

**ATX Motherboard Supports LGA1700 12th/13th Gen. Intel® Core™  
i9/i7/i5/i3, Pentium® and Celeron® Processor, DDR4,  
Triple Independent Display, Dual 2.5GbE LAN, M.2,  
USB 3.2, SATA 6Gb/s, IPMI, Audio and RoHS**

# **IMBA-ADL-Q670**

## **Quick Installation Guide** **Version 1.0**

January 5, 2023

### **Package List**

IMBA-ADL-Q670 package includes the following items:

- 1 x IMBA-ADL-Q670 single board computer
- 2 x SATA cable
- 1 x I/O shielding
- 1 x QIG



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## Specifications

- CPU:  
LGA1700 12<sup>th</sup>/13<sup>th</sup> Generation Intel® Core™ i9/i7/i5/i3, Celeron® and Pentium® processors (up to 125W TDP)
- Chipset:  
Intel® Q670/Q670E
- Memory:  
Four 288-pin 3200MHz dual-channel unbuffered DDR4 SDRAM DIMM slots supporting up to 128 GB memory
- BIOS:  
AMI UEFI BIOS
- Graphics Engine:  
New Intel® Xe Graphics architecture with SRIOV, Genlock
- Display Output:  
Triple independent display  
1 x DP (up to 4096 x 2304 @ 60Hz)  
1 x HDMI (up to 4096 x 2304 @ 30Hz)  
1 x IEI iDPM eDP/ LVDS/ VGA module
- Ethernet:  
2 x 2.5GbE RJ-45 port via Intel® I225V controller (colay I225-LM support vPro)
- External I/O Interface:  
4 x USB 3.2 Gen 2 (Type-A) (10Gb/s)  
2 x USB 3.2 Gen 1 (Type-A) (5Gb/s)  
2 x RS-232/422/485 (RS-485 support AFC)
- Internal I/O Interface:  
4 x SATA 6Gb/s (RAID 0/1/5/10 supported)  
4 x USB 2.0 (2x4 pin, p=2.54)  
2 x USB 3.2 Gen 1 (5Gb/s) (2x10 pin, p=2.00, wafer)  
4 x RS-232 (2x5 pin, p=2.54)
- Audio:  
1 x iAUDIO supports IEI AC-KIT-888S Audio Kit (2x5 pin)

- Front Panel:
  - 1 x Front panel (2x7 pin, p=2.54; power LED, HDD LED, speaker, power button, reset button)
- LAN LED:
  - 2 x LAN LED (1x2 pin, p=2.54)
- Expansions:
  - 1 x PCIe Gen4 x16 slot
  - 3 x PCIe Gen4 x4 open-end slot
  - 2 x PCIe Gen3 x1 slot
  - 1 x PCI slot
  - 1 x M.2 M key (2242/2280, PCIe x4), NVMe supported
  - 1 x M.2 M key (2242/2280, PCIe x2 for SSD), NVMe supported
- Digital I/O:
  - 1 x 12-bit digital I/O (2x7 pin, p=2.0)
- SMBus:
  - 1 x SMBus (1x4 pin, p=1.25)
- I<sup>2</sup>C:
  - 1 x I<sup>2</sup>C (1x4 pin, p=1.25)
- Fan Connector:
  - 1 x CPU fan connector (1x4 pin)
  - 2 x System fan connector (1x4 pin)
- Chassis Intrusion:
  - 1 x Chassis intrusion connector (1x2 pin, p=2.54)
- TPM:
  - Intel® PTT (TPM 2.0)
- IPMI:
  - 1 x IPMI slot supports intelligent platform management
- Power Supply:
  - ATX/AT power supply
  - Support AT/ATX mode
  - ErP/EuP compliant

- Power Consumption:  
3.3V@1.04A, 5V@10.38A, 12V@5.76A, 5VSB@0.39A  
(Intel® Core™ i9-12900E CPU with 8 GB 3200 MHz DDR4 memory, EuP mode enabled)
- Watchdog Timer:  
Software programmable support 1–255 sec. system reset
- Operation Temperature: 0°C – 60°C
- Storage Temperature: -30°C – 70°C
- Operation Humidity: 5% – 95%, non-condensing
- Dimensions: 244 mm x 305 mm
- Weight: GW:1200 g / NW:700 g

All the drivers and utility for the IMBA-ADL-Q670 are available on IEI Resource Download Center. Type IMBA-ADL-Q670 and press Enter to find all the relevant software, utilities, and documentation. To install software from the downloaded ISO file, mount the file as a virtual drive to view its content.

IEI Resource Download Center

<https://download.ieiworld.com>



## Ordering Information

- **IMBA-ADL-Q670-R10:**  
ATX motherboard supports LGA1700 12th/13th Generation Intel® Core™ i9/i7/i5/i3, Pentium® and Celeron® processor, DDR4, triple independent display, dual 2.5GbE LAN, M.2, USB 3.2, SATA 6Gb/s, IPMI, audio and RoHS
- **AC-KIT-888S-R10:**  
Realtek ALC888S 7.1 Channel HD Audio board, RoHS
- **19800-003100-100-RS:**  
Dual-port USB cable with bracket, 300mm, p=2.54
- **19800-010500-200-RS:**  
USB 3.0/USB3.2 cable with bracket, 450mm, p=2.0
- **32102-000100-200-RS:**  
SATA power cable, MOLEX 5264-4P to SATA15P
- **32205-000702-200-RS:**  
RS-232 cable, 230mm, p=2.54
- **iDPM-eDP-R10:**  
eDP to eDP converter board (for IEI iDPM connector)
- **iDPM-LVDS-R10:**  
eDP to LVDS converter board (for IEI iDPM connector)

## Jumpers Setting and Connectors

<b>LABEL</b>	<b>FUNCTION</b>
J_ATX_AT1	AT/ATX power mode setting
J_CMOS1	Clear CMOS jumper
IAUDIO	Audio connector for IEI AC-KIT-888S kit
ATX1	ATX power connector
CPU12V1	ATX CPU 12V power connector
BAT2	RTC battery connector
CHASSIS1	Chassis intrusion connector
CHA_DIMM0, CHA_DIMM1, CHB_DIMM0, CHB_DIMM1	DDR4 DIMM slots
DIO1	Digital I/O connector
DEBUG_1	EC debug connector
CPU_FAN1, SYS_FAN1, SYS_FAN2	Fan connectors
F_PANEL1	Front panel connector
J_I2C1	I <sup>2</sup> C connector
JLAN_LED1	LAN1 link LED connector
JLAN_LED2	LAN2 link LED connector
COM3, COM4, COM5, COM6	RS-232 serial port connectors
SATA1, SATA2, SATA3, SATA4	SATA 6Gb/s connectors
J_SMB1	SMBus connector
JSPI1	Flash SPI ROM connector
USB2_CN1, USB2_CN2	Internal USB 2.0 connectors
USB3_2	Internal USB 3.2 Gen 1 connector
M2_M1, M2_M2	M.2 M key slots
IDPM	IEI iDPM slot
IPMI1	IPMI (Intelligent Platform Management Interface) slot
PCI1	PCI slot
PCIE3, PCIE7	PCIe x1 slots
PCIE1, PCIE5, PCIE6	PCIe x4 slots
PCIE8	PCIe x16 slot

PWR_BTN1	Onboard power button
COM1_2	External dual RS-232/422/485 connector
HDMI_DP1	External HDMI and DP combo connector
LAN1_USB1	External 2.5GbE RJ-45 and dual USB 3.2 Gen 1 combo connector
LAN2_USB2	External 2.5GbE RJ-45 and dual USB 3.2 Gen 2 combo connector
LAN3_USB3	External RJ-45 for IPMI and dual USB 3.2 Gen 2 combo connector

<b>J_ATX_AT1: AT/ATX Power Mode Setting</b>	
<b>PIN NO.</b>	<b>DESCRIPTION</b>
Short A - B	ATX Power Mode (default)
Short B - C	AT Power Mode

<b>J_CMOS1: Clear CMOS Button</b>	
<b>Status</b>	<b>DESCRIPTION</b>
NC	Keep CMOS Setup (Normal Operation)
Press	Clear CMOS Setup

<b>IAUDIO: Audio Connector for IEI AC-KIT-888S kit</b>			
<b>PIN NO.</b>	<b>DESCRIPTION</b>	<b>PIN NO.</b>	<b>DESCRIPTION</b>
1	HDA_SYNC_R	2	HDA_BCLK_R
3	HDA_SDO_R	4	HDA_PCBEPC
5	HDA_SDI_0_R	6	HDA_RST_R
7	+5V	8	GND
9	+12V	10	GND

<b>ATX1: ATX Power Connector</b>			
<b>PIN NO.</b>	<b>DESCRIPTION</b>	<b>PIN NO.</b>	<b>DESCRIPTION</b>
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

<b>CPU12V1: ATX CPU 12V Power Connector</b>			
<b>PIN NO.</b>	<b>DESCRIPTION</b>	<b>PIN NO.</b>	<b>DESCRIPTION</b>
1	GND	5	+12V
2	GND	6	+12V
3	GND	7	+12V
4	GND	8	+12V

<b>BAT2: RTC Battery Connector</b>			
<b>PIN NO.</b>	<b>DESCRIPTION</b>	<b>PIN NO.</b>	<b>DESCRIPTION</b>
1	VBATT	2	GND

<b>CHASSIS1: Chassis Intrusion Connector</b>			
<b>PIN NO.</b>	<b>DESCRIPTION</b>	<b>PIN NO.</b>	<b>DESCRIPTION</b>
1	CASEOPEN_N	2	GND



<b>DIO1 : Digital Input/Output Connector</b>			
<b>PIN NO.</b>	<b>DESCRIPTION</b>	<b>PIN NO.</b>	<b>DESCRIPTION</b>
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

<b>DEBUG_1: EC Debug Connector</b>			
<b>PIN NO.</b>	<b>DESCRIPTION</b>	<b>PIN NO.</b>	<b>DESCRIPTION</b>
1	NC	4	EDICLK
2	EDICS	5	EDIDI
3	EDIDO	6	GND

<b>CPU_FAN1: CPU Fan Connector</b>			
<b>PIN NO.</b>	<b>DESCRIPTION</b>	<b>PIN NO.</b>	<b>DESCRIPTION</b>
1	GND	2	+12V
3	FANIO	4	PWM (+5V)

<b>SYS_FAN1, SYS_FAN2: System Fan Connectors</b>			
<b>PIN NO.</b>	<b>DESCRIPTION</b>	<b>PIN NO.</b>	<b>DESCRIPTION</b>
1	GND	2	+12V
3	FANIO	4	PWM (+5V)

<b>F_PANEL1: Front Panel Connector</b>					
	<b>PIN</b>	<b>DESCRIPTION</b>	<b>PIN</b>	<b>DESCRIPTION</b>	
PWR LED	1	PWR_LED+	2	SPKR+	SPKR
	3	NC	4	NC	
	5	PWR_LED-	6	NC	
PWR BTN	7	PWR_BTN+	8	SPKR-	
	9	PWR_BTN-	10	NC	
HDD LED	11	HDD_LED+	12	Reset+	RESET
	13	HDD_LED-	14	Reset-	

<b>J_I2C1: I<sup>2</sup>C Connector</b>			
<b>PIN NO.</b>	<b>DESCRIPTION</b>	<b>PIN NO.</b>	<b>DESCRIPTION</b>
1	GND	3	I2C_CLK
2	I2C_DATA	4	+5V

<b>JLAN_LED1: LAN1 Link LED Connector</b>			
<b>PIN</b>	<b>DESCRIPTION</b>	<b>PIN</b>	<b>DESCRIPTION</b>
1	+3.3V	2	I225_LINK_ACT_N_1

<b>JLAN_LED2: LAN2 Link LED Connector</b>			
<b>PIN</b>	<b>DESCRIPTION</b>	<b>PIN</b>	<b>DESCRIPTION</b>
1	+3.3V	2	I225_LINK_ACT_N_2

<b>COM3, COM4, COM5, COM6: RS-232 Serial Port Connectors</b>			
<b>PIN NO.</b>	<b>DESCRIPTION</b>	<b>PIN NO.</b>	<b>DESCRIPTION</b>
1	DCD	2	DSR
3	RXD	4	RTS
5	TXD	6	CTS
7	DTR	8	RI
9	GND	10	NC

<b>SATA1, SATA2, SATA3, SATA4: SATA 6Gb/s Connectors</b>			
<b>PIN NO.</b>	<b>DESCRIPTION</b>	<b>PIN NO.</b>	<b>DESCRIPTION</b>
1	GND	5	SATA_RX-
2	SATA_TX+	6	SATA_RX+
3	SATA_TX-	7	GND
4	GND	8	N/C

<b>J_SMB1: SMBus Connector</b>			
<b>PIN NO.</b>	<b>DESCRIPTION</b>	<b>PIN NO.</b>	<b>DESCRIPTION</b>
1	GND	3	SMB_CLK
2	SMB_DATA	4	+5V

<b>JSPI1: Flash SPI ROM Connector</b>			
<b>PIN NO.</b>	<b>DESCRIPTION</b>	<b>PIN NO.</b>	<b>DESCRIPTION</b>
1	+3.3V	4	SPI_CLK
2	SPI_CS#	5	SPI_SI
3	SPI_SO	6	GND

<b>USB2_CN1, USB2_CN2: Internal USB 2.0 Connectors</b>			
<b>PIN NO.</b>	<b>DESCRIPTION</b>	<b>PIN NO.</b>	<b>DESCRIPTION</b>
1	VCC	2	GND
3	USB_DATA-	4	USB_DATA+
5	USB_DATA+	6	USB_DATA-
7	GND	8	VCC

<b>USB3_2: Internal USB 3.2 Gen 1 Connector</b>			
<b>PIN NO.</b>	<b>DESCRIPTION</b>	<b>PIN NO.</b>	<b>DESCRIPTION</b>
1	+5V	11	USB2_4_P
2	USB3_RX3_N	12	USB2_4_N
3	USB3_RX3_P	13	GND
4	GND	14	USB3_TX4_P
5	USB3_TX3_N	15	USB3_TX4_N
6	USB3_TX3_P	16	GND
7	GND	17	USB3_RX4_P
8	USB2_3_N	18	USB3_RX4_N
9	USB2_3_P	19	+5V
10	N/C		

<b>M2_M1: M.2 M-key Slot</b>			
<b>PIN NO.</b>	<b>DESCRIPTION</b>	<b>PIN NO.</b>	<b>DESCRIPTION</b>
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_4_TX_DN4	12	+3.3V
13	PCIE_4_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_3_TX_DN3	24	N/C
25	PCIE_3_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_2_TX_DN2	36	N/C
37	PCIE_2_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_1_TX_DN1	48	N/C
49	PCIE_1_TX_DP1	50	PLT_RST_N
51	GND	52	SRCCLKREQB_17_N
53	PCIE_SRC17_DN	54	NC
55	PCIE_SRC17_DP	56	N/C
57	GND	58	N/C
59	N/C	60	N/C
61	N/C	62	N/C
63	N/C	64	N/C
65	N/C	66	N/C
67	N/C	68	NC
69	N/C	70	+3.3V
71	GND	72	+3.3V
73	GND	74	+3.3V
75	GND		

<b>M2_M2: M.2 M-key Slot</b>			
<b>PIN NO.</b>	<b>DESCRIPTION</b>	<b>PIN NO.</b>	<b>DESCRIPTION</b>
1	GND	2	+3.3V
3	GND	4	+3.3V
5	N/C	6	N/C
7	N/C	8	N/C
9	GND	10	NGFF2_ACT_N
11	N/C	12	+3.3V
13	N/C	14	+3.3V
15	GND	16	+3.3V
17	N/C	18	+3.3V
19	N/C	20	N/C
21	GND	22	N/C
23	N/C	24	N/C
25	N/C	26	N/C

27	GND	28	N/C
29	PCIE_18_RX_DN	30	N/C
31	PCIE_18_RX_DP	32	N/C
33	GND	34	N/C
35	PCIE_18_TX_DN18	36	N/C
37	PCIE_18_TX_DP18	38	M_2_SATA_SLP
39	GND	40	N/C
41	PCIE_17_RX_DN	42	N/C
43	PCIE_17_RX_DP	44	N/C
45	GND	46	N/C
47	PCIE_17_TX_DN17	48	N/C
49	PCIE_17_TX_DP17	50	PERST_N
51	GND	52	SRCCLKREQB_15_N
53	PCIE_SRC15_DN	54	NC
55	PCIE_SRC15_DP	56	N/C
57	GND	58	N/C
59	N/C	60	N/C
61	N/C	62	N/C
63	N/C	64	N/C
65	N/C	66	N/C
67	N/C	68	NC
69	N/C	70	+3.3V
71	GND	72	+3.3V
73	GND	74	+3.3V
75	GND		

<b>COM1, COM2: External RS-232/422/485 Connectors</b>			
	<b>RS-232</b>	<b>RS-422</b>	<b>RS-485</b>
1	DCD	TXD422-	TXD485-
2	RXD	TXD422+	TXD485+
3	TXD	RXD422+	--
4	DTR	RXD422-	--
5	GND	--	--
6	DSR	--	--
7	RTS	--	--
8	CTS	--	--
9	RI	--	--

<b>HDMI_DP1</b>			
<b>External DP Connector</b>			
<b>PIN NO.</b>	<b>DESCRIPTION</b>	<b>PIN NO.</b>	<b>DESCRIPTION</b>
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
<b>External HDMI Connector</b>			
<b>PIN NO.</b>	<b>DESCRIPTION</b>	<b>PIN NO.</b>	<b>DESCRIPTION</b>
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		

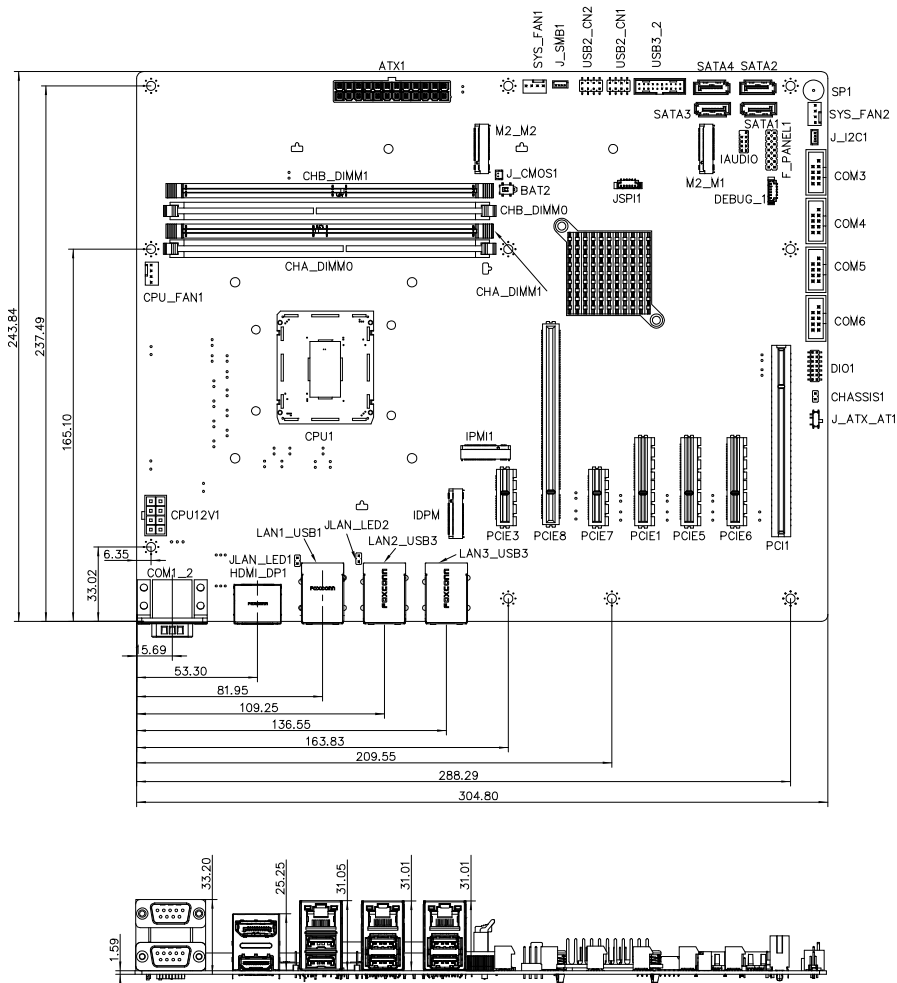
<b>LAN1_USB1</b>			
<b>External Dual USB 3.2 Gen 1 Connector</b>			
<b>PIN NO.</b>	<b>DESCRIPTION</b>	<b>PIN NO.</b>	<b>DESCRIPTION</b>
1	VCC	10	VCC
2	USB_DATA-	11	USB_DATA-
3	USB_DATA+	12	USB_DATA+
4	GND	13	GND
5	USB3_RX-	14	USB3_RX-
6	USB3_RX+	15	USB3_RX+
7	GND	16	GND
8	USB3_TX-	17	USB3_TX-
9	USB3_TX+	18	USB3_TX+
<b>2.5GbE RJ-45 Connector</b>			
<b>PIN NO.</b>	<b>DESCRIPTION</b>	<b>PIN NO.</b>	<b>DESCRIPTION</b>
20	LAN1_MDI0P	24	LAN1_MDI2P
21	LAN1_MDI0N	25	LAN1_MDI2N
22	LAN1_MDI1P	26	LAN1_MDI3P
23	LAN1_MDI1N	27	LAN1_MDI3N



<b>LAN2_USB2</b>			
<b>External Dual USB 3.2 Gen 2 Connector</b>			
<b>PIN NO.</b>	<b>DESCRIPTION</b>	<b>PIN NO.</b>	<b>DESCRIPTION</b>
1	VCC	10	VCC
2	USB_DATA-	11	USB_DATA-
3	USB_DATA+	12	USB_DATA+
4	GND	13	GND
5	USB3_RX-	14	USB3_RX-
6	USB3_RX+	15	USB3_RX+
7	GND	16	GND
8	USB3_TX-	17	USB3_TX-
9	USB3_TX+	18	USB3_TX+
<b>2.5GbE RJ-45 Connector</b>			
<b>PIN NO.</b>	<b>DESCRIPTION</b>	<b>PIN NO.</b>	<b>DESCRIPTION</b>
20	LAN1_MDI0P	24	LAN1_MDI2P
21	LAN1_MDI0N	25	LAN1_MDI2N
22	LAN1_MDI1P	26	LAN1_MDI3P
23	LAN1_MDI1N	27	LAN1_MDI3N

<b>LAN3_USB3</b>			
<b>External Dual USB 3.2 Gen 2 Connector</b>			
<b>PIN NO.</b>	<b>DESCRIPTION</b>	<b>PIN NO.</b>	<b>DESCRIPTION</b>
1	+5V	10	+5V
2	USB2_3_N	11	USB2_4_N
3	USB2_3_P	12	USB2_4_P
4	GND	13	GND
5	USB3_RX3_N	14	USB3_RX4_N
6	USB3_RX3_P	15	USB3_RX4_P
7	GND	16	GND
8	USB3_TX3_N	17	USB3_TX4_N
9	USB3_TX3_P	18	USB3_TX4_P
<b>RJ-45 for IPMI</b>			
<b>PIN NO.</b>	<b>DESCRIPTION</b>	<b>PIN NO.</b>	<b>DESCRIPTION</b>
19	GND	30	IPMI_LED_ATC_N
20	I225_MDI0_P_2	31	IPMI_LINK_LED_1G_N
21	IPMI_MDI0_N	32	IPMI_LINK_LED_100M_N
22	IPMI_MDI1_P	G1	LAN3_GND
23	IPMI_MDI1_N	G2	LAN3_GND
24	IPMI_MDI2_P	G3	LAN3_GND
25	IPMI_MDI2_N	G4	LAN3_GND
26	IPMI_MDI3_P	G5	LAN3_GND
27	IPMI_MDI3_N	G6	LAN3_GND
28	GND	G7	LAN3_GND
29	+3.3V	G8	LAN3_GND

# Board Layout: Jumper and Connector Locations



(Unit: mm)

