IEI Integration Corp.

MODEL:

IMBA-Q471

ATX Motherboard Supports LGA1200 10th/11th Gen. Intel® Core™ i9/i7/i5/i3, Celeron® and Pentium® Processors, DDR4, Triple Independent Displays, Triple 2.5GbE, M.2, USB 3.2, SATA 6Gb/s, HD Audio and RoHs

User Manual

Rev. 1.00 – June 15, 2022

RoHS Lead Free

Revision

Date	Version	Changes
June 15, 2022	1.00	Initial release

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Manual Conventions

WARNING

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

CAUTION

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

NOTE

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

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Chapter

1

Introduction

1.1 Introduction

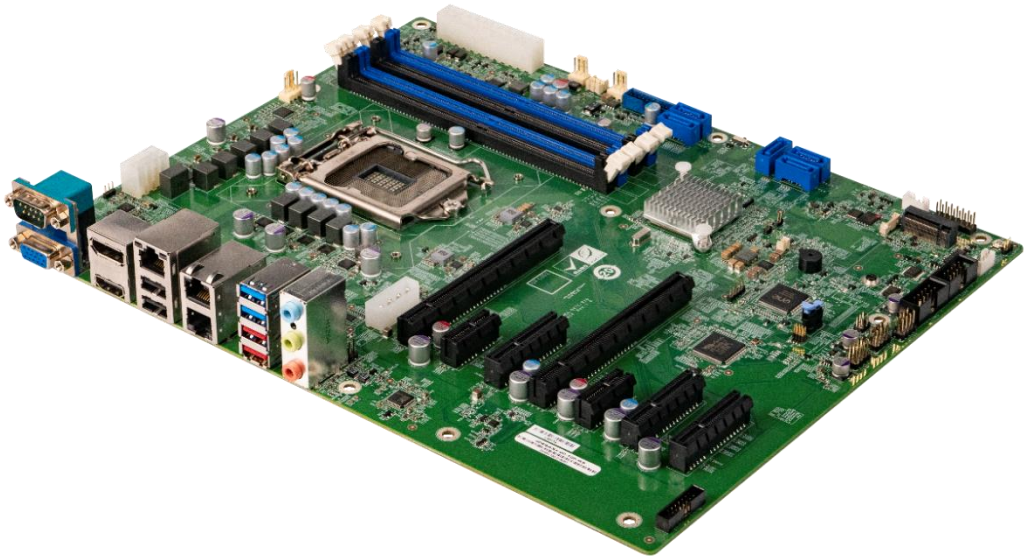


Figure 1-1: IMBA-Q471

The IMBA-Q471 is an ATX motherboard. It accepts a Socket LGA1200 10/11th Generation Intel® Core™ i9/i7/i5/i3, Pentium® and Celeron® processor and supports four 288-pin 2933MHz dual-channel DDR4 SDRAM DIMM modules up to 128 GB. The integrated Intel®

Q470/Q470E chipset supports four SATA 6Gb/s drives. Moreover, the IMBA-Q471 includes DP, HDMI and VGA interfaces for triple independent display.

The IMBA-Q471 provides three 2.5GbE interfaces through the Intel® I225V controllers. Expansion include four PCI slots, two PCIe x16 slots, three PCIe x4 slots, two PCIe x1 slots and one M.2 M-key 2242/2280 for installing function cards like Graphic cards. It also includes one RS-232 DB-9, two USB 3.2 Gen 1, two USB 3.2 Gen 2 and two USB 2.0 on the rear panel, six USB 2.0 via internal pin headers, two USB 3.2 Gen 1 via internal box headers and two RS-232 via internal pin headers, one RS-422/485 via internal pin headers, five SATA 6Gb/s via internal connectors.

1.2 Features

Some of the IMBA-Q471 motherboard features are listed below:

- ATX form factor
- LGA1200 10th/11th generation Intel® Core™ i9/i7/i5/i3, Pentium® and Celeron® processor supported
- Intel® Q470/Q470E chipset
- Four 288-pin 2933 MHz dual-channel unbuffered DDR4 SDRAM DIMM slots support up to 128 GB memory
- Three Intel® I225V 2.5GbE controller
- Supports PCI Express Generation 3.0
- Triple independent display by DP, HDMI and VGA interfaces
- Five SATA 6Gb/s connectors support RAID 0, 1, 5, 10
- Two USB 3.2 Gen 2 ports and two USB 3.2 Gen 1 ports on the rear panel
- One M.2 M-key slot with PCIe x2 & SATA signals
- Two PCIe Gen3 x16 slots
- Three PCIe Gen3 x4 slots
- Two PCIe Gen3 x1 slots
- Four serial ports (one RS-232 DB-9 on rear panel，the others via internal pin header)
- The optional expansion cards provide more choices to meet user’s demand
- TPM 2.0 security function supported by PTT (Platform Trust Technology)，based on BIOS setting
- High Definition Audio

- RoHS compliant

1.3 Connectors

The connectors on the IMBA-Q471 are shown in the figure below.

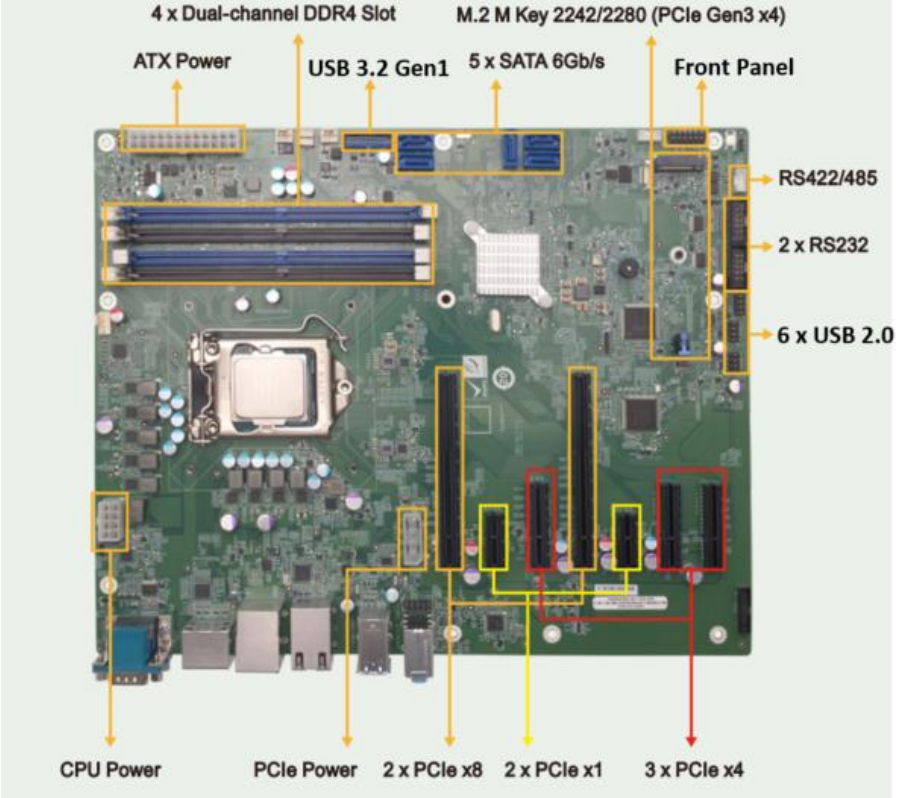


Figure 1-2: Connectors

1.4 Dimensions

The main dimensions of the IMBA-Q471 are shown in the diagram below.

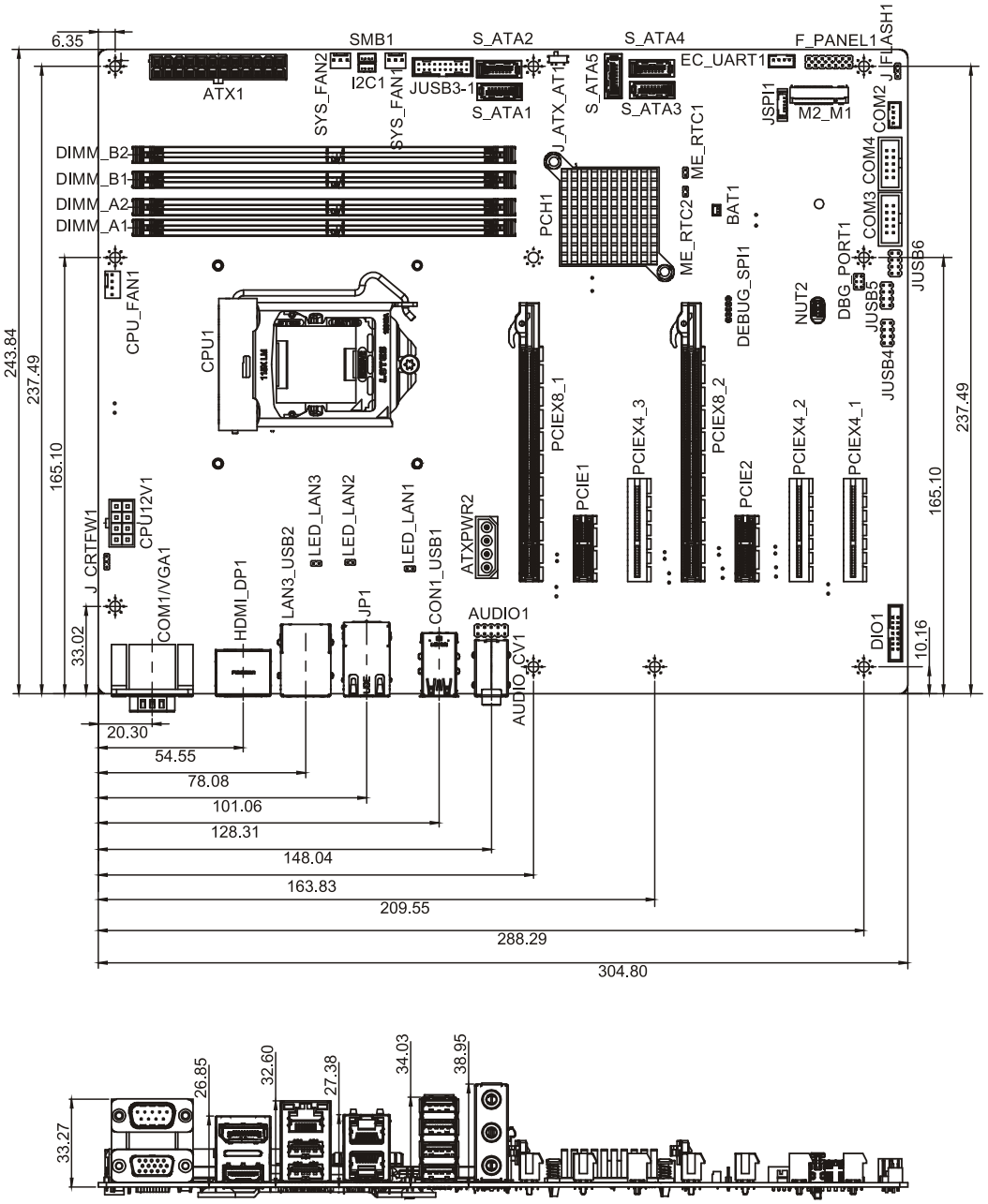


Figure 1-3: IMBA-Q471 Dimensions (mm)

1.5 Data Flow

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

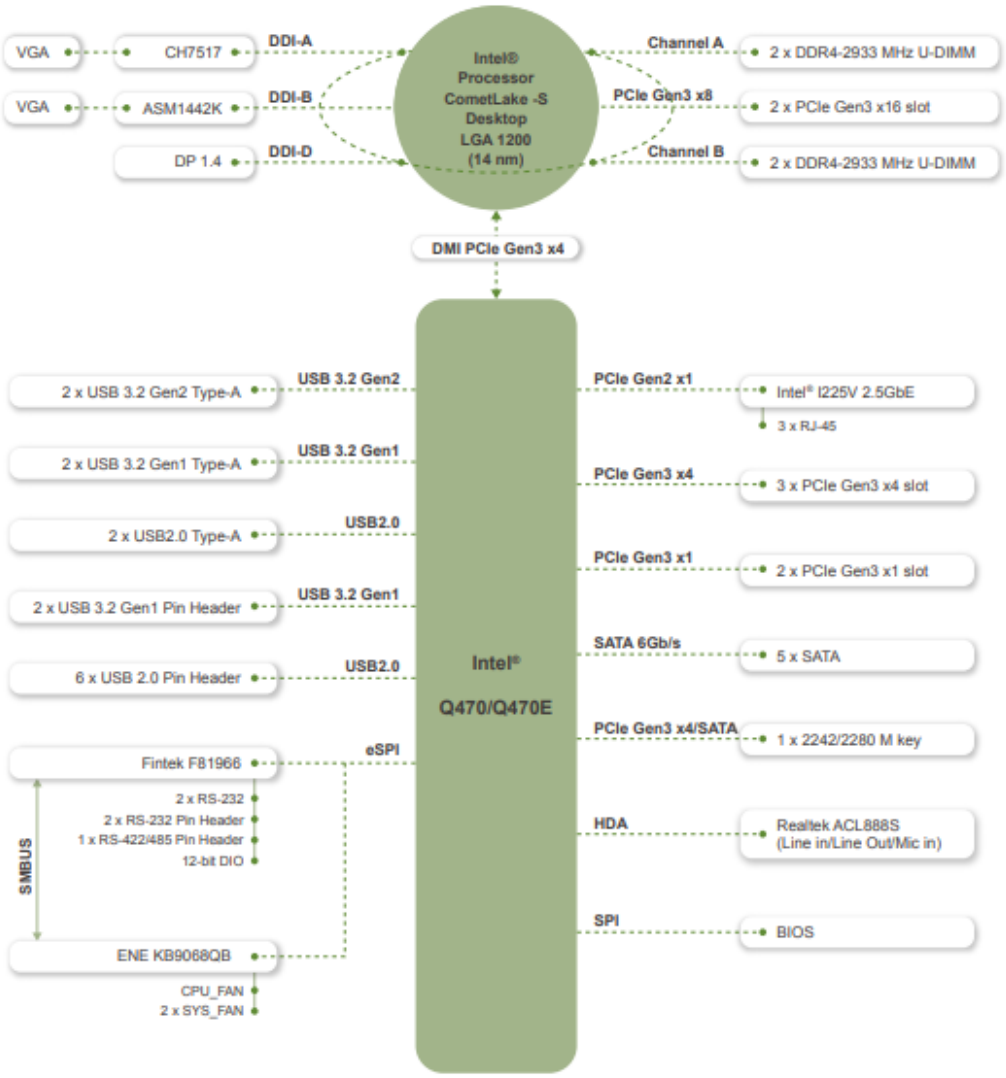


Figure 1-4: Data Flow Diagram

1.6 Technical Specifications

The IMBA-Q471 technical specifications are listed below.

Specification/Model	IMBA-Q471
Form Factor	ATX
CPU Supported	LGA1200 10th/11th generation Intel® Core™ i9/i7/i5/i3, Pentium® and Celeron® CPU
Chipset	Intel® Q470/Q470E
Memory	Four 288-pin 2933 MHz dual-channel unbuffered DDR4 SDRAM DIMMs supported (system max. 128 GB)
Graphics Engine	Up to Intel® UHD Graphics 630; Intel® HD Graphics Gen 9 Engines with 16 low-power execution units, supporting DX2015, OpenGL 5.x, OpenCL2.x and ES 2.0
Display Output	Triple independent display One VGA (up to 1920x1200@60Hz) One DP (up to 4096x2304@60Hz) One HDMI (up to 4096x2160@30Hz)
Ethernet Controllers	**LAN1**: Intel® I225V 2.5GbE controller **LAN2**: Intel® I225V 2.5GbE controller **LAN3:** Intel® I225V 2.5GbE controller
Audio	Realtek ALC888S HD Audio codec supports 7.1-channel 3 x Audio jack (line-in, line-out, mic-in) on real I/O 1 x Front audio (2x5 pin, p=2.54)
BIOS	AMI UEFI BIOS
Super I/O Controller	Fintek F81966D
Watchdog Timer	Software programmable supports 1~255 sec. system reset
Expansions	2 x PCIe Gen3 x16 slots 3 x PCIe Gen3 x4 slots 2 x PCIe Gen3 x1 slots 1 x M.2 M-key 2242/2280 (PCIe x4, support NVMe SSD)

I/O Interface Connectors	
Audio Connectors	Line-in, line-out and mic-in audio jacks on rear panel One internal front panel audio connector (10-pin header)
Chassis Intrusion	One 2-pin header
Digital I/O	1 x 12-bit digital I/O (2x7 pin)
Ethernet	Three RJ-45 GbE ports
Fan	One 4-pin CPU smart fan connector Two 3-pin system fan connector
Front Panel	1 x Front panel connector (2x7 pin) Power LED, HDD LED, Power Button, Reset Button
I²C	One 4-pin wafer connector
LAN LED	Three 2-pin headers for LAN1 LED and LAN2 LED
Serial ATA	Five SATA 6Gb/s connectors (support RAID 0, 1, 5, 10)
Serial Ports	One RS-232 via DB-9 2 x RS-232 via internal box header 1 x RS-422/485 via internal box header (support Auto Flow Control over RS-485)
SMBus	One 4-pin wafer connector
USB Ports	Two USB 3.2 Gen 2 (10Gb/s) ports(Type A) on rear panel Two USB 3.2 Gen 1 (5Gb/s) ports(Type A) on rear panel Two USB 2.0 ports (Type A) on rear panel Six USB 2.0 ports via internal pin header Two USB 3.2 Gen 1 ports via internal box header
Environmental and Power Specifications	
Power Supply	AT/ATX power supply Support AT/ATX mode ErP/EuP compliant

Power Consumption	3.3V@1.1A, 5V@3.359A, 12V@2.18A, 5VSB@0.12A (Intel® Core™ i9-10900E CPU with four 32 GB 3200 MHz DDR4 memory)
Operating Temperature	0ºC ~ 60ºC
Storage Temperature	-30ºC ~ 70ºC
Operating Humidity	5% ~ 95% (non-condensing)
Physical Specifications	
Dimensions	244 mm x 305 mm
Weight (GW/NW)	1200 g/700 g

Table 1-1: IMBA-Q471 Specifications

Chapter

2

Packing List

2.1 Anti-static Precautions

WARNING!

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

Make sure to adhere to the following guidelines:

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

2.2 Unpacking Precautions

When the IMBA-Q471 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-Q471 was purchased from or contact an IEI sales representative directly by sending an email to sales@ieiworld.com.

The IMBA-Q471 is shipped with the following components:

Quantity	Item and Part Number	Image
1	IMBA-Q471 single board computer	
2	SATA cable	
1	I/O shielding	
1	Quick installation guide	

Table 2-1: Packing List

2.4 Optional Items

The following are optional components which may be separately purchased:

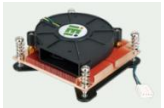
Item and Part Number	Image
Dual port USB cable with bracket, 300mm, P=2.54 (**P/N**: 19800-003100-100-RS)	
USB 3.0/USB3.2 cable 450mm with bracket (**P/N**: 19800-010500-200-RS)	
SATA power cable, MOLEX 5264-4P to SATA15P (**P/N**: 32102-000100-200-RS)	
RS-232 cable 230mm P=2.54 (**P/N**: 19800-020100-100-RS)	
High performance LGA115X Cooler kit for Intel Xeon/Core i7/i5/i3 CPU, 89*92.6*27.4, 1U Chassis compatible, 73W, CCL; RoHS (**P/N**: CF-115XA-R10)	
Low power LGA1155/LGA1156 Cooler kit for Intel CPU, 45W, CCL, R20; RoHS (**P/N**: CF-1156C-R20)	
Low power LGA1155/LGA1156 Cooler kit for Intel CPU, 65W, CCL, R30; RoHS (**P/N**: CF-1156D-R30)	
High performance LGA115X Cooler kit for Intel Xeon/Core i7/i5/i3 CPU, 91L*91W*84H, 95W, CCL; RoHS (**P/N**: CF-115XE-R10)	

Table 2-2: Optional Items

Chapter

3

Connectors

3.1 Peripheral Interface Connectors

This chapter details all the peripheral interface connectors.

3.1.1 IMBA-Q471 Layout

The figures below show all the peripheral interface connectors.

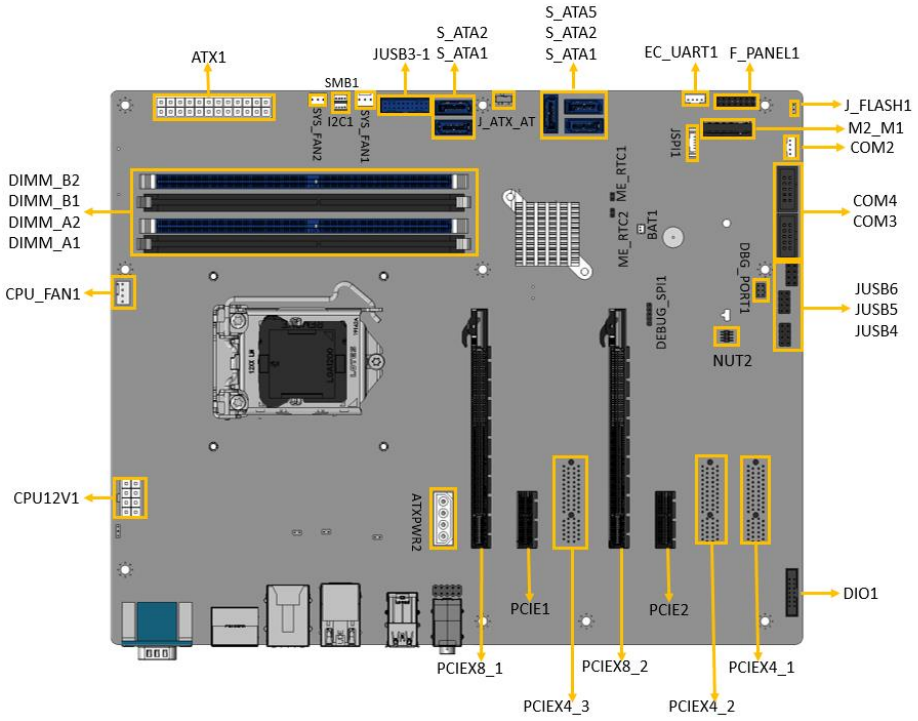


Figure 3-1: Peripheral Interface Connectors

3.1.2 Peripheral Interface Connectors

The table below lists all the connectors on the board.

Connector	Type	Label
AT/ATX power mode setting	3-pin Molex power connector	J_ATX_AT1
PCIe power connector	4-pin connector	ATXPWR2
ATX power connector	24-pin connector	ATX1

Connector	Type	Label
ATX CPU 12V power connector	8-pin connector	CPU12V1
Internal audio connector	10-pin connector	AUDIO1
Digital I/O connector	14-pin header	DIO1
EC UART debug connector	4-pin header	EC_UART1
EC debug connector	5-pin header	DEBUG_SPI1
Debug connector	6-pin header	DBG_PORT1
Clear CMOS jumper	2-pin header	ME_RTC2
Clear ME jumper	2-pin header	ME_RTC1
Flash descriptor security override jumper	3-pin header	J_FLASH1
Fan connectors	4-pin wafer, 3-pin wafer	CPU_FAN1, SYS_FAN1, SYS_FAN2
Front panel connector	14-pin header	F_PANEL1
I²C connector	4-pin wafer	I2C1
SMBUS connector	4-pin wafer	SMB1
LAN1 link LED connector	2-pin header	LED_LAN1
LAN2 link LED connector	2-pin header	LED_LAN2
LAN3 link LED connector	2-pin header	LED_LAN3
M.2 M-key slot	75-pin slot	M2_A1
PCIe x1 slots	PCIe x1 slots	PCIE1, PCIE2
PCIe x4 slots	PCIe x4 slots	PCIEX4_1, PCIEX4_2, PCIEX4_3
PCIe x16 slots (x8 signal)	PCIe x16 slots	PCIEX8_1, PCIEX8_2
Onboard power button	Push button	PWR_SW1

Connector	Type	Label
SATA 6Gb/s connectors	8-pin SATA connector	S_ATA1, S_ATA2, S_ATA3, S_ATA4, S_ATA 5
RS-232 serial port connectors	10-pin box header	COM3, COM4
RS-422/485 serial port connector	4-pin box header	COM2
Flash SPI ROM connector	6-pin wafer	JSPI1
Flash EC ROM connector	8-pin header	JEC1
Internal USB 2.0 connectors	8-pin header	JUSB4, JUSB5, JUSB6
Internal USB 3.2 Gen 1 connector	19-pin box header	JUSB3-1

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 HD Audio jack	Audio jacks	AUDIO_CV1
External HDMI and DP++ combo connector	DisplayPort, HDMI	HDMI_DP1
External dual 2.5GbE RJ-45 connector	Dual RJ45	JP1
External 2.5GbE RJ-45 and dual USB 2.0 combo connector	Dual RJ45, 8-pin header	LAN3_USB2
External RS-232 and VGA combo connector	DB-9(9-pin male) VGA (15-pin female)	COM1/VGA
External dual USB 3.2 Gen 1 and dual USB 3.2 Gen 2 connector	USB 3.2 Gen1&USB 3.2 Gen 2 Type A	CON1_USB1

Table 3-2: Rear Panel Connectors

3.2 Internal Peripheral Connectors

The section describes all of the connectors on the IMBA-Q471.

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.

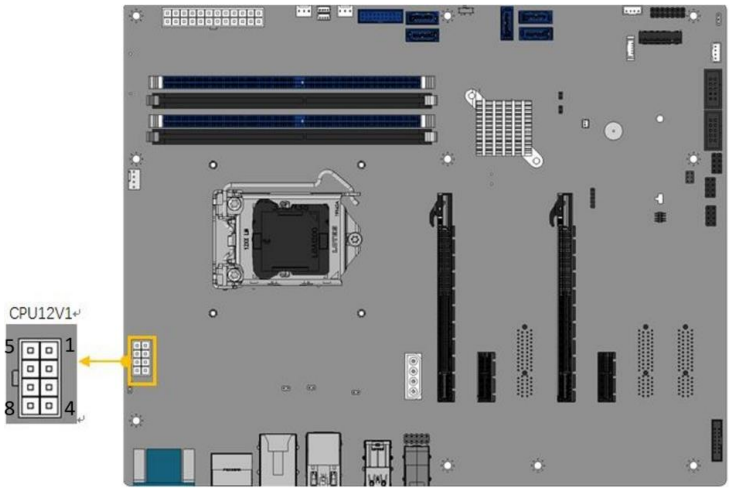


Figure 3-2: ATX CPU 12V Power Connector Location

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

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

3.2.2 PCIe Power Connector

CN Label: **ATXPWR2**

CN Type: 4-pin connector, p=5.08 mm

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

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

The additional power connector provides extra +12V and +5V power to the system.

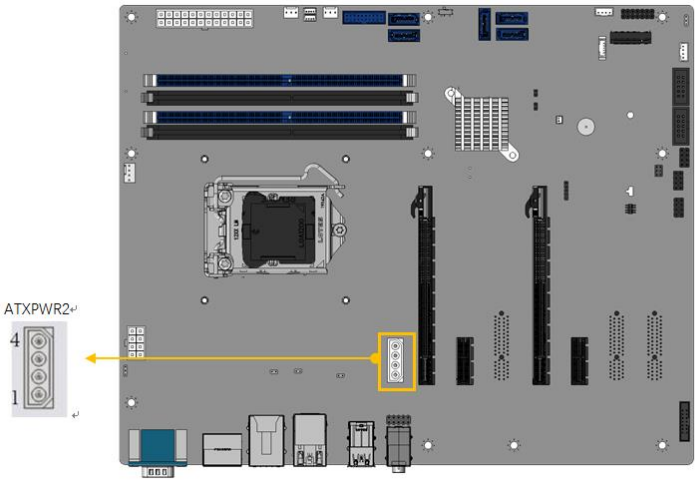


Figure 3-3: PCIe Power Connector Location

Pin	Description
1	+12V
2	GND
3	GND
4	+5V

Table 3-4: PCIe Power Connector Pinouts

3.2.3 ATX Power Connector

CN Label: **ATX1**

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

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

CN Pinouts: See **Table 3-5**

The ATX power connector connects to an ATX power supply.

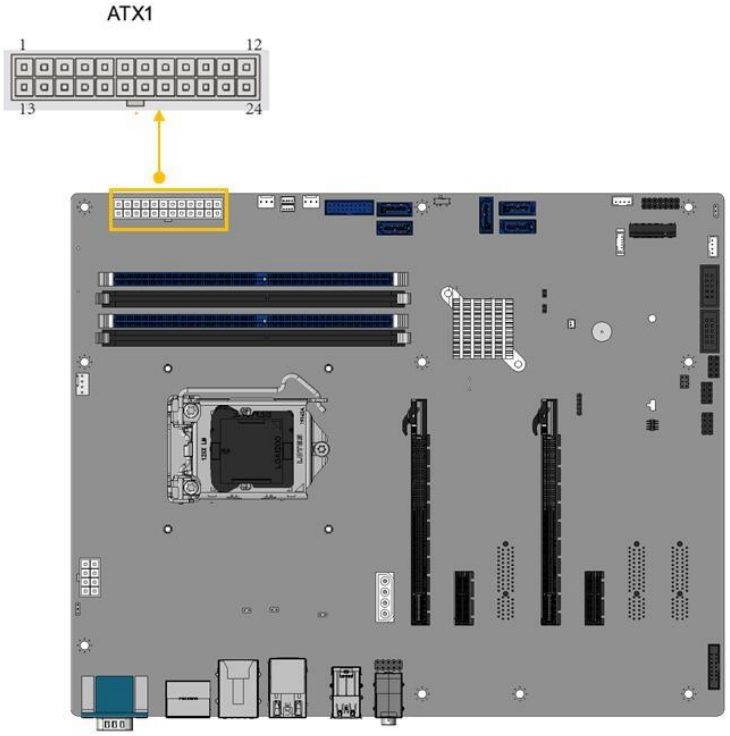


Figure 3-4: ATX Power Connector Location

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

Table 3-5: ATX Power Connector Pinouts

3.2.4 Battery Connector

CAUTION:

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

Dispose of used batteries according to instructions and local regulations.

NOTE:

It is recommended to attach the RTC battery onto the system chassis in which the IMBA-Q471 is installed.

CN Label:	**BAT1**
CN Type:	2-pin header
CN Location:	See **Figure 3-5**

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

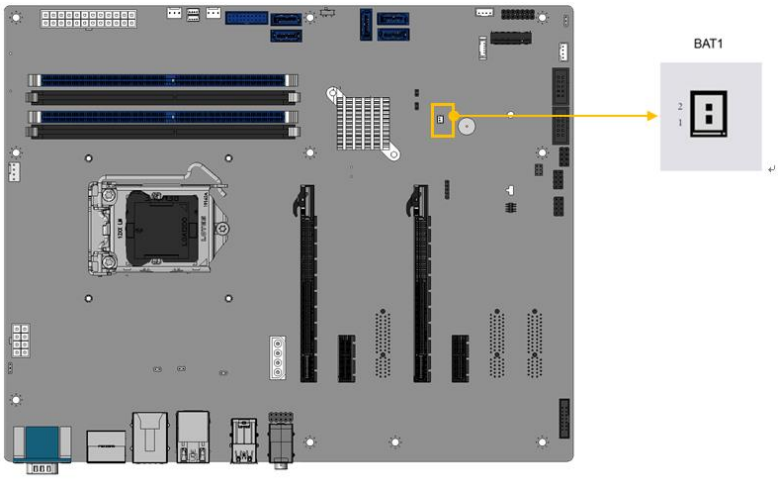


Figure 3-5: Battery Connector Location

3.2.5 Digital Input / Output Connector

CN Label: **DIO1**

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

CN Location: See **Figure 3-6**

CN Pinouts: See **Table 3-6**

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

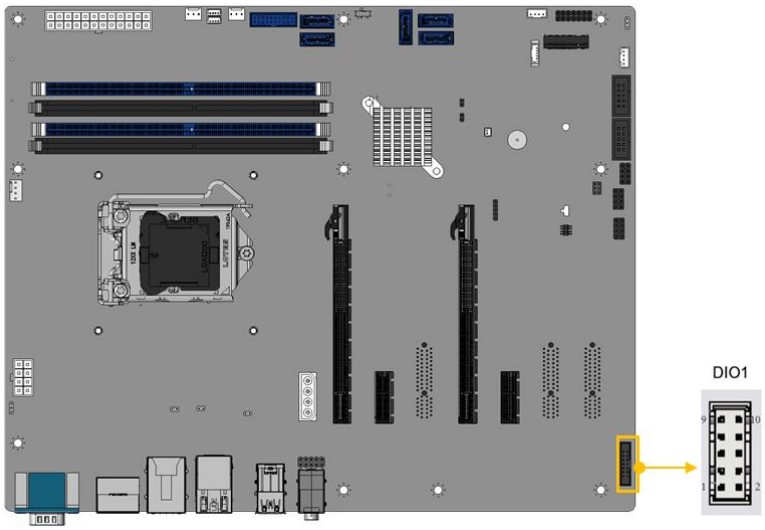


Figure 3-6: Digital Input / Output Connector Location

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

Table 3-6: Digital Input / Output Connector Pinouts

3.2.6 EC UART Debug Connector

CN Label:	**EC_UART1**
CN Type:	4-pin header
CN Location:	See **Figure 3-7**
CN Pinouts:	See **Table 3-7**

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

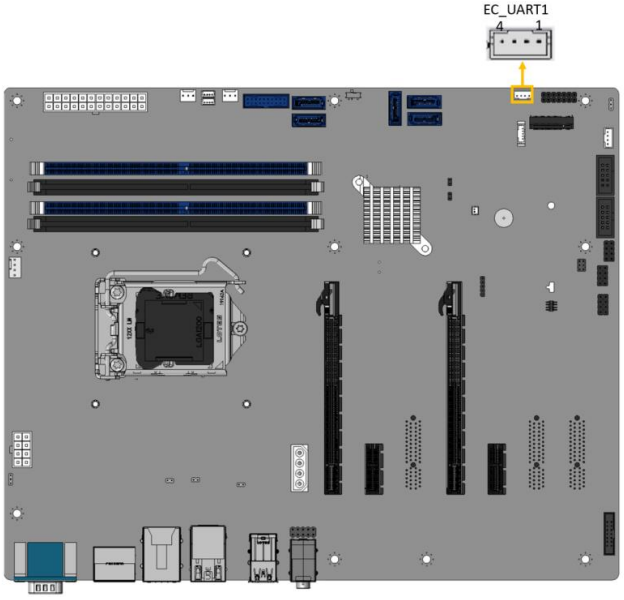


Figure 3-7: EC UART Debug Connector Location

Pin	Description	Pin	Description
1	UART_TX	2	VCC3.3
3	UART_RX	4	GND

Table 3-7: EC UART Debug Connector Pinouts

3.2.7 EC Debug Connector

CN Label: **DEBUG_SPI1**

CN Type: 5-pin header, p=2 mm

CN Location: See **Figure 3-8**

CN Pinouts: See **Table 3-8**

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

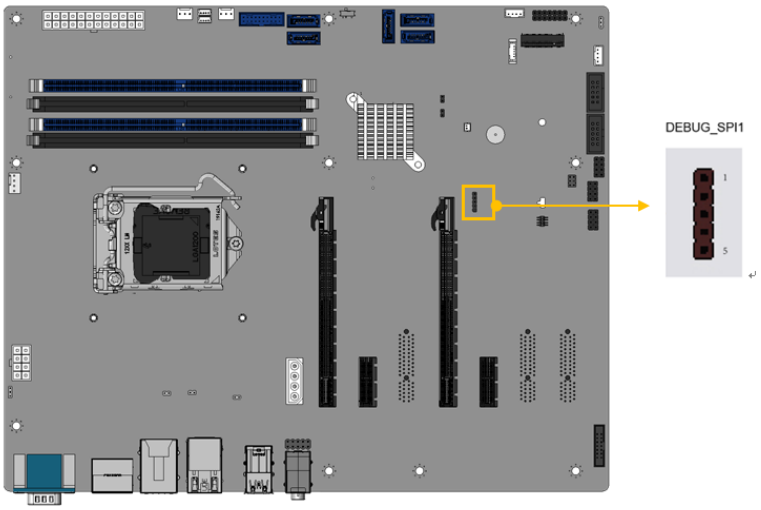


Figure 3-8: EC Debug Connector Location

Pin	Description	Pin	Description
1	GND	2	EDICS
3	EDICLK	4	EDIDI
5	EDIDO		

Table 3-8: EC Debug Connector Pinouts

3.2.8 Debug Connector

CN Label: **DBG_PORT1**

CN Type: 6-pin header, p=2 mm

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

CN Pinouts: See **Table 3-9**

The DBG_PORT1 is used for monitoring the motherboard startup process with debug card .

Figure 3-9: Debug Connector Location

Pin	Description	Pin	Description
1	+5V	2	SMCLK1_EC
3	NC	4	SMDAT1_EC
5	GND	6	PLTRST_N

Table 3-9: Debug Connector Pinouts

3.2.9 Clear ME Jumper

CN Label:	**ME_RTC2**
CN Type:	2-pin wafer, p=2.00 mm
CN Location:	See **Figure 3-10**
CN Pinouts:	See **Table 3-10**

The ME_RTC1 is used to reset protions of the Intel Converged Security and Management Engine.

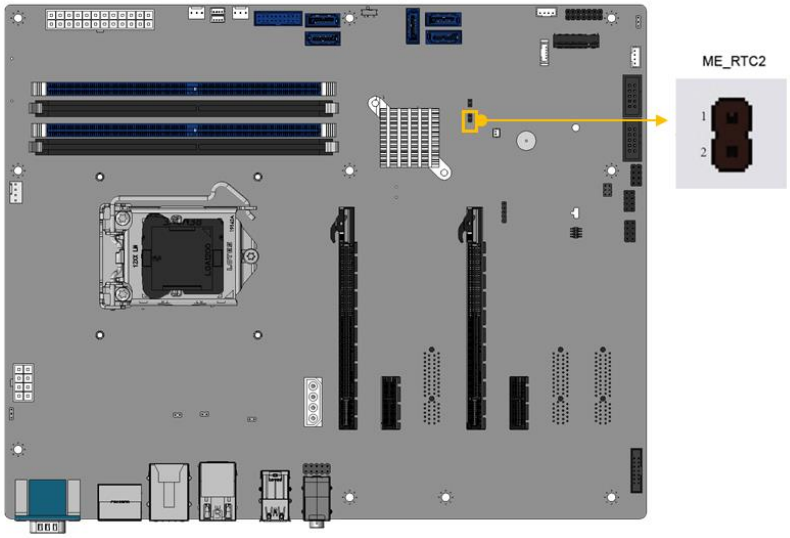


Figure 3-10: Clear ME Jumper Location

Pin	Description
Open	Keep RTC (default)
Short	Clear RTC

Table 3-10: Clear ME Jumper Pinouts

3.2.10 Fan Connector (CPU)

CN Label:	**CPU_FAN1**
CN Type:	4-pin wafer, p=2.54 mm
CN Location:	See **Figure 3-11**
CN Pinouts:	See **Table 3-11**

The fan connector attaches to a CPU cooling fan.

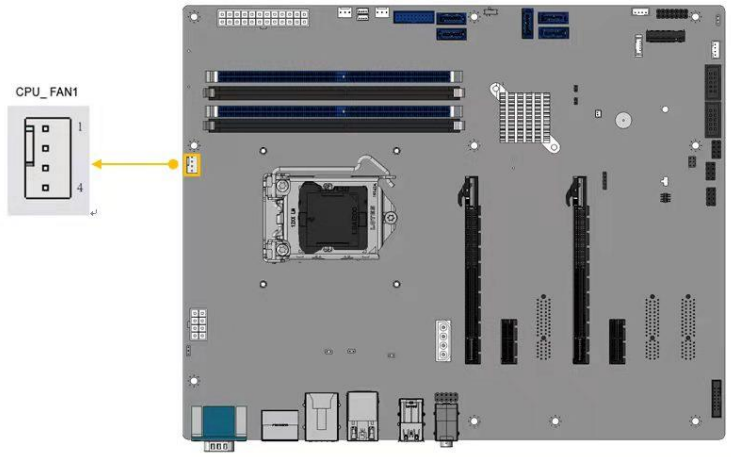


Figure 3-11: CPU Fan Connector Location

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

Table 3-11: CPU Fan Connector Pinouts

3.2.11 Fan Connectors

CN Label:	**SYS_FAN1, SYS_FAN2**
CN Type:	4-pin wafer,3-pin wafer, p=2.54 mm
CN Location:	See **Figure 3-12**
CN Pinouts:	See **Table 3-12** and **Table 3-13**

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

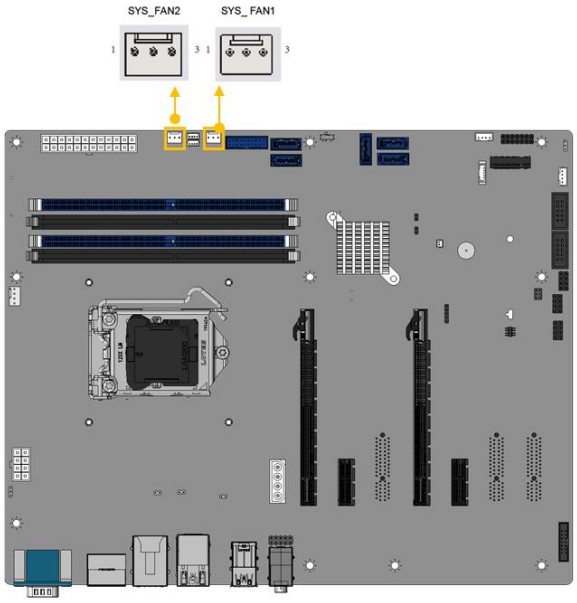


Figure 3-12: System Fan Connector Locations

Pin	Description
1	FANIO
2	PWM
3	GND

Table 3-12: System Fan (SYS_FAN1) Connector Pinouts

Pin	Description
1	NC

Pin	Description
2	+12V
3	GND

Table 3-13: System Fan (SYS_FAN2) Connector Pinouts

3.2.12 Front Panel Audio Connector

CN Label: **AUDIO1**

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

CN Location: See **Figure 3-13**

CN Pinouts: See **Table 3-14**

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

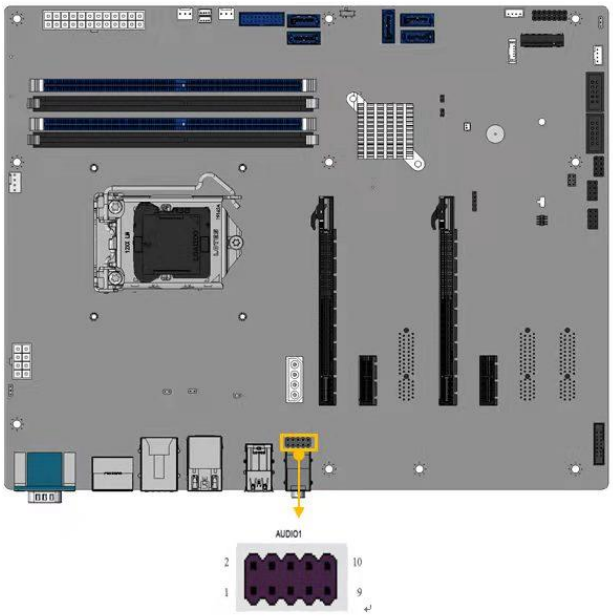


Figure 3-13: AUDIO1 Location

Pin	Description	Pin	Description
1	LMIC2-L	2	AUD_GND
3	LMIC2-R	4	PRESENCE#
5	LLINE2-R	6	MIC2-JD
7	FRONT-IO	8	NC
9	LLINE2-L	10	LINE2-JD

Table 3-14: AUDIO1 Pinouts

3.2.13 Front Panel Connector

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

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

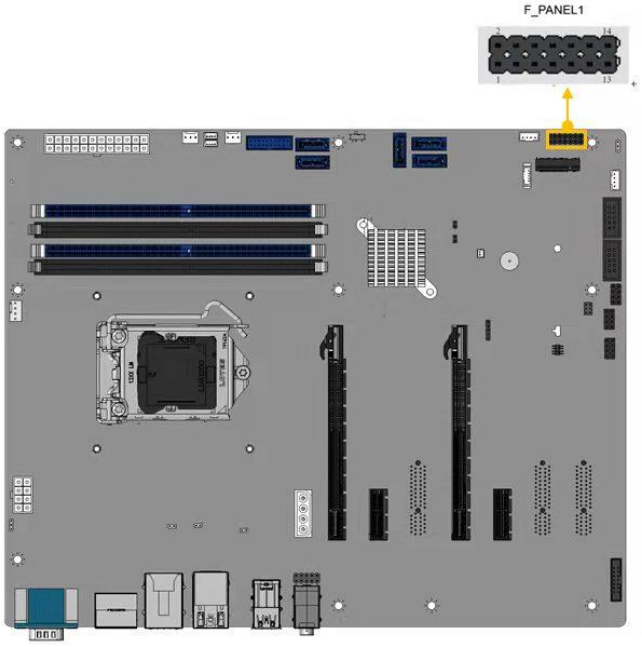


Figure 3-14: Front Panel Connector Location

Function	Pin	Description	Pin	Description	
PWR LED	1	PWR_LED+	2	BEEP_PWR	SPKR
	3	NC	4	NC	
	5	PWR_LED-	6	NC	
PWR BTN	7	PWR_BTN+	8	PC_BEEP	
	9	PWR_BTN-	10	NC	
HDD LED	11	HDD_LED+	12	RESET+	RESET
	13	HDD_LED-	14	RESET-	

Table 3-15: Front Panel Connector Pinouts

3.2.14 I²C Connector

CN Label: **I2C1**

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

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

CN Pinouts: See **Table 3-16**

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

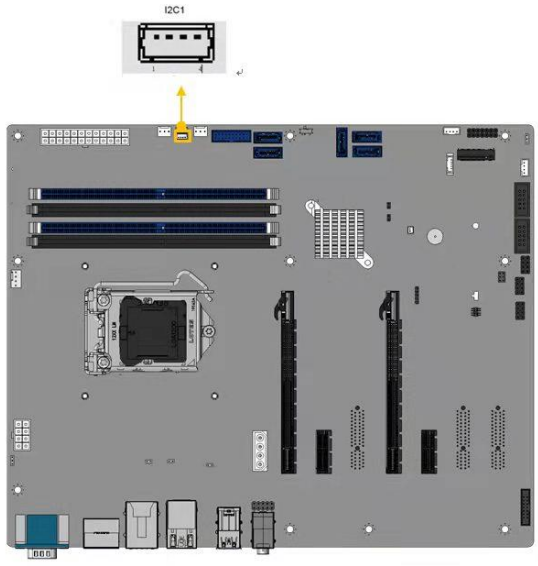


Figure 3-15: I²C Connector Location

Pin	Description
1	GND

Pin	Description
2	I2C_DAT
3	I2C_CLK
4	+5V

Table 3-16: I2C Connector Pinouts

3.2.15 SMBus Connector

CN Label: **SMB1**

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

CN Location: See **Figure 3-16**

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

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

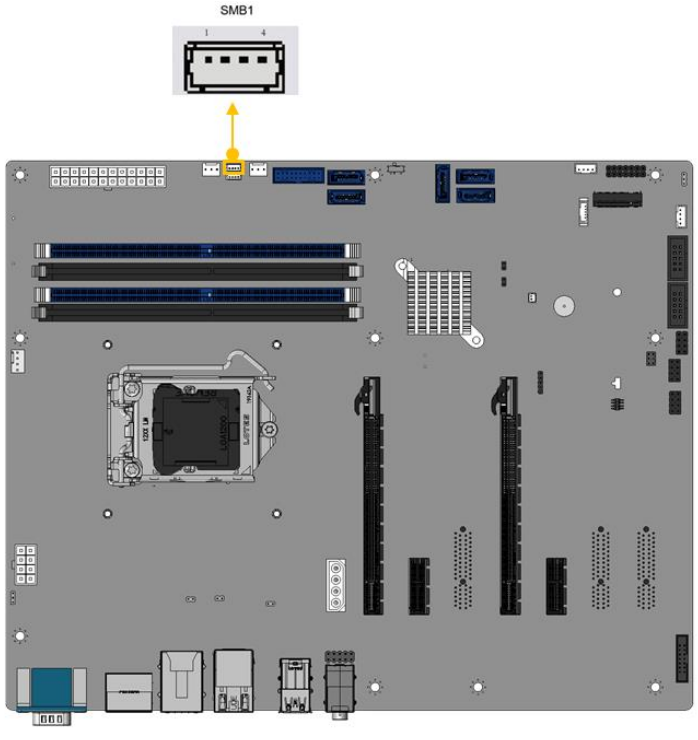


Figure 3-16: SMBus Connector Location

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

Table 3-17: SMBus Connector Pinouts

3.2.16 LAN link LED Connector

CN Label: **LED_LAN1, LED_LAN2, LED_LAN3**

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

CN Location: See **Figure 3-17**

CN Pinouts: See **Table 3-18**,**Table 3-19** and **Table 3-20**

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

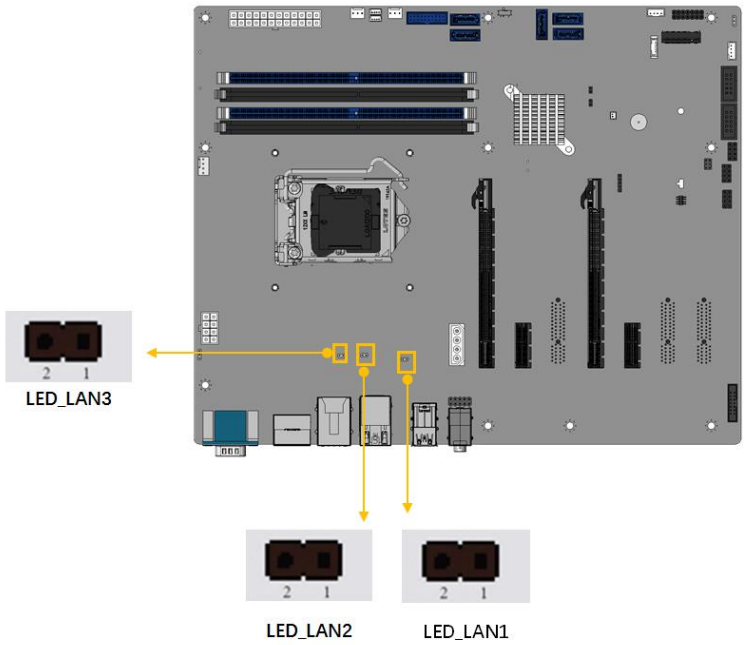


Figure 3-17: LAN LED Connector Locations

Pin	Description
1	+3.3V
2	LAN1_LED_LINK#_ACT

Table 3-18: LAN1 LED Connector (LED_LAN1) Pinouts

Pin	Description
1	+3.3V
2	LAN2_LED_LINK#_ACT

Table 3-19: LAN2 LED Connector (LED_LAN2) Pinouts

Pin	Description
1	+3.3V
2	LAN3_LED_LINK#_ACT

Table 3-20: LAN3 LED Connector (LED_LAN3) Pinouts

3.2.17 M.2 M-key (2240/2280) Slot

CN Label: **M2_M1**

CN Type: M-key slot

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

CN Pinouts: See **Table 3-21**

The M.2 M-key slot is keyed in the A position. The M.2 slot supports PCIe x1 and USB 2.0 interfaces.

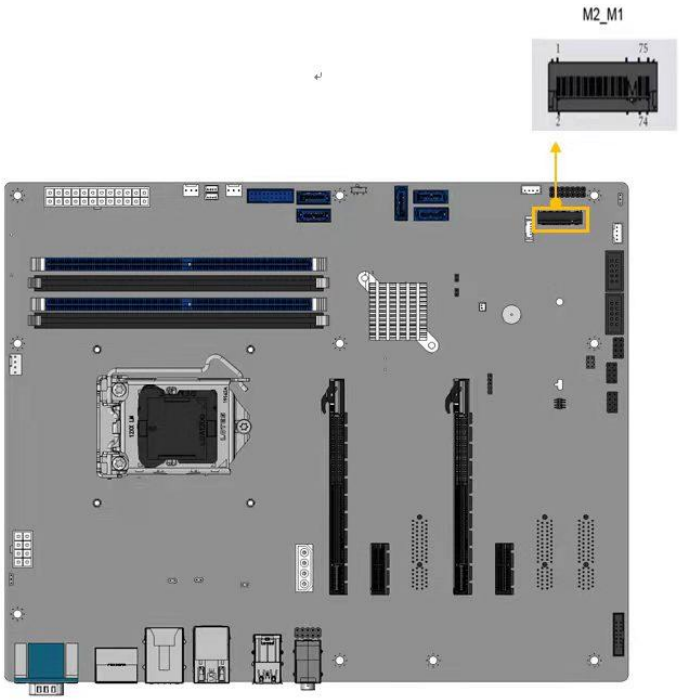


Figure 3-18: M.2 M-key slot

Pin	Description	Pin	Description
1	GND	2	+3.3V
3	GND	4	+3.3V
5	PERN0	6	NC
7	PERN0	8	NC
9	GND	10	DAS/DSS#
11	PERN0	12	+3.3V
13	PERN0	14	+3.3V

15	GND	16	+3.3V
17	PERN1	18	+3.3V
19	PERN1	20	NC
21	GND	22	NC
23	PERN1	24	NC
25	PERN1	26	NC
27	GND	28	NC
29	PERN2	30	NC
31	PERN2	32	NC
33	GND	34	NC
35	PETP2	36	NC
37	PETN2	38	DEVSLP
39	GND	40	NC
41	PERP3	42	NC
43	PERN3	44	NC
45	GND	46	NC
47	PERN3	48	NC
49	PERN3	50	PERST#
51	GND	52	CLKREQ
53	PCIECLKN	54	PEWAKE
55	PCIECLKN	56	NC
57	GND	58	NC
59	Module Key	60	Module Key
61	Module Key	62	Module Key
63	Module Key	64	Module Key
65	Module Key	66	Module Key
67	NC	68	NC
69	PEDET	70	+3.3V
71	GND	72	+3.3V
73	GND	74	+3.3V
75	GND		

Table 3-21: M.2 2240/2280 Connector Pinouts

3.2.18 PCIe x1 Slots

CN Label: **PCIE1, PCIE2**

CN Type: PCIe x1 slot

CN Location: See **Figure 3-19**

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

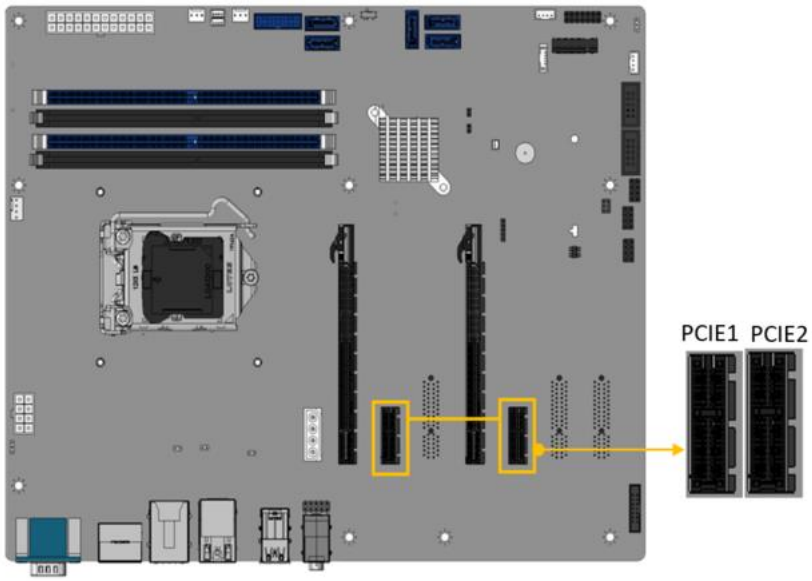


Figure 3-19: PCIe x1 Slot Locations

3.2.19 PCIe x4 Slots

CN Label: **PCIEX4_1, PCIEX4_2, PCIEX4_3**

CN Type: PCIe x4 slot

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

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

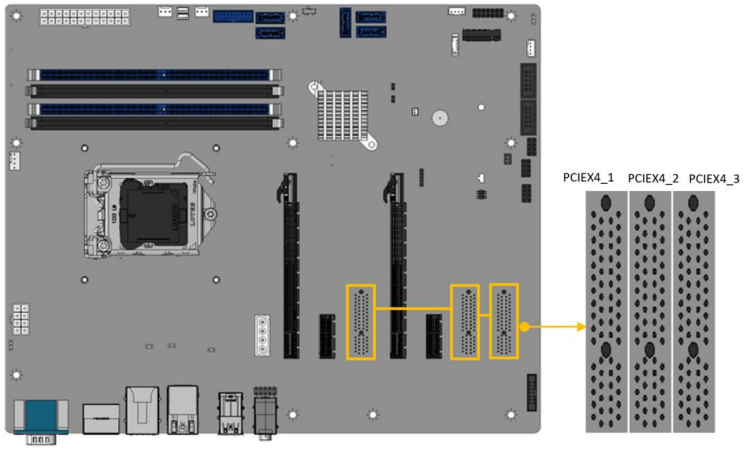


Figure 3-20: PCIe x4 Slot Locations

3.2.20 PCIe x16 Slots

CN Label:	**PCIEX8_1, PCIEX8_2**
CN Type:	PCIe x16 slot
CN Location:	See **Figure 3-21**

The PCIe x8 expansion card slots are for PCIe x8 expansion cards.

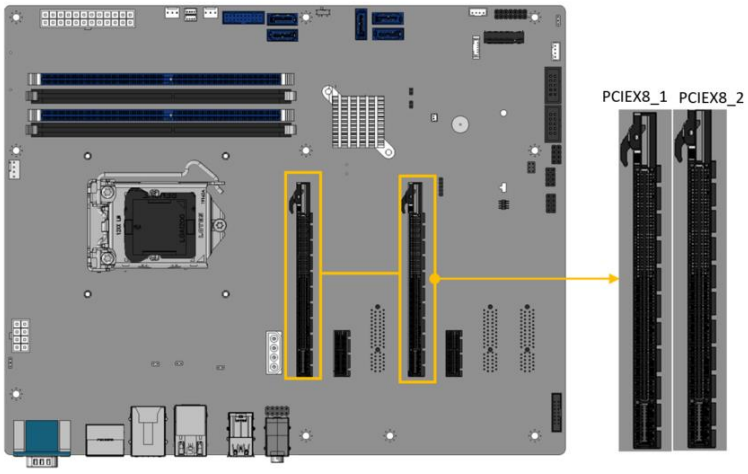


Figure 3-21: PCIe x8 Slot Locations

3.2.21 DDR4 DIMM Sockets

CN Label: **CHA_DIMM0, CHA_DIMM1, CHB_DIMM0, CHB_DIMM1**

CN Type: 288-pin socket

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

The DIMM slots are for DDR4 DIMM memory modules

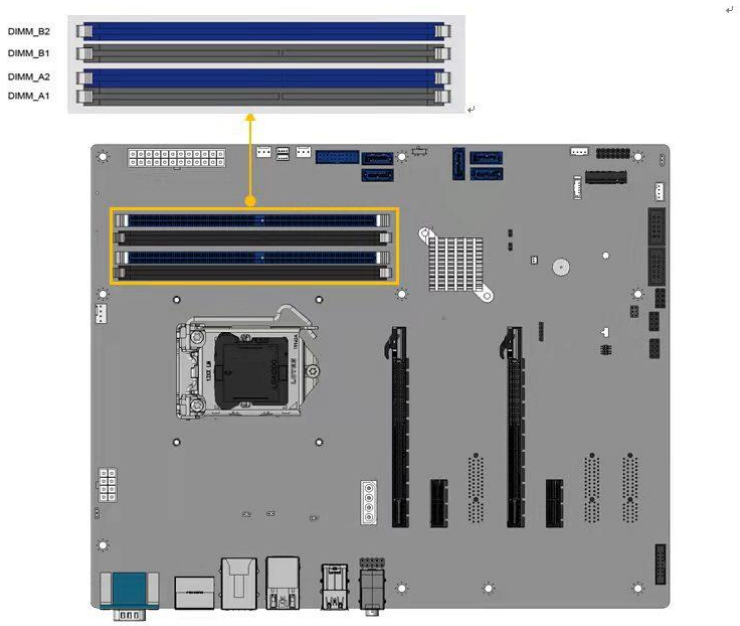


Figure 3-22: DDR4 DIMM Socket Location

3.2.22 SATA 6Gb/s Connectors

CN Label:	**S_ATA1, S_ATA2, S_ATA3, S_ATA4, S_ATA5**
CN Type:	8-pin SATA connector
CN Location:	See **Figure 3-23**
CN Pinouts:	See **Table 3-22**

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

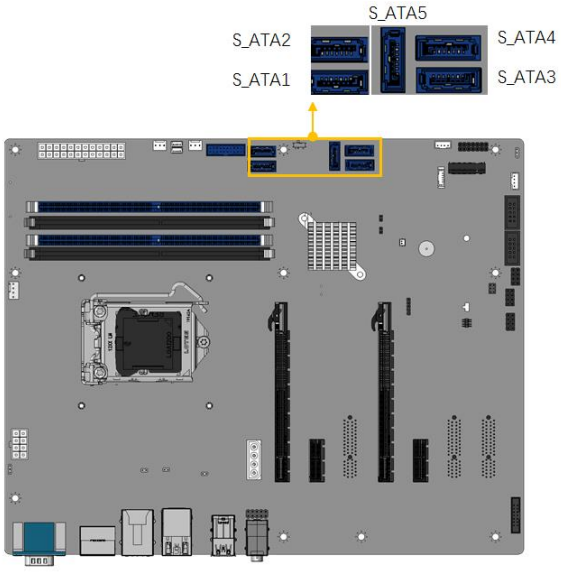


Figure 3-23: SATA 6Gb/s Connector Locations

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

Table 3-22: SATA 6Gb/s Connector Pinouts

3.2.23 RS-232 Serial Port Connectors

CN Label: **COM3, COM4**

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

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

CN Pinouts: See **Table 3-23**

Each of these connectors provides RS-232 connections.

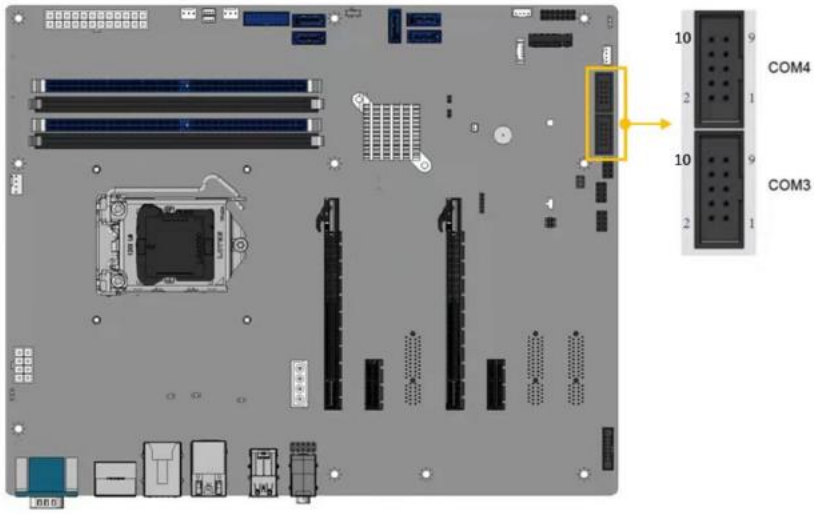


Figure 3-24: RS-232 Serial Port Connector Location

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

Table 3-23: RS-232 Serial Port Connector Pinouts

3.2.24 RS-422/485 Serial Port Connector

CN Label:	**COM2**
CN Type:	4-pin box header, p=2.54 mm
CN Location:	See **Figure** 3-25 and **Figure 3-26**
CN Pinouts:	See **Table 3-24**

Each of these connectors provides RS-422/485 connections.

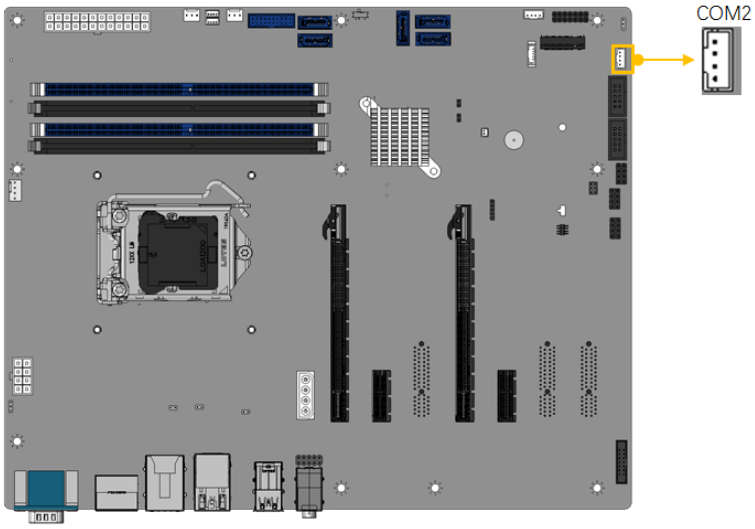


Figure 3-25: RS-422/485 Serial Port Connector

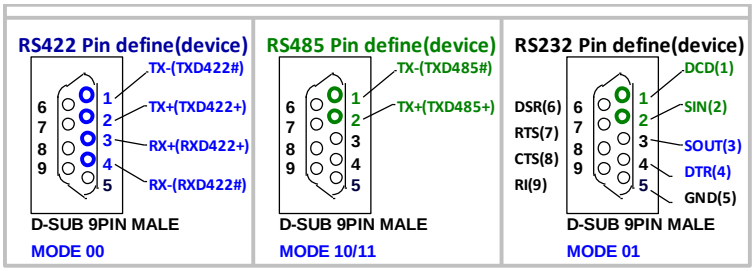


Figure 3-26: RS-422, RS-485, RS-232 Pin define (device)

Pin	Description	Pin	Description
1	RXD422	2	TXD422+/TXD485+
3	RXD422	4	TXD422+/TXD485+

Table 3-24: RS-422/485 Serial Port Connector

3.2.25 Flash SPI ROM Connector

CN Label: **JSPI1**

CN Type: 6pin header, p=1.25 mm

CN Location: See **Figure 3-27**

CN Pinouts: See **Table 3-25**

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

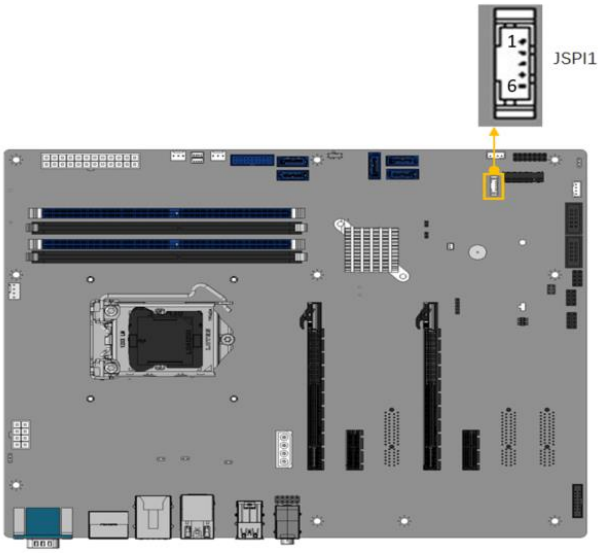


Figure 3-27: Flash SPI ROM Connector Location

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

Table 3-25: Flash SPI ROM Connector Pinouts

3.2.26 Flash EC ROM Connector

CN Label: **JEC1**

CN Type: 8-pin header, p=1.27 mm

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

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

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

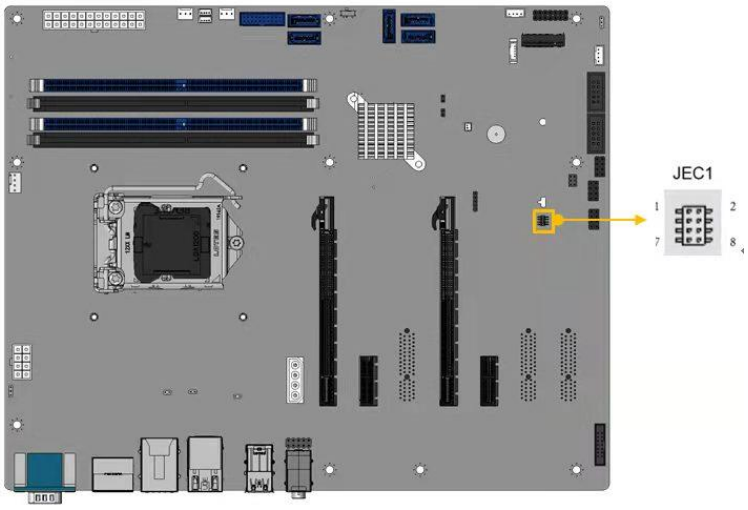


Figure 3-28: Flash EC ROM Connector Location

Pin	Description	Pin	Description
1	+3.3V	2	SPI_CS#
3	SPI_SO	4	NC
5	EC_DET_FLASH	6	SPI_CLK
7	GND	8	SPI_SI

Table 3-26: Flash EC ROM Connector Pinouts

3.2.27 Internal USB 2.0 Connectors

CN Label: **JUSB4, JUSB5, JUSB6**

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

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

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

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

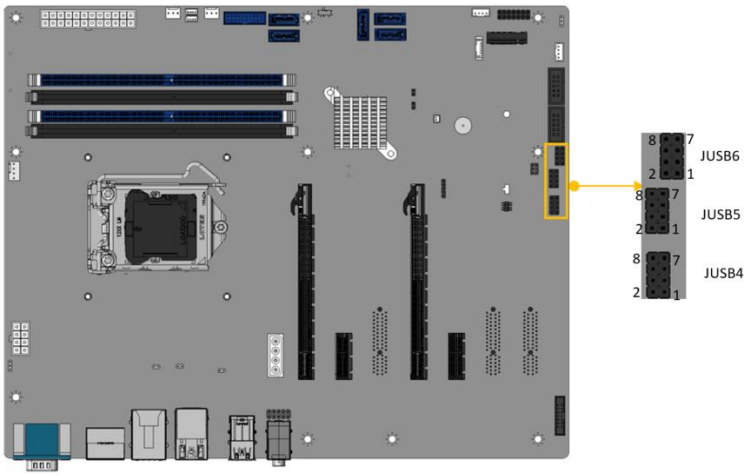


Figure 3-29: Internal USB 2.0 Connector Locations

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

Table 3-27: Internal USB 2.0 Connector Pinouts

3.2.28 Internal USB 2.0 Connector

CN Label: **JUSB6**

CN Type: 8pin header, p=2.54 mm

CN Location: See **Figure 3-30**

CN Pinouts: See **Table 3-28**

The Internal USB 2.0 connector connects to USB 2.0 devices.

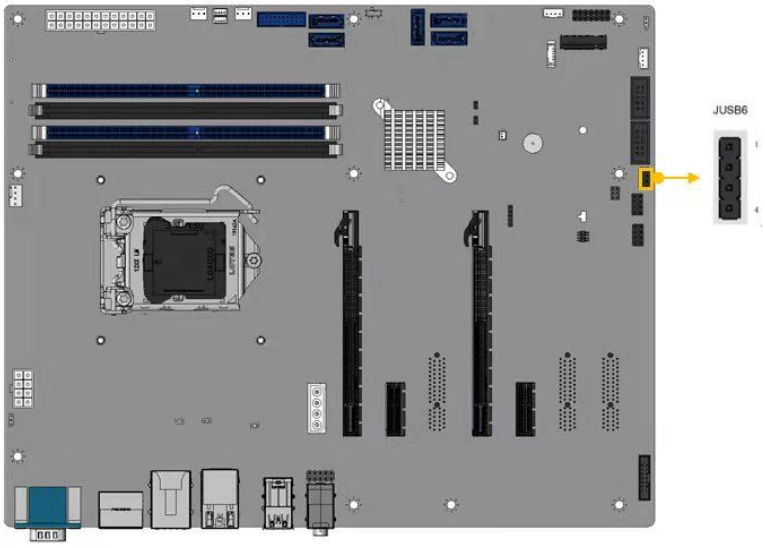


Figure 3-30: Internal USB 2.0 Connector Locations

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

Table 3-28: Internal USB 2.0 Connector Pinouts

3.2.29 Internal USB 3.2 Gen 1 Connector

CN Label: **JUSB3-1**

CN Type: 19-pin box header, p=2.00 mm

CN Location: See **Figure 3-31**

CN Pinouts: See **Table 3-29**

The Internal USB 3.2 Gen 1 connector connects to USB 3.2 devices.

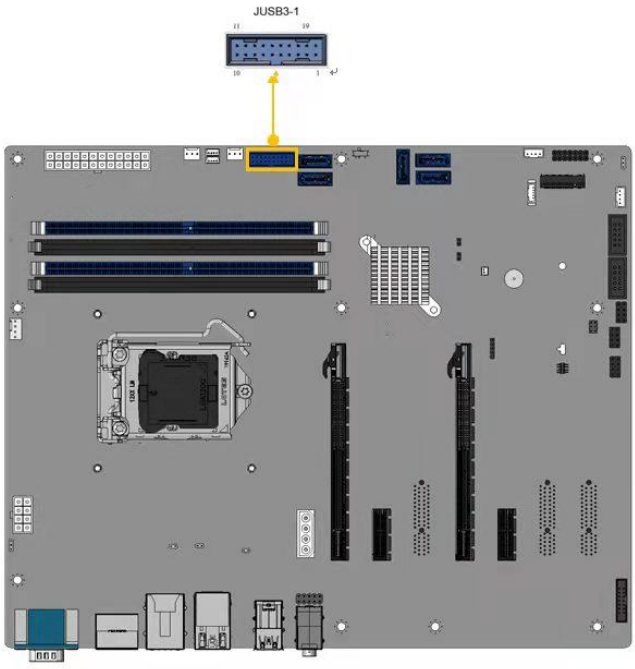


Figure 3-31: Internal USB 3.2 Gen 1 Connector Location

Pin	Description	Pin	Description
1	VCC	11	USB_DATA+
2	USB_RX-	12	USB_ DATA-
3	USB_RX+	13	GND
4	GND	14	USB3_TX+
5	USB3_TX-	15	USB3_ TX-
6	USB3_TX+	16	GND
7	GND	17	USB3_RX+

Pin	Description	Pin	Description
8	USB3_DATA-	18	USB3_RX-
9	USB3_DATA+	19	VCC
10	NC		

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

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:

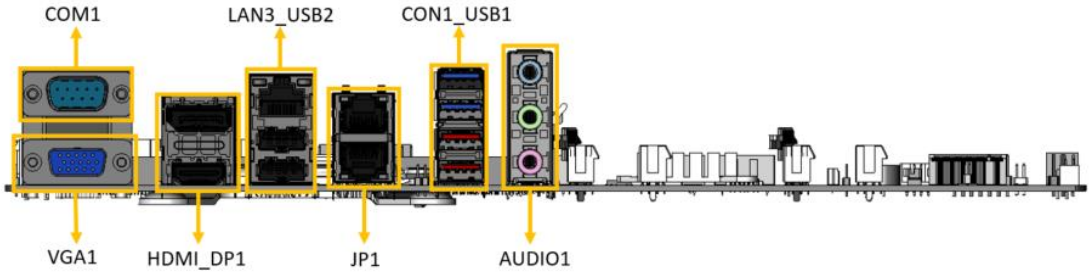


Figure 3-32: External Peripheral Interface Connector

3.3.1 External HD Audio Jack

CN Label: **AUDIO_CV1**

CN Type: Audio jacks

CN Location: See **Figure 3-33**

The audio jacks connect to external audio devices.

- **Line In port (Light Blue):** CD/DVD or other audio source input port.
- **Line Out port (Green):** connect this port to headphone or speaker.
- **Microphone (Pink):** connect this port to microphone.

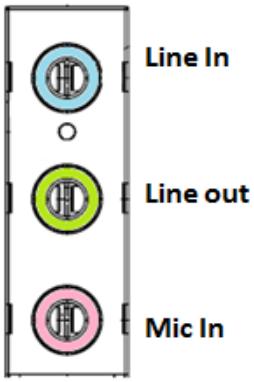


Figure 3-33: Audio Connector

3.3.2 External HDMI And DP Combo Connector

CN Label: **HDMI_DP1**

CN Type: HDMI, DisplayPort

CN Location: See **Figure 3-34** and **Figure 3-35**

CN Pinouts: See **Table 3-30** and **Table 3-31**

The HDMI connector can connect to an HDMI device.

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

Table 3-30: HDMI Connector Pinouts

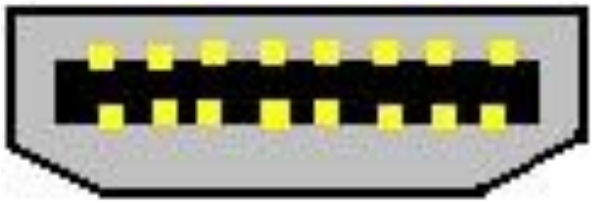


Figure 3-34: HDMI Connector

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

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

Table 3-31: DP++ Connector Pinouts

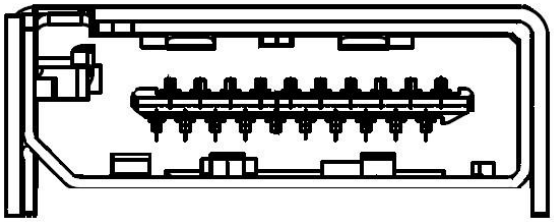


Figure 3-35: DP++ Connector

3.3.3 External Dual 2.5GbE RJ-45 Connector

CN Label: **JP1**

CN Type: Dual RJ45

CN Location: See **Figure 3-36**

CN Pinouts: See **Table 3-32**

The dual 2.5GbE RJ-45 connector support 10/100/1000/2500Mb/s data rate

PIN	DESCRIPTION	PIN	DESCRIPTION
A1	LAN1_MDI0P	B1	LAN1_MDI0P
A2	LAN1_MDI0N	B2	LAN1_MDI0N
A3	LAN1_MDI1P	B3	LAN1_MDI1P
A4	LAN1_MDI1N	B4	LAN1_MDI1N
A5	LAN1_MDI2P	B5	LAN1_MDI2P
A6	LAN1_MDI2N	B6	LAN1_MDI2N
A7	LAN1_MDI3P	B7	LAN1_MDI3P
A8	LAN1_MDI3N	B8	LAN1_MDI3N
A9	Connect 0.1uf	B9	Connect 0.1uf
A10	GND	B10	GND
AL1	2.5G_LED	BL1	2.5G_LED
AL2	1G_LED	BL2	1G_LED
AL3	ACT_LED	BL3	ACT_LED
AL4	+3.3V	BL4	+3.3V

Table 3-32: Dual RJ45 Pinouts

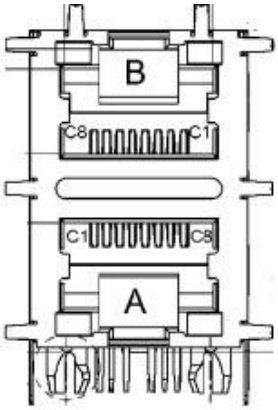


Figure 3-36: Dual RJ45 Connector

Each LAN connector connects to a local network.

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	MDIA3-	5	MDIA1+
2	MDIA3+	6	MDIA2+
3	MDIA2-	7	MDIA0-
4	MDIA1-	8	MDIA0+

Table 3-33: LAN Port Pinouts

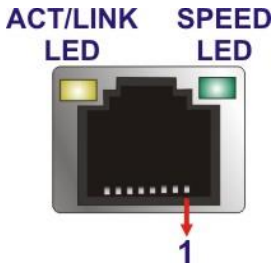


Figure 3-37: LAN Connector

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

Table 3-34: LAN Connector LEDs

3.3.4 RS-232 and VGA Connectors

CN Label: **COM1/VGA**

CN Type: 15-pin VGA and 9-pin COM1

CN Location: See **Figure 3-38** and **Figure 3-39**

CN Pinouts: See **Table 3-35** and **Table 3-35**

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

Pin	Description	Pin	Description
1	DCD1	6	DSR1
2	RXD1	7	RTS1
3	TXD1	8	CTS1
4	DTR1	9	RI1
5	GND1		

Table 3-35: COM1 Connector Pinouts

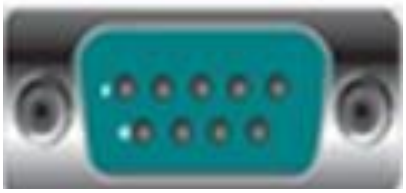


Figure 3-38: COM1 Serial Port Pinout Locations

The 15-pin VGA connector connects to a monitor that accepts a standard VGA input.

NOTE:

The user has to connect the VGA connector to the monitor before system booting as the VGA output function is supported via the eDP to VGA converter.

Pin	Description	Pin	Description
V1	RED	V2	GREEN

Pin	Description	Pin	Description
V3	BLUE	V4	NC
V5	GND	V6	Hot plug detect
V7	GND	V8	GND
V9	VCC	V10	GND
V11	NC	V12	DDCDA
V13	HSYNC	V14	VSYNC
V15	DDCCLK		

Table 3-36: VGA Connector Pinouts

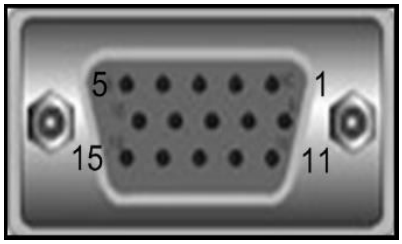


Figure 3-39: VGA Connector

3.3.5 External 2.5GbE Connector and External USB 2.0 Connector

CN Label: **LAN3_USB2**

CN Type: 8–pin 2.5GbE and 8–pin USB 2.0

CN Location: See **Figure 3-40**

CN Pinouts: See **Table 3-37** and **Table 3-38**

The USB connector can be connected to a USB device. The RJ-45 connector supports 10/100/1000/2500Mb/s data rate.

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	LAN3_I225_MDI0_P	5	LAN3_I225_MDI0_P
2	LAN3_I225_MDI0_N	6	LAN3_I225_MDI0_N
3	LAN3_I225_MDI0_P	7	LAN3_I225_MDI0_P
4	LAN3_I225_MDI0_N	8	LAN3_I225_MDI0_N

Table 3-37: RJ45 LAN Connector

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	VCC	5	VCC
2	USB_DATA-	6	USB_DATA-
3	USB_DATA+	7	USB_DATA+
4	GND	8	GND

Table 3-38: External USB 2.0 Connector

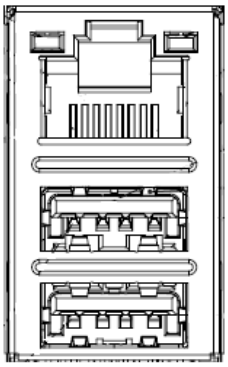


Figure 3-40: USB 2.0 and RJ45 LAN Connector

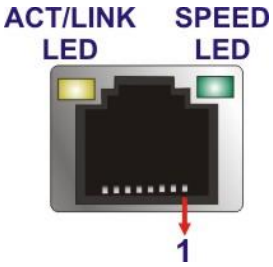


Figure 3-41: LAN Connector

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

Table 3-39: LAN Connector LEDs

3.3.6 External Dual USB 3.2 Gen 1 And Dual USB 3.2 Gen 2 Connector

CN Label: **CON1_USB1**

CN Type: USB 3.2 Gen1 & USB 3.2 Gen 2 Type A

CN Location: See **Figure 3-42**

CN Pinouts: See **Table 3-40** Table 3-40

There are four external USB 3.2 connectors on the IMBA-Q471.The CON1_USB1 connector supports dual USB 3.2 Gen 2(10Gb/s) and dual USB 3.2 Gen 1（5Gb/s）.

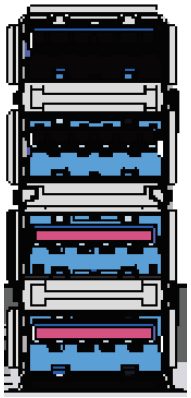


Figure 3-42: USB 3.2 Gen1 & USB 3.2 Gen 2 Type A Location

PIN	DESCRIPTION	PIN	DESCRIPTION
A1	VCC	C1	VCC
A2	USB_DATA-	C2	USB_DATA-
A3	USB_DATA+	C3	USB_ DATA+
A4	GND	C4	GND
A5	USB3_RX-	C5	USB3_RX-
A6	USB3_RX+	C6	USB3_ RX+
A7	GND	C7	GND
A8	USB3_TX-	C8	USB3_TX-
A9	USB3_TX+	C9	USB3_TX+
B1	VCC	D1	VCC
B2	USB_DATA-	D2	USB_DATA-
B3	USB_DATA+	D3	USB_ DATA+
B4	GND	D4	GND

B5	USB3_RX-	D5	USB3_RX-
B6	USB3_RX+	D6	USB3_ RX+
B7	GND	D7	GND
B8	USB3_TX-	D8	USB3_TX-
B9	USB3_TX+	D9	USB3_TX+

Table 3-40: USB 3.2 Gen1 & USB 3.2 Gen 2 Type A Connector Pinouts

Chapter

4

Installation

4.1 Anti-Static Precautions

WARNING:

Failure to take ESD precautions during the installation of the IMBA-Q471 may result in permanent damage to the IMBA-Q471 and severe injury to the user.

Electrostatic discharge (ESD) can cause serious damage to electronic components, including the IMBA-Q471. Dry climates are especially susceptible to ESD. It is therefore critical that whenever the IMBA-Q471 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-Q471, place it on an anti-static pad. This reduces the possibility of ESD damaging the IMBA-Q471.
- ***Only handle the edges of the PCB***:-: When handling the PCB, hold the PCB by the edges.

4.2 Installation Considerations

NOTE:

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

WARNING:

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

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

- Read the user manual:
  - The user manual provides a complete description of the IMBA-Q471 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-Q471 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-Q471 off:
  - When working with the IMBA-Q471, 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-Q471, **DO NOT:**

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

4.3 Socket LGA1200 CPU Installation

WARNING:

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

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

To install the CPU, follow the steps below.

Step 1: **Disengage the load lever** by pressing the lever down and slightly outward to clear the retention tab. Fully open the lever. See **Figure 4-1**.

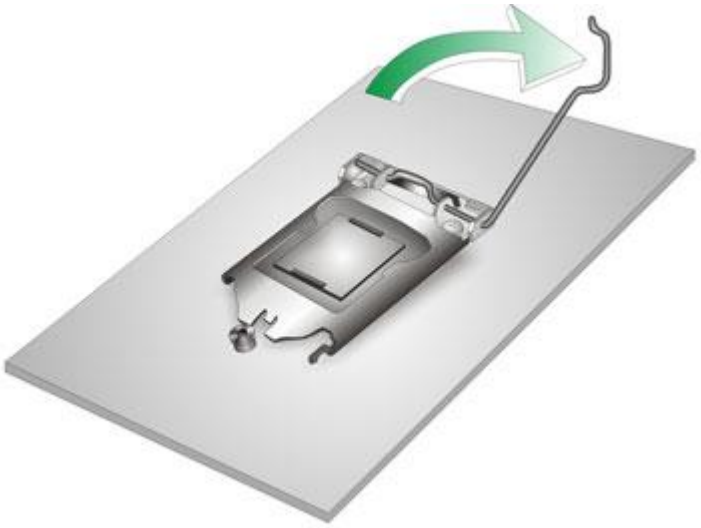


Figure 4-1: Disengage the CPU Socket Load Lever

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 4-2**.

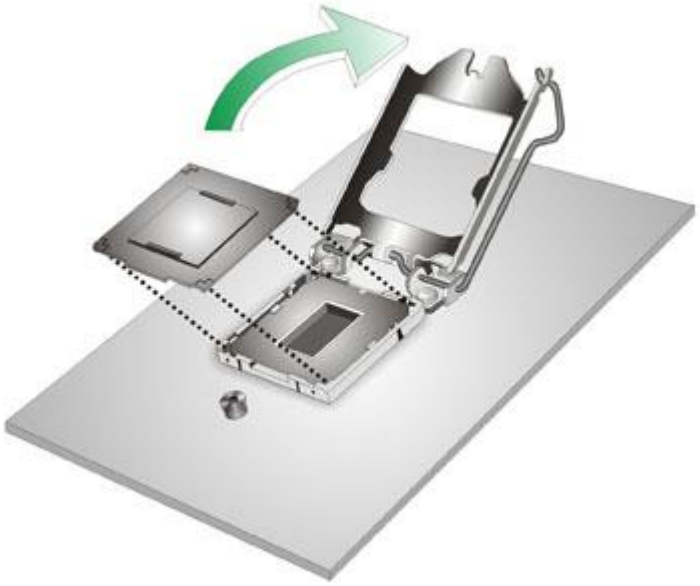


Figure 4-2: Remove Protective Cover

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

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

WARNING:

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

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

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

Step 7: **Insert the CPU.** Gently insert the CPU into the socket. If the CPU pins are properly aligned, the CPU should slide into the CPU socket smoothly. See **Figure 4-3**.

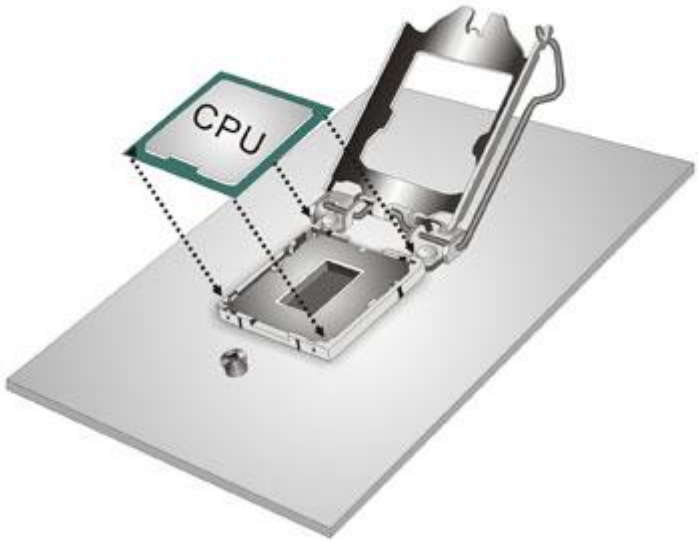


Figure 4-3: Insert the Socket LGA1200 CPU

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

Figure 4-4: Close the Socket LGA1200

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

4.4 Socket LGA1200 Cooling Kit Installation

WARNING:

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

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

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

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 4-5.**

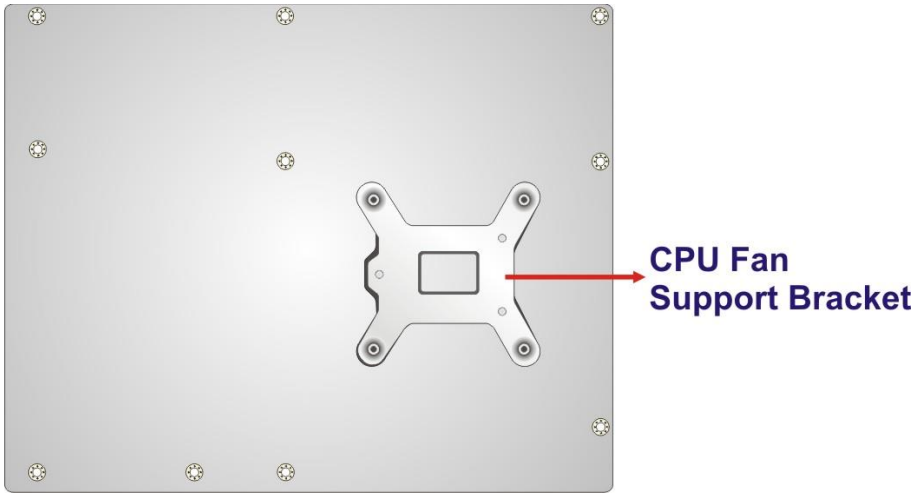


Figure 4-5: Cooling Kit Support Bracket

Step 2: **Place the cooling kit onto the socket LGA1200 CPU**. Make sure the CPU cable can be properly routed when the cooling kit is installed.

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

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

Step 5: **Connect the fan cable**. Connect the cooling kit fan cable to the CPU fan connector on the IMBA-Q4711. Carefully route the cable and avoid heat generating chips and fan blades.

4.5 DIMM Installation

To install a DIMM, please follow the steps below and refer to **Figure 4-6**.

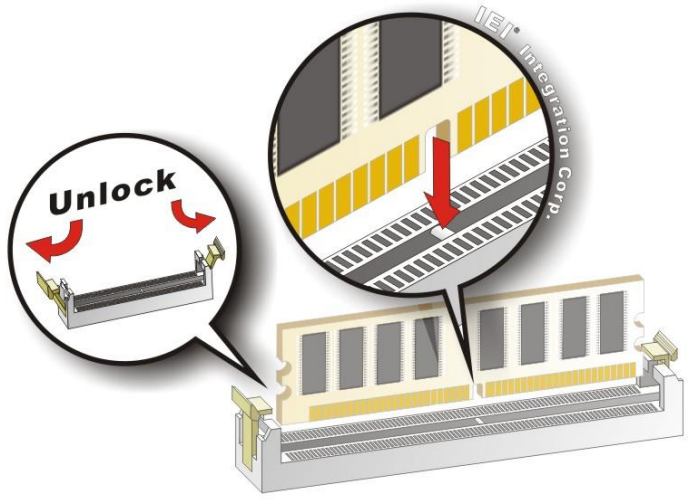


Figure 4-6: DIMM Installation

Step 1: **Open the DIMM socket handles**. Open the two handles outwards as far as they can. See **Figure 4-6**.

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 4-6**.

Step 3: **Insert the DIMM**. Once aligned, press down until the DIMM is properly seated. Clip the two handles into place. See **Figure 4-6**.

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.

4.6 System Configuration

The system configuration is controlled by jumpers, buttons, switches and BIOS options. The system configuration must be performed before installation.

4.6.1 AT/ATX Power Mode Setting

The AT and ATX power mode selection is made through the AT/ATX power mode switch which is shown in **Figure 4-7**.

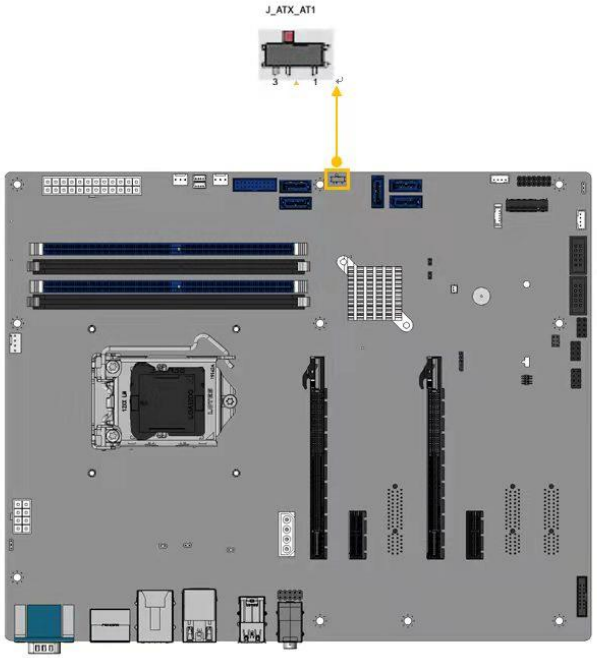


Figure 4-7: AT/ATX Power Mode Switch Location

Setting	Description
1-2	ATX power mode (default)
2-3	AT power mode

Table 4-1: AT/ATX Power Mode Switch Settings

4.6.2 Clearing CMOS

To reset the BIOS, remove the on-board battery and short the **ME_RTC2** connector The clear CMOS connector is shown in **Figure 4-8**

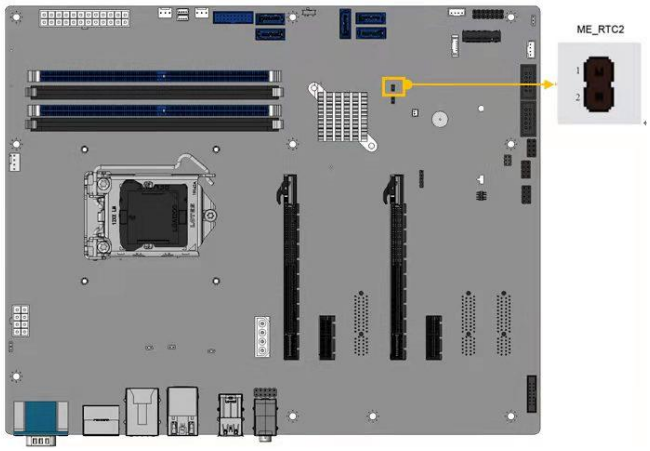


Figure 4-8: Clear CMOS Jumper Location

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

Table 4-2: Clear CMOS Jumper Pinouts

4.6.3 Flash Descriptor Security Override Jumper

The flash descriptor security override jumper (J_FLASH1) allows to enable or disable the ME firmware update. Refer to **Table 4-3** and **Figure 4-9** for the jumper location and settings.

Pin	Description
Short 1-2	Disabled (default)
Short 2-3	Enabled

Table 4-3: Flash Escriptor Security Override Jumper Pinouts

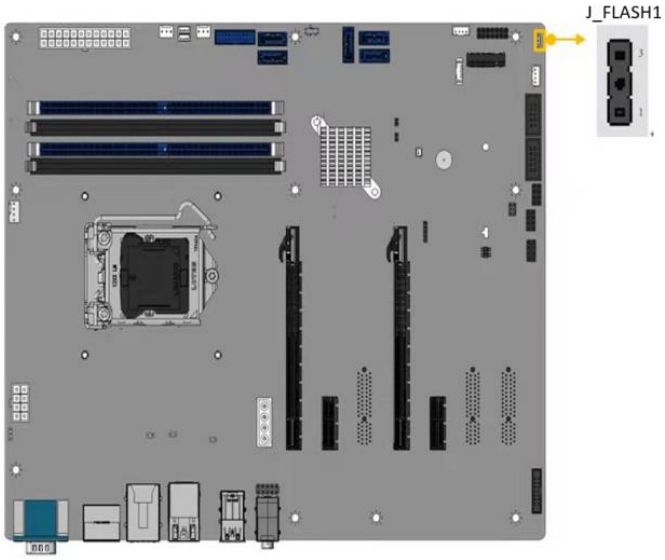


Figure 4-9: Flash Descriptor Security Override Jumper Location

To update the ME firmware, please follow the steps below.

Step 1: Before turning on the system power, short pin 2-3 of the flash descriptor security override jumper.

Step 2: Update the BIOS and ME firmware, and then turn off the system power.

Step 3: Remove the metal clip on the flash descriptor security override jumper or return to its default setting (short pin 1-2).

Step 4: Restart the system. The system will reboot 2 ~ 3 times to complete the ME firmware update.

4.7 Internal Peripheral Device Connections

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

4.7.1 SATA Drive Connection

The IMBA-Q471 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 4-10**.

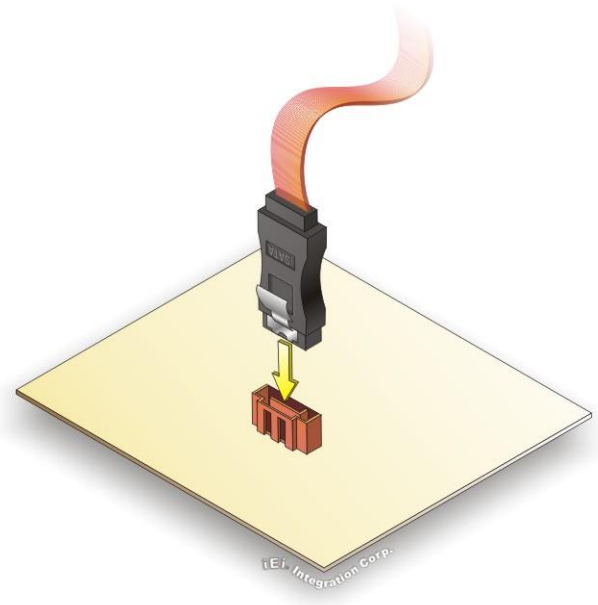


Figure 4-10: SATA Drive Cable Connection

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 4-11**.

Step 4: **Connect the SATA power cable**. Connect the SATA power connector to the back of the SATA drive. See **Figure 4-11**.

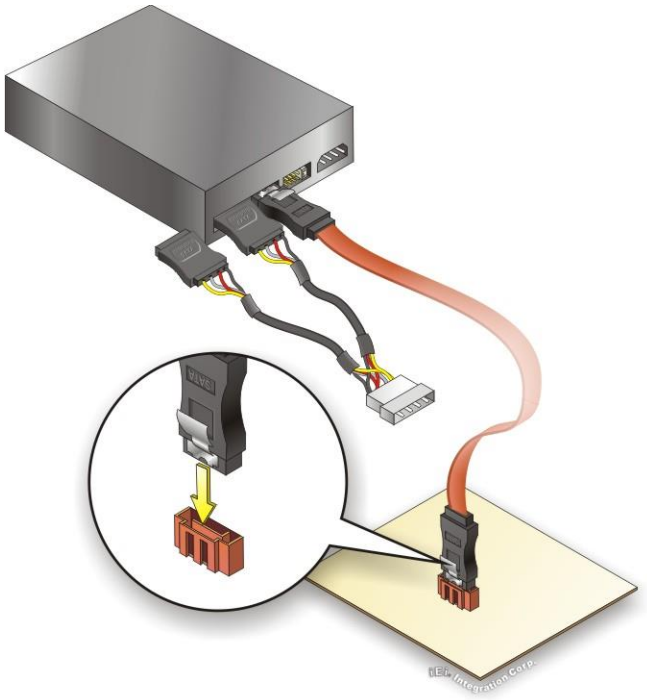


Figure 4-11: SATA Power Drive Connection

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

4.8 Software Installation

All the drivers for the IMBA-Q471 are available on IEI Resource Download Center (https://download.ieiworld.com). Type IMBA-Q471 and press Enter to find all the relevant software, utilities, and documentation.

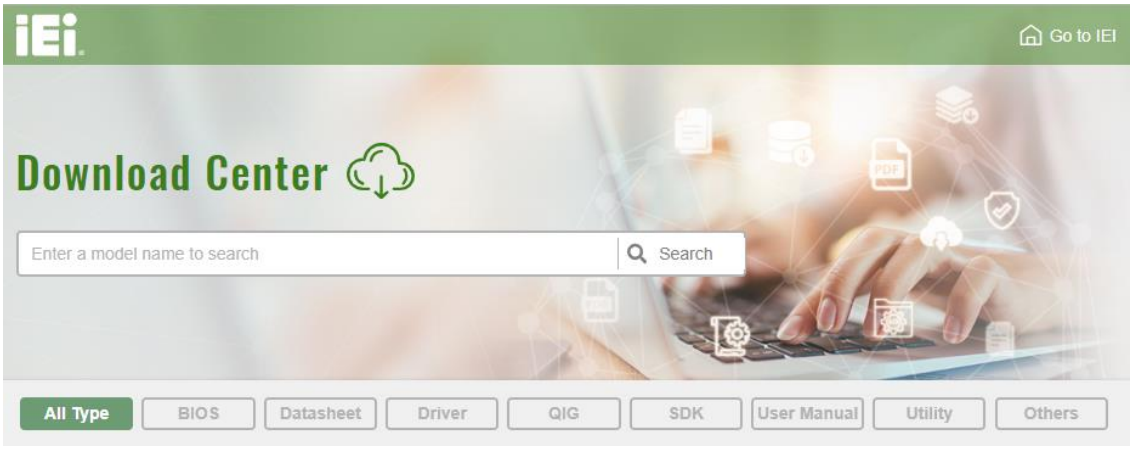
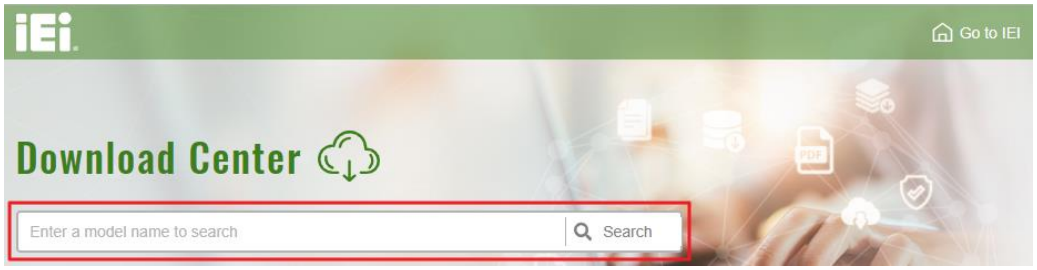


Figure 4-12: IEI Resource Download Center

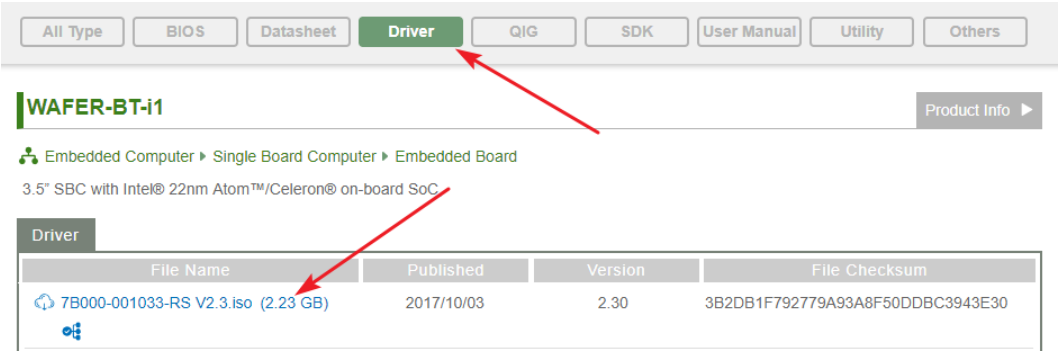
4.9 Driver Download

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

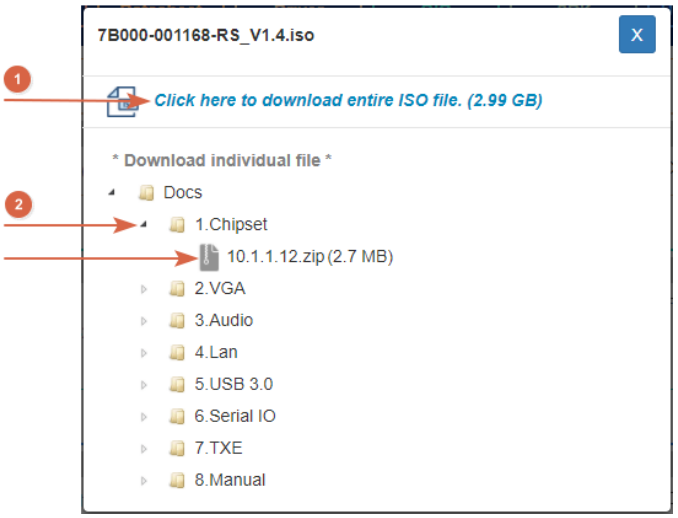
Step 1: Go to https://download.ieiworld.com. Type IMBA-Q471 and press Enter.



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).



NOTE:

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

4.10 Intel® AMT Setup Procedure

The IMBA-Q471 is featured with the Intel® Active Management Technology (AMT). To enable the Intel® AMT function, follow the steps below.

Step 1: Make sure at least one of the memory sockets is installed with a DDR4 DIMM.

Step 2: Connect an Ethernet cable to the RJ-45 connector labeled **JP1**

Step 3: The AMI BIOS options regarding the Intel® ME or Intel® AMT must be enabled,

Step 4: Properly install the Intel® Management Engine Components drivers from the iAMT Driver & Utility directory in the driver CD.

Step 5: Configure the Intel® Management Engine BIOS extension (MEBx). To get into the Intel® MEBx settings, press <Ctrl+P> after a single beep during boot-up process. Enter the Intel® current ME password as it requires (the Intel® default password is **admin**).

Appendix

A

Regulatory Compliance

DECLARATION OF CONFORMITY

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

FCC WARNING

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

- This device may not cause harmful interference, and
- This device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Appendix

B

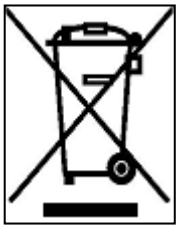
Product Disposal

CAUTION:

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

Dispose of used batteries according to instructions and local regulations.

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



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

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

Appendix

C

Error Beep Code

C.1 PEI Beep Codes

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

C.2 DXE Beep Codes

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

NOTE:

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

Appendix

D

Hazardous Materials Disclosure

D.1 RoHS 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

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

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

D.2 China RoHS

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

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

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

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

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