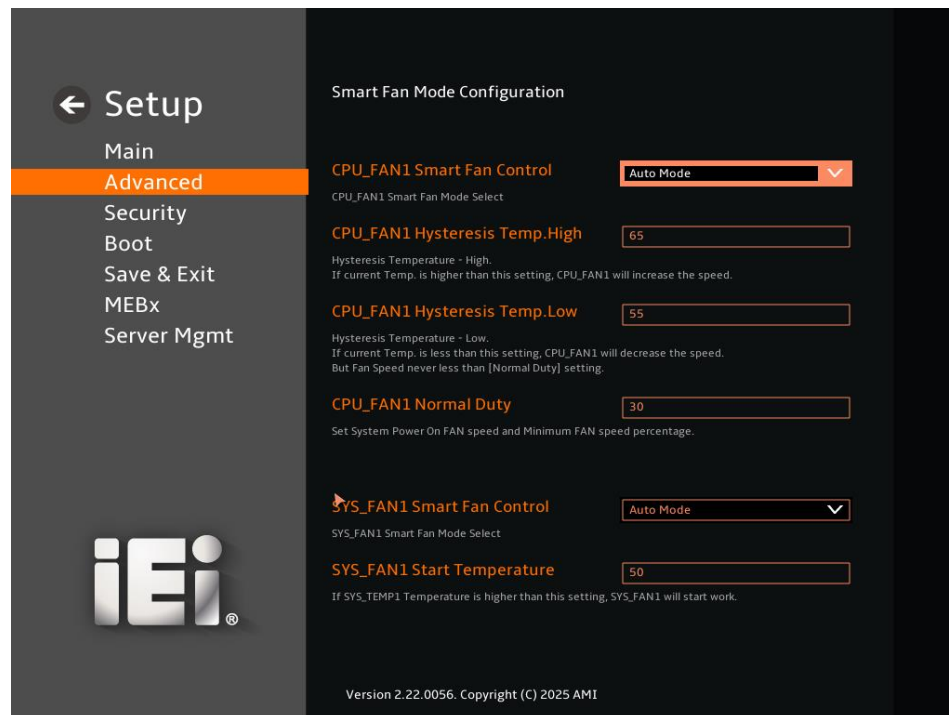
The following system parameters and values are shown. The system parameters that are monitored are:

- System Temperatures:
  - CPU Temperature
  - System Temperature
- Fan Speeds:
  - CPU\_Fan1 Speed
  - SYS\_Fan1 Speed
  - SYS\_Fan2 Speed
- Voltages:
  - VCCCORE
  - +V5S
  - V12S
  - V3P3S

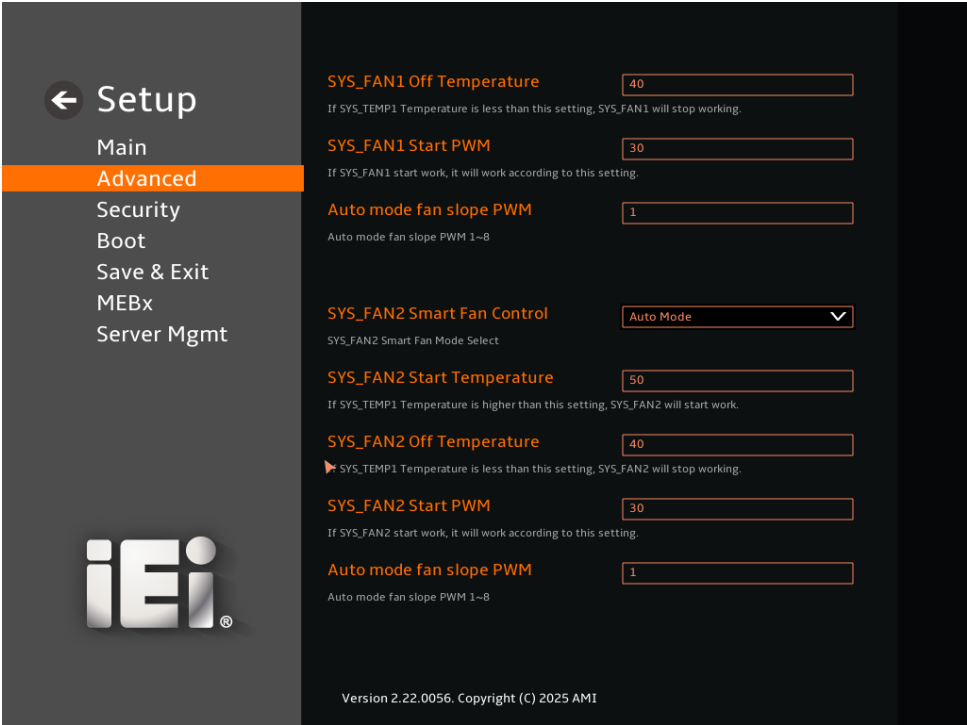
## IMBA-ARL-W880 ATX Motherboard

## 5.3.10.1 Smart Fan Mode Configuration

Use the **Smart Fan Mode Configuration** submenu (**BIOS Menu 34**) to configure the CPU/system fan start/off temperature and control mode.



BIOS Menu 34: Smart Fan Mode Configuration (1/2)



BIOS Menu 35: 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.

→ CPU\_FAN1 Hysteresis Temp.High [65]

If the current CPU temperature is higher than this setting, CPU\_FAN1 will increase the speed.

→ CPU\_FAN1 Hysteresis Temp.Low [55]

If the current CPU temperature is lower than this setting, CPU\_FAN1 will decrease the speed. But fan speed never less than [Normal Duty] setting.



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### → CPU\_FAN1 Normal Duty [30]

Use the **CPU\_FAN1 Start PWM** option to set the system power on fan speed and minimum fan speed percentage. Use the + or – key to change the value or enter a decimal number .

### → SYS\_FAN1 Smart Fan Control [Auto Mode]

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

- |   |                                 |                                                         |
|---|---------------------------------|---------------------------------------------------------|
| → | <b>Manual Mode</b>              | The fan spins at the speed set in Manual Mode settings. |
| → | <b>Auto Mode</b> <b>DEFAULT</b> | The fan adjusts its speed using Auto Mode settings.     |

### → SYS\_FAN1 Start Temperature [50]

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 [40]

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 [30]

Use the **SYS\_FAN1 Start PWM** option to set the PWM start value. Use the + or – key to change the value or enter a decimal number between 1 and 100.

### → Auto mode fan slop PWM [1]

Use the **Auto mode fan slop PWM** option to set the PWM start value. Use the + or – key to change the value or enter a decimal number between 1 and 8.

### → SYS\_FAN2 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\_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.

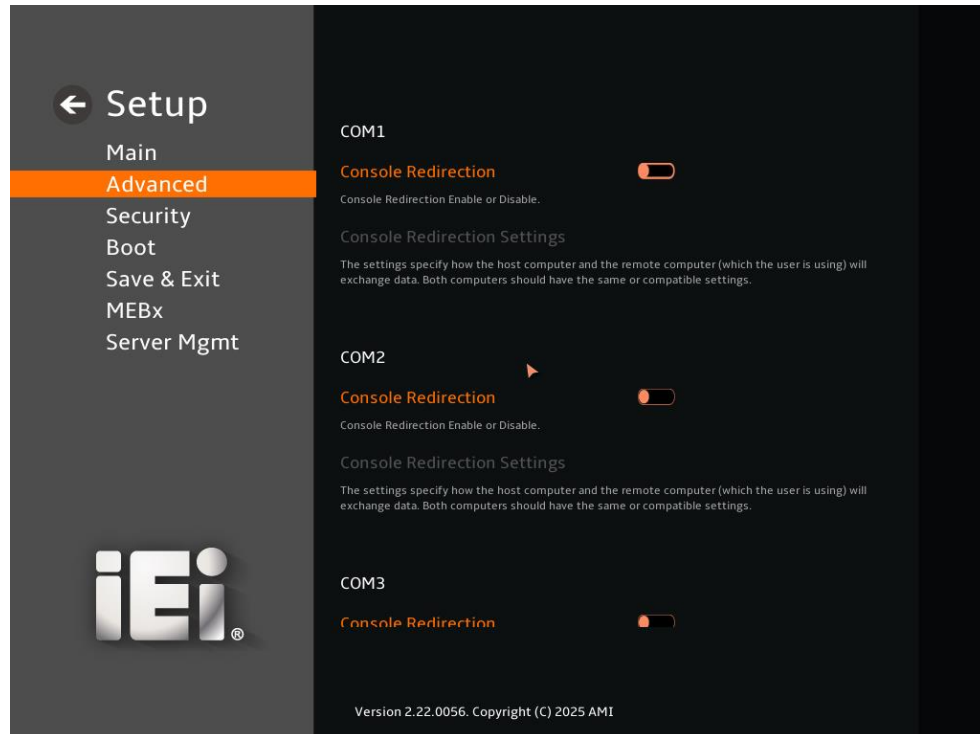
➔ **SYS\_FAN2 Start PWM**

Use the **SYS\_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.

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### 5.3.11 Serial Port Console Redirection

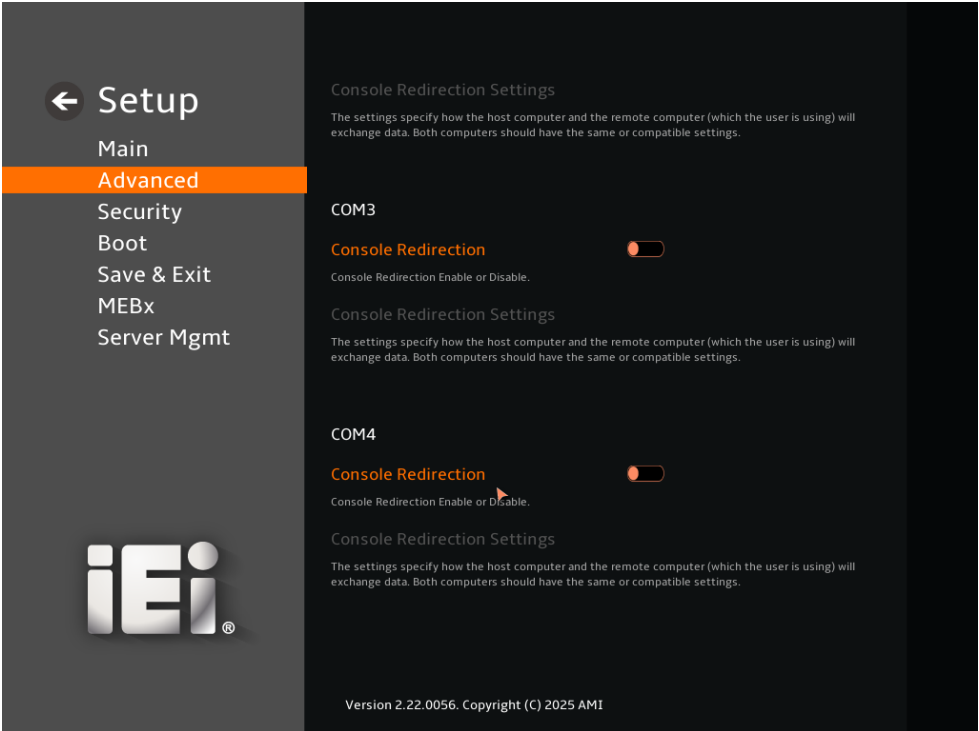
The **Serial Port Console Redirection** menu (**BIOS Menu 36 & BIOS Menu 37**) allows the console redirection options to be configured. Console Redirection allows users to maintain a system remotely by re-directing keyboard input and text output through the serial port.



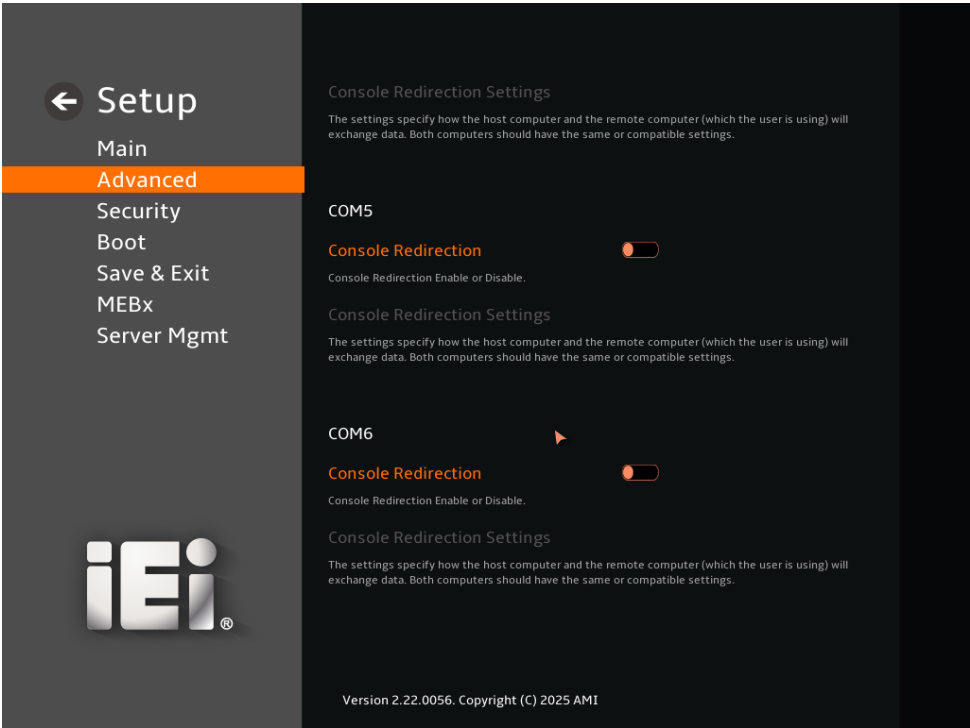
**BIOS Menu 36: Serial Port Console Redirection (1/4)**



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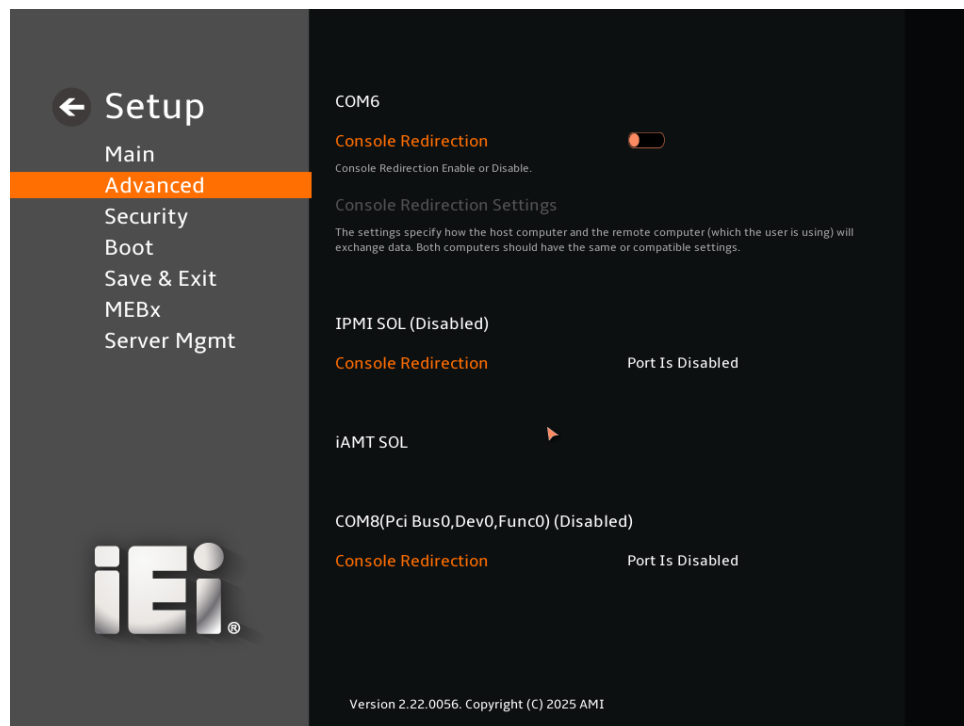
BIOS Menu 37: Serial Port Console Redirection (2/4)



BIOS Menu 38: Serial Port Console Redirection (3/4)



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## BIOS Menu 39: Serial Port Console Redirection (4/4)

## ➔ Console Redirection [Disabled]

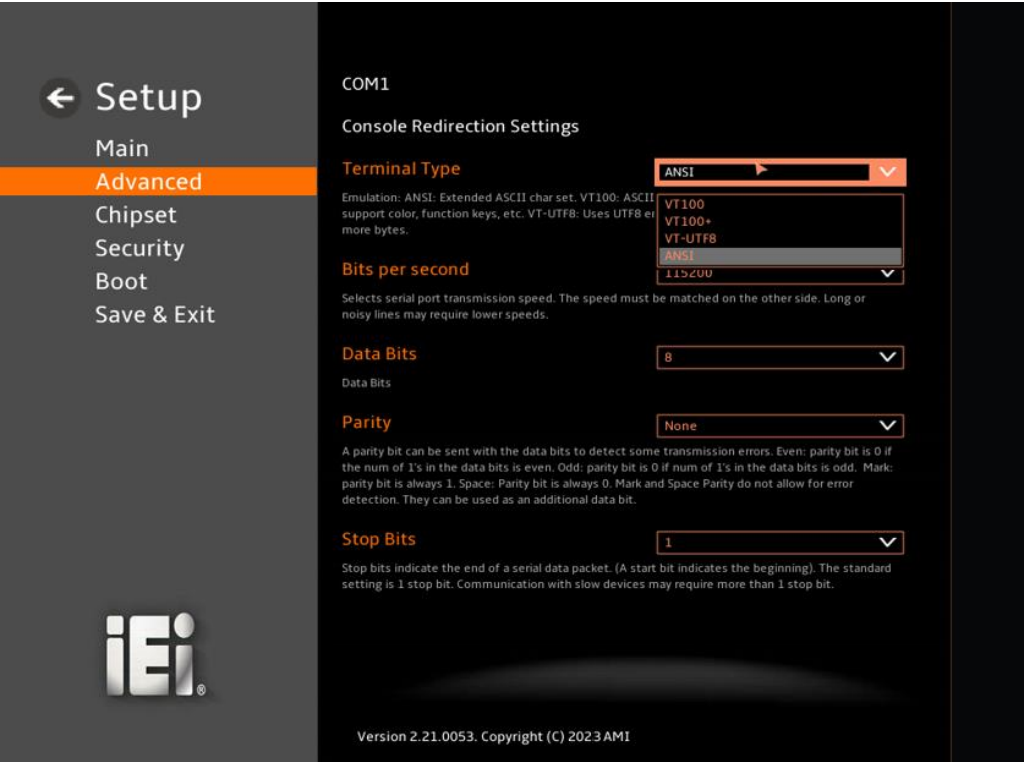
Use **Console Redirection** option to enable or disable the console redirection function.

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

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

### 5.3.11.1 Console Redirection Settings

The following options are available in the **Console Redirection Settings** submenu (**BIOS Menu 40**) when the **COM Console Redirection** (for COM1 to COM6) option is enabled.



#### BIOS Menu 40: COM Console Redirection Settings

##### → Terminal Type [ANSI]

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

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

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### → Bits per second [115200]

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

|   |        |         |                                                    |
|---|--------|---------|----------------------------------------------------|
| → | 9600   |         | Sets the serial port transmission speed at 9600.   |
| → | 19200  |         | Sets the serial port transmission speed at 19200.  |
| → | 38400  |         | Sets the serial port transmission speed at 38400.  |
| → | 57600  |         | Sets the serial port transmission speed at 57600.  |
| → | 115200 | DEFAULT | Sets the serial port transmission speed at 115200. |

### → Data Bits [8]

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

|   |   |         |                          |
|---|---|---------|--------------------------|
| → | 7 |         | Sets the data bits at 7. |
| → | 8 | DEFAULT | Sets the data bits at 8. |

### → Parity [None]

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

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



➔ Stop Bits [1]

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

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

5.3.12 NVMe Configuration

Use the **NVMe Configuration (BIOS Menu 41)** menu to display the NVMe controller and device information.



BIOS Menu 41: NVMe Configuration



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## 5.4 Security

Use the **Security** menu (**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.

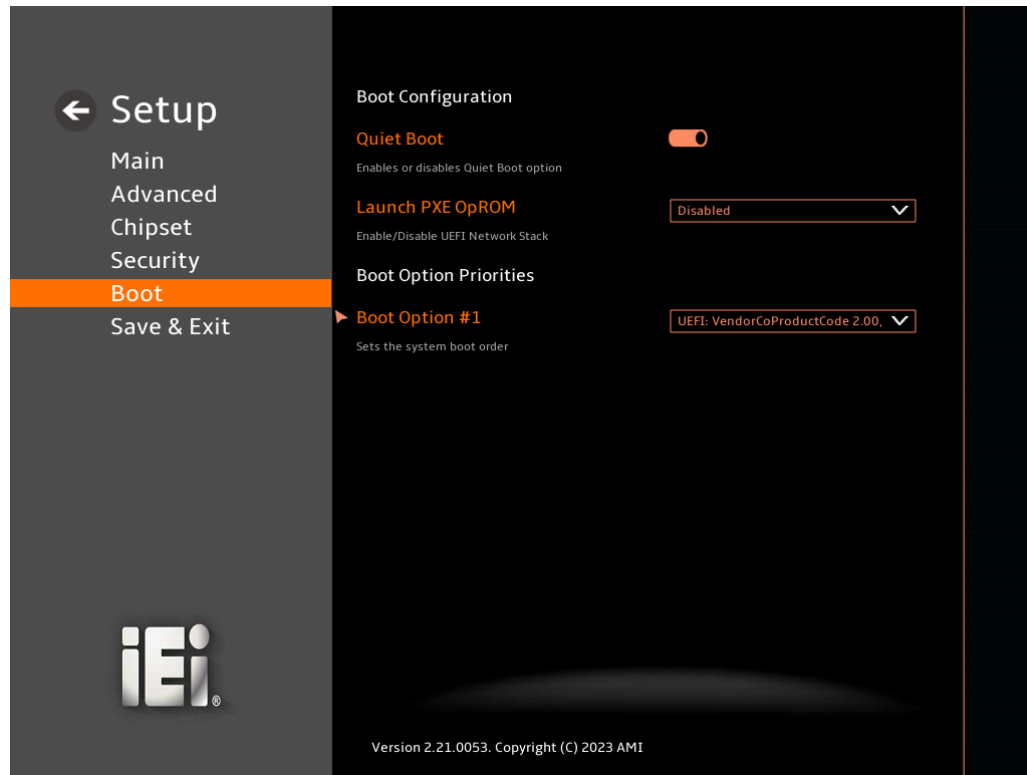
##### ➔ User Password

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

## IMBA-ARL-W880 ATX Motherboard

## 5.5 Boot

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



## BIOS Menu 44: Boot

## 5.5.1 Boot Configuration

## ➔ Quiet Boot [Enabled]

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

- ➔ **Disabled** Normal POST messages displayed
- ➔ **Enabled** **DEFAULT** OEM Logo displayed instead of POST messages

## ➔ Launch PXE OpROM [Disabled]

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



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

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

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

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

**5.5.2 Boot Option Priorities**

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

➔ **Boot Option #1**

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

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

➔ **Boot Option #2**

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

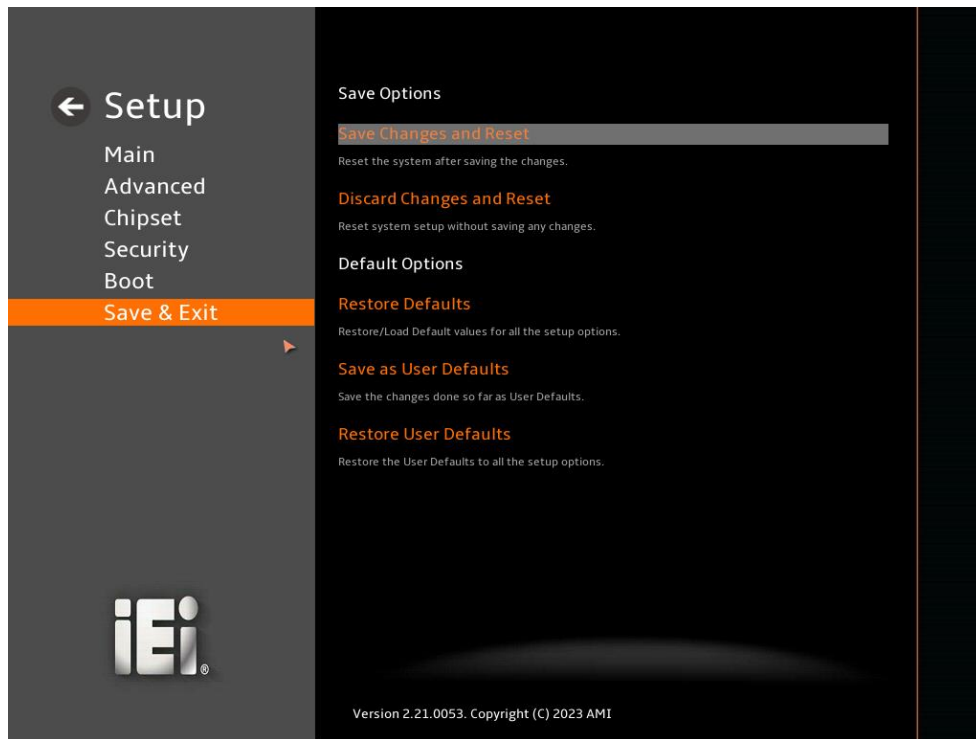
- ➔ UEFI: USB, Partition 1
- ➔ Disabled



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## 5.6 Save & Exit

Use the **Save & Exit** menu (**BIOS Menu 47**) 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**

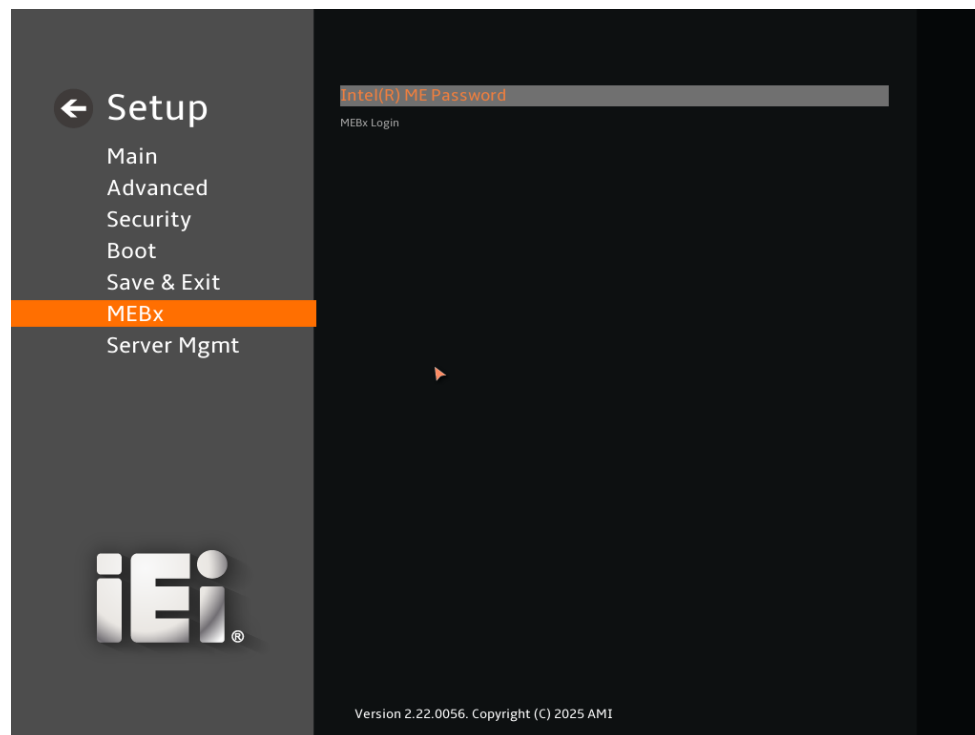
Use the **Save as User Defaults** option to save the changes done so far as user defaults.

➔ **Restore User Defaults**

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

## 5.7 MEBX

Use the **MEBX** menu (**BIOS Menu 47**) to login MEBx.

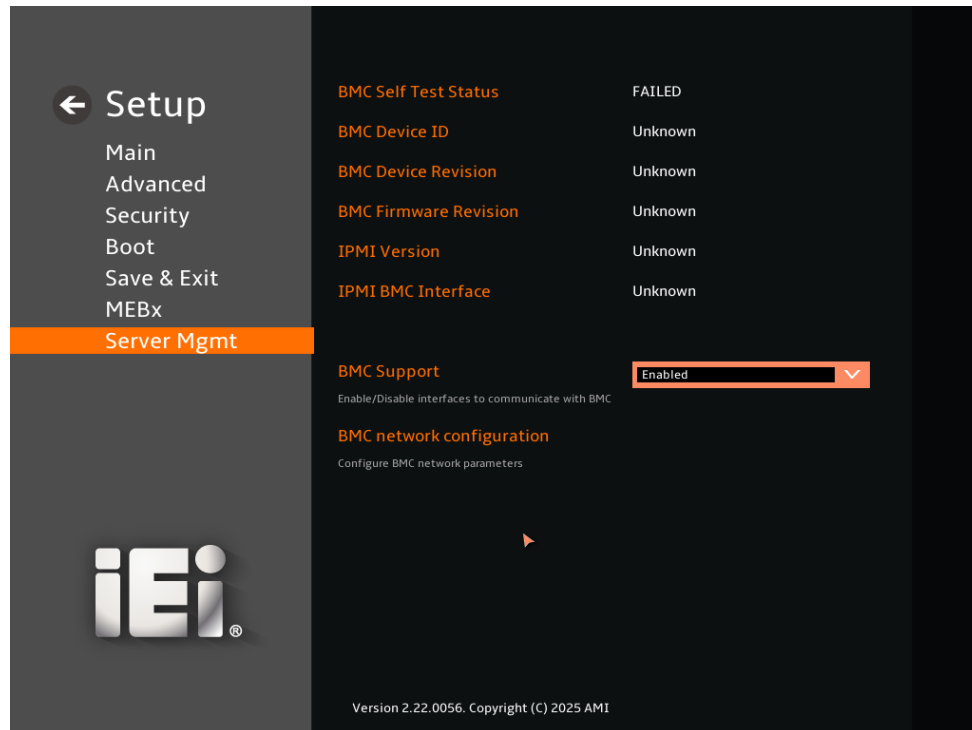


**BIOS Menu 46: MEBX**

## IMBA-ARL-W880 ATX Motherboard

## 5.8 Server Mgmt

Use the **Server Mgmt** menu (**BIOS Menu 47**) to communicate with BMC.



**BIOS Menu 47: Server Mgmt**

**Appendix**

**A**

# **Regulatory Compliance**

---

## IMBA-ARL-W880 ATX Motherboard

### 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

---

## IMBA-ARL-W880 ATX Motherboard

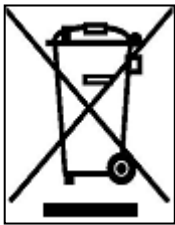


### CAUTION:

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

---

## IMBA-ARL-W880 ATX Motherboard

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

|                                                         |     |
|---------------------------------------------------------|-----|
| ➔ BIOS Information .....                                | 89  |
| ➔ Processor Information.....                            | 90  |
| ➔ PCH Information.....                                  | 90  |
| ➔ System Date [xx/xx/xx] .....                          | 90  |
| ➔ System Time [xx:xx:xx] .....                          | 90  |
| ➔ Intel(R) SpeedStep(tm) [Enabled].....                 | 94  |
| ➔ C states [Disabled].....                              | 94  |
| ➔ Turbo Mode [Enabled] .....                            | 95  |
| ➔ Intel (VMX) Virtualization Technology [Enabled] ..... | 95  |
| ➔ Active Performance Cores [All] .....                  | 95  |
| ➔ Active Efficient Cores [All] .....                    | 95  |
| ➔ Power Limit 1 [0] .....                               | 96  |
| ➔ Power Limit 1 Time Window [0] .....                   | 96  |
| ➔ Power Limit 2 [0] .....                               | 96  |
| ➔ Primary Display [Auto] .....                          | 98  |
| ➔ Internal Graphics [Enabled] .....                     | 99  |
| ➔ DVMT Pre-Allocated [128M] .....                       | 99  |
| ➔ Igfx Gsm2 [0GB] .....                                 | 99  |
| ➔ Enable VMD controller [Disabled] .....                | 102 |
| ➔ PCIe Speed [Auto].....                                | 105 |
| ➔ Detect Non-Compliance Device [Disabled] .....         | 105 |
| ➔ Auto Power Button Function [Disabled (ATX)] .....     | 108 |
| ➔ Power Saving Function (EUP) [Disabled] .....          | 108 |
| ➔ USB Power Control [+5VDUAL] .....                     | 109 |
| ➔ ME OVERRIDE [Disabled] .....                          | 109 |
| ➔ HD Audio [Enabled] .....                              | 110 |
| ➔ Security Device Support [Enabled] .....               | 112 |
| ➔ Pending Operation [None] .....                        | 112 |
| ➔ Auto Recovery Function [Disablde] .....               | 113 |
| ➔ Wake system with Fixed Time [Enabled].....            | 115 |
| ➔ Serial Port [Enabled].....                            | 117 |
| ➔ Device Settings .....                                 | 117 |
| ➔ Device Mode [RS232].....                              | 117 |

|                                                |     |
|------------------------------------------------|-----|
| ➔ Serial Port [Enabled].....                   | 118 |
| ➔ Device Settings .....                        | 118 |
| ➔ Device Mode [RS232].....                     | 119 |
| ➔ Serial Port [Enabled].....                   | 119 |
| ➔ Device Settings .....                        | 120 |
| ➔ Serial Port [Enabled].....                   | 120 |
| ➔ Device Settings .....                        | 121 |
| ➔ Serial Port [Enabled].....                   | 121 |
| ➔ Device Settings .....                        | 121 |
| ➔ Serial Port [Enabled].....                   | 122 |
| ➔ Device Settings .....                        | 122 |
| ➔ PC Health Status .....                       | 124 |
| ➔ CPU_FAN1 Smart Fan Control [Auto Mode] ..... | 126 |
| ➔ CPU_FAN1 Hysteresis Temp.High [65].....      | 126 |
| ➔ CPU_FAN1 Hysteresis Temp.Low [55] .....      | 126 |
| ➔ CPU_FAN1 Normal Duty [30] .....              | 127 |
| ➔ SYS_FAN1 Smart Fan Control [Auto Mode].....  | 127 |
| ➔ SYS_FAN1 Start Temperature [50] .....        | 127 |
| ➔ SYS_FAN1 Off Temperature [40].....           | 127 |
| ➔ SYS_FAN1 Start PWM [30] .....                | 127 |
| ➔ Auto mode fan slop PWM [1] .....             | 127 |
| ➔ SYS_FAN2 Smart Fan Control [Auto Mode].....  | 127 |
| ➔ SYS_FAN2 Start Temperature .....             | 128 |
| ➔ SYS_FAN2 Off Temperature .....               | 128 |
| ➔ SYS_FAN2 Start PWM .....                     | 128 |
| ➔ Console Redirection [Disabled].....          | 131 |
| ➔ Terminal Type [ANSI].....                    | 132 |
| ➔ Bits per second [115200].....                | 133 |
| ➔ Data Bits [8] .....                          | 133 |
| ➔ Parity [None].....                           | 133 |
| ➔ Stop Bits [1] .....                          | 134 |
| ➔ Administrator Password .....                 | 136 |
| ➔ User Password .....                          | 136 |
| ➔ Quiet Boot [Enabled] .....                   | 137 |
| ➔ Launch PXE OpROM [Disabled] .....            | 137 |

**IMBA-ARL-W880 ATX Motherboard**

|                                         |     |
|-----------------------------------------|-----|
| ➔ Option ROM Messages [Force BIOS]..... | 138 |
| ➔ Boot Option #1 .....                  | 138 |
| ➔ Boot Option #2 .....                  | 138 |
| ➔ Save Changes and Reset .....          | 139 |
| ➔ Discard Changes and Reset .....       | 139 |
| ➔ Restore Defaults .....                | 139 |
| ➔ Save as User Defaults .....           | 140 |
| ➔ Restore User Defaults .....           | 140 |

**Appendix**

**D**

# Watchdog Timer

---

**IMBA-ARL-W880 ATX Motherboard****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:

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

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

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

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

**NOTE:**

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

**EXAMPLE PROGRAM:**

**; INITIAL TIMER PERIOD COUNTER**

;

**W\_LOOP:**

;

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

;

**; ADD THE APPLICATION PROGRAM HERE**

;

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

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

;

**; EXIT ;**

**Appendix**

**E**

# Error Beep Code

---

E.1 PEI Beep Codes

| Number of Beeps | Description                                                                       |
|-----------------|-----------------------------------------------------------------------------------|
| 1               | Memory not Installed                                                              |
| 1               | Memory was installed twice<br>(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

---



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> |                                            |              |              |                              |                                |                                       |                                    |                              |                         |                             |



## IMBA-ARL-W880 ATX Motherboard

## 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                                                                                                                                                                 | ○         | ○      | ○      | ○            | ○          | ○            |
| <p>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。</p> <p>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。</p> |           |        |        |              |            |              |

## 5.9