

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

IMBA-Q470

Quick Installation Guide

Version 1.0

November 24, 2021

Package List

IMBA-Q470 package includes the following items:

- 1 x IMBA-Q470 single board computer
- 2 x SATA cable
- 1 x I/O shielding
- 1 x QIG



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Specifications

- CPU:
10th/11th Generation LGA1200 Intel® Core™ i9/i7/i5/i3, Celeron® and Pentium® processors
- Chipset:
Intel® Q470E
- Memory:
Four 288-pin 2933 MHz dual-channel unbuffered DDR4 SDRAM DIMM slots supporting up to 128 GB memory
- BIOS:
AMI UEFI BIOS
- 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
1 x VGA (up to 1920 x 1200 @ 60 Hz)
1 x DP (up to 4096 x 2304 @ 60 Hz)
1 x HDMI (up to 4096 x 2304 @ 30 Hz)
- Ethernet:
LAN1: Intel® I225V 2.5GbE controller
LAN2: Intel® I225V 2.5GbE controller
- External I/O Interface:
2 x RS-232 DB-9
1 x RS-422/485 DB-9 (support Auto Flow Control over RS-485)
2 x USB 2.0 (Type-A)
2 x USB 3.2 Gen 1 (5Gb/s) (Type-A)
2 x USB 3.2 Gen 2 (10Gb/s) (Type-A)

- Internal I/O Interface:
 - 5 x USB 2.0 (2x4 pin, p=2.54)
 - 2 x USB 3.2 Gen1 (2x10 pin, p=2.0)
 - 2 x RS-232 (2x5 pin, p=2.54)
 - 1 x RS-232/422/485 (2x5 pin, p=2.54) (support Auto Flow Control over RS-485)
 - 4 x SATA 6Gb/s (RAID 0/1/5/10 supported)
- Audio:
 - Realtek ALC888S HD Audio codec supports 7.1-channel
 - 3 x Audio jack (line-in, line-out, mic-in) on rear I/O
 - 1 x Front audio (2x5 pin, p=2.54)
- 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=2.0)
- Expansions:
 - 1 x PCIe x16 slot
 - 3 x PCIe x4 slot
 - 3 x PCI slot
 - 1 x M.2 M-key 2242/2280 (PCIe x4)
 - 1 x M.2 A-key 2230 (PCIe x1 / USB 2.0)
- Digital I/O:
 - 1 x 8-bit digital I/O (2x5 pin, p=2.0)
- SMBus:
 - 1 x SMBus (1x4 pin, p=1.25)
- I²C:
 - 1 x I²C (1x4 pin, p=1.25)
- Fan Connector:
 - 1 x CPU fan connector (1x4 pin)
 - 2 x System fan connector (1x3 pin)

- Chassis Intrusion:
1 x Chassis intrusion connector (1x2 pin, p=2.54)
- Power Supply:
ATX/AT power supply
Support AT/ATX mode
ErP/EuP compliant
- Power Consumption:
3.3V@1.36A, 5V@14.16A, 12V@7.5A
(Intel® Core™ i9-10900E CPU with four 32 GB 3200 MHz DDR4 memory)
- Watchdog Timer:
Software programmable support 1–255 sec. system reset
- Operation Temperature: -20°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
- Safety: CE/FCC compliant

All the drivers and utility for the IMBA-Q470 are available on IEI Resource Download Center. Type IMBA-Q470 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-Q470-R10:**
ATX Motherboard Supports 10th/11th Gen. LGA1200 Intel® Core™ i9/i7/i5/i3, Celeron® and Pentium® Processors, DDR4, Triple Independent Display, Dual 2.5GbE, M.2, USB 3.2, SATA 6Gb/s, HD Audio and RoHS
- **19800-003100-100-RS:**
Dual port USB cable with bracket, 30mm, p=2.54
- **19800-010500-200-RS:**
USB 3.0 /USB 3.2 cable, 450mm with bracket, p=2.0
- **32102-000100-200-RS:**
SATA power cable, MOLEX 8981-4M to SATA15P, 150mm
- **32205-000702-200-RS:**
RS-232 cable, 230mm, p=2.54
- **CF-115XA-R10:**
High performance LGA1155/1156 cooler kit, 1U chassis compatible, 73W
- **CF-1156C-R20:**
LGA1155/LGA1156 cooler kit, 1U chassis compatible, 45W
- **CF-1156D-R30:**
LGA1155/LGA1156 cooler kit, 1U chassis compatible, 65W
- **CF-115XE-R10:**
High-performance LGA1155/1156 cooler kit, 95W

Jumpers Setting and Connectors

LABEL	FUNCTION
J_ATX_AT1	AT/ATX power mode setting
ME_RTC2	Clear CMOS jumper
ME_RTC1	Clear ME jumper
J_FLASH1	Flash descriptor security override jumper
AUDIO1	Internal audio connector
ATX1	ATX power connector
CPU12V1	ATX CPU 12V power connector
CHASSIS1	Chassis intrusion connector
DBG_PORT1	Debug connector
DIO1	Digital I/O connector
DEBUG_SPI1	EC debug connector
EC_UART1	EC UART debug connector
CPU_FAN1, SYS_FAN1, SYS_FAN2	Fan connectors
F_PANEL1	Front panel connector
I2C1	I ² C connector
LED_LAN1	LAN1 link LED connector
LED_LAN2	LAN2 link LED connector
COM3, COM4	RS-232 serial port connectors
COM5	RS-232/422/485 serial port connector
S_ATA1, S_ATA2, S_ATA3, S_ATA4	SATA 6Gb/s connectors
SMB1	SMBus connector
JSPI1	Flash SPI ROM connector
JEC1	Flash EC ROM connector
ATXPWR1	PCIe power connector
JUSB4, JUSB5, JUSB6	Internal USB 2.0 connectors
JUSB3-1	Internal USB 3.2 Gen 1 connector
M2_A1	M.2 A-key slot
M2_M1	M.2 M-key slot
PCI1, PCI2, PCI3	PCI slots
PCIEX4_1, PCIEX4_2, PCIEX4_3	PCIe x4 slots

PCIEX16_1	PCIe x16 slot
PWR_SW1	Onboard power button
AUDIO_CV1	External HD Audio jack
K/M_USB1	External USB 2.0 connector
JP1	External dual 2.5GbE RJ-45 connector
CON1_USB1	External dual USB 3.2 Gen 1 and dual USB 3.2 Gen 2 connector
COM2	External RS-232 and RS-422/485 combo connector
COM1/VGA1	External RS-232 and VGA combo connector
HDMI_DP1	External HDMI and DP++ combo connector

J_ATX_AT1: AT/ATX Power Mode Setting

PIN NO.	DESCRIPTION
Short 1 - 2	ATX Power Mode (default)
Short 2 - 3	AT Power Mode

ME_RTC2: Clear CMOS Jumper

PIN NO.	DESCRIPTION
Open (default)	Keep CMOS Setup (Normal Operation)
Short	Clear CMOS Setup

ME_RTC1: Clear ME Jumper

PIN NO.	DESCRIPTION
Open	Keep RTC (default)
Short	Clear RTC

J_FLASH1: Flash Descriptor Security Override Jumper

PIN NO.	DESCRIPTION
Short 1-2	Disabled (default)
Short 2-3	Enabled

USB Power SW: USB Power Setting	
USB Power SW	DESCRIPTION
+5V DUAL	Power is provided in S3/S4 sleep state (default)
+5V	Power is not provided in S3/S4 sleep state

Use the **USB Power SW** BIOS options to configure whether to provide power to the corresponding USB connector(s) when the system is in S3/S4 sleep state. This option is valid only when the above **Power Saving Function (ERP)** BIOS option is disabled.

AUDIO1 : Internal Audio Connector			
PIN NO.	DESCRIPTION	PIN NO.	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

CHASSIS1: Chassis Intrusion Connector			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	+3.3VSB	2	CHASSIS_OPEN

ATX1: ATX Power Connector			
PIN NO.	DESCRIPTION	PIN NO.	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

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

DBG_PORT1: Debug Connector			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	+5V	2	SMCLK1_EC
3	NC	4	SMDAT1_EC
5	GND	6	PLTRST_N

DIO1 : Digital Input/Output Connector			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	GND	2	VCC
3	Output 3	4	Output 2
5	Output 1	6	Output 0
7	Input 3	8	Input 2
9	Input 1	10	Input 0

DEBUG_SPI1: EC Debug Connector			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	GND	2	EDICS
3	EDICLK	4	EDIDI
5	EDIDO		

EC_UART1: EC UART Debug Connector			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	UART_TX	2	VCC3.3
3	UART_RX	4	GND

CPU_FAN1: CPU Fan Connector			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	GND	2	+12V
3	FANIO	4	PWM

SYS_FAN1: System Fan Connector			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	FANIO	2	PWM
3	GND		

SYS_FAN2: System Fan Connector			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	NC	2	+12V
3	GND		

F_PANEL1: Front Panel Connector					
	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-	

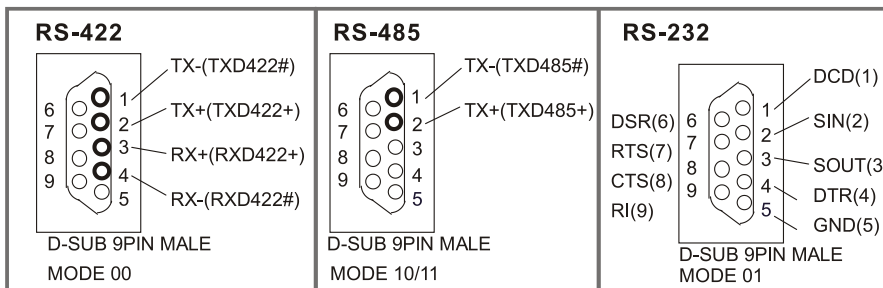
I2C1: I²C Connector			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	GND	3	I2C_CLK
2	I2C_DATA	4	+5V

LED_LAN1: LAN1 Link LED Connector			
PIN	DESCRIPTION	PIN	DESCRIPTION
1	+3.3V	2	LAN1_LED_LNK#_ACT

LED_LAN2: LAN2 Link LED Connector			
PIN	DESCRIPTION	PIN	DESCRIPTION
1	+3.3V	2	LAN2_LED_LNK#_ACT

COM3, COM4: RS-232 Serial Port Connectors			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	DCD	2	DSR
3	RXD	4	RST
5	TXD	6	CTS
7	DTR	8	RI
9	GND	10	GND

COM5: RS-232/422/485 Serial Port Connectors			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	DCD	2	DSR
3	RXD	4	RST
5	TXD	6	CTS
7	DTR	8	RI
9	GND	10	GND



S_ATA1, S_ATA2, S_ATA3, S_ATA4: SATA 6Gb/s Connectors			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	GND	5	SATA_RX-
2	SATA_TX+	6	SATA RX+
3	SATA_TX-	7	GND
4	GND	8	N/C

SMB1: SMBus Connector			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	GND	3	SMB_CLK
2	SMB_DATA	4	+5V

ATXPWR1: PCIe Power Connector			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	+12V	3	GND
2	GND	4	+5V

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

JEC1: Flash EC ROM Connector			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	+3.3V	2	SPI_CS#
3	SPI_SO	4	NC
5	EC_DET_FLASH	6	SPI_CLK
7	GND	8	SPI_SI

JUSB4, JUSB5: Internal USB 2.0 Connectors			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	VCC	2	GND
3	USB_DATA-	4	USB_DATA+
5	USB_DATA+	6	USB_DATA-
7	GND	8	VCC

JUSB6: Internal USB 2.0 Connector			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	VCC	3	USB_DATA+
2	USB_DATA-	4	GND

JUSB3-1: Internal USB 3.2 Gen 1 Connector			
PIN NO.	DESCRIPTION	PIN NO.	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+
8	USB3_DATA-	18	USB3_RX-
9	USB3_DATA+	19	VCC
10	NC		

M2_A1: M.2 A-key Slot			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	GND	2	+3.3V
3	USB2_DP	4	+3.3V
5	USB2_DN	6	NC
7	GND	8	Module Key
9	Module Key	10	Module Key
11	Module Key	12	Module Key
13	Module Key	14	Module Key
15	Module Key	16	NC
17	NC	18	GND
19	NC	20	NC
21	NC	22	NC
23	GND	24	GND
25	NC	26	NC
27	NC	28	NC
29	GND	30	GND
31	NC	32	NC
33	GND	34	NC
35	PETP0	36	GND
37	PETN0	38	NC

39	GND	40	NC
41	PERP0	42	NC
43	PERN0	44	NC
45	GND	46	NC
47	PCIE_CLK+	48	NC
49	PCIE_CLK-	50	NC
51	GND	52	PLT_RST
53	CLKREQ0#	54	Pull up
55	PCIE_WAKE	56	W_DIS
57	GND	58	I2C_DAT
59	NC	60	I2C_CLK
61	NC	62	NC
63	GND	64	NC
65	NC	66	NC
67	NC	68	NC
69	GND	70	+3.3V
71	NC	72	+3.3V
73	NC	74	+3.3V
75	GND		

M2_M1: M.2 M-key Slot			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	GND	2	+3.3V
3	GND	4	+3.3V
5	PERN0	6	NC
7	PERP0	8	NC
9	GND	10	DAS/DSS#
11	PETN0	12	+3.3V
13	PETP0	14	+3.3V
15	GND	16	+3.3V
17	PERN1	18	+3.3V
19	PERP1	20	NC
21	GND	22	NC
23	PETN1	24	NC

25	PETP1	26	NC
27	GND	28	NC
29	PERN2	30	NC
31	PERP2	32	NC
33	GND	34	NC
35	PETN2	36	NC
37	PETP2	38	DEVSLP
39	GND	40	NC
41	PERN3	42	NC
43	PERP3	44	NC
45	GND	46	NC
47	PETN3	48	NC
49	PETP3	50	PERST#
51	GND	52	CLKREQ
53	PCIECLKN	54	PEWAKE
55	PCIECLKP	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		

AUDIO_CV1: External Audio Jacks	
Jack Color	DESCRIPTION
Blue	Line-in: CD/DVD or other audio source input port
Green	Line-out: connect this port to headphone or speaker
Pink	Microphone: connect this port to microphone

K/M_USB1: External USB 2.0 Connectors			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	GND	5	GND
2	USB_DATA+	6	USB_DATA+
3	USB_DATA-	7	USB_DATA-
4	VCC	8	VCC

JP1: External 2.5GbE RJ-45 Connectors			
PIN NO.	DESCRIPTION	PIN NO.	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

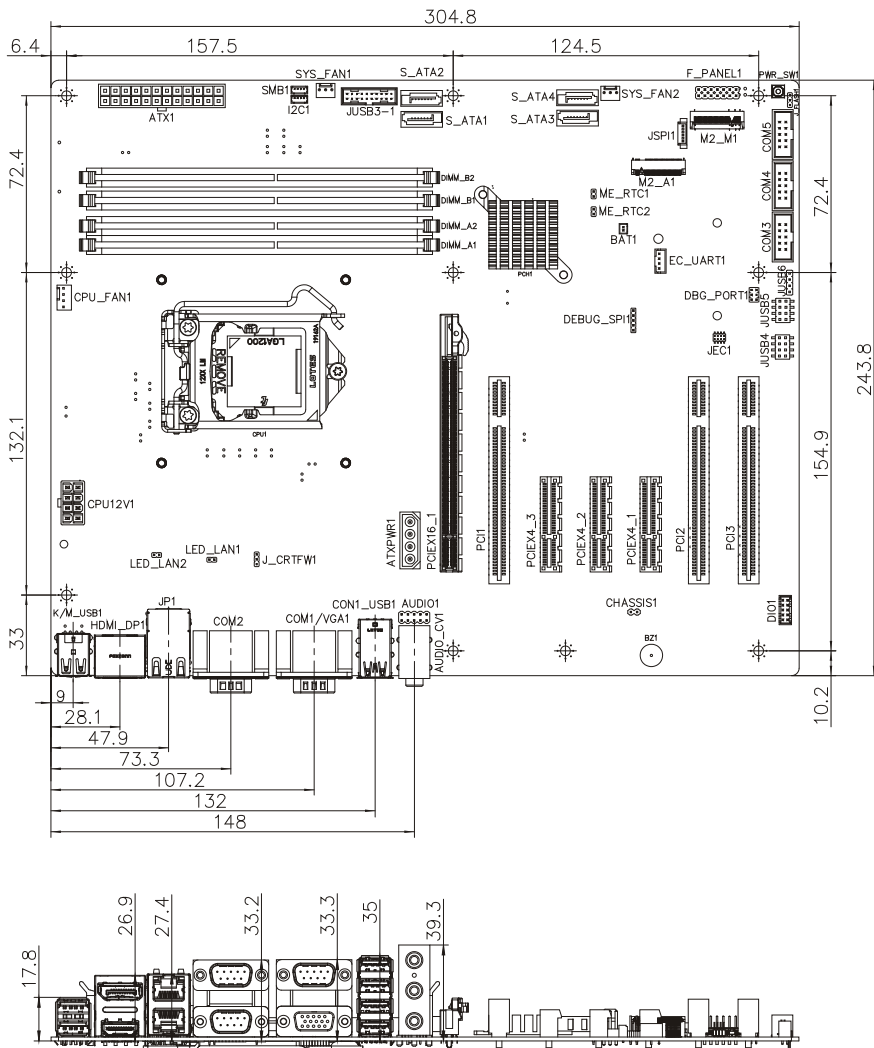
HDMI_DP1			
External DP++ Connector			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	LANE0P	11	GND
2	GND	12	LANE3N
3	LANE0N	13	AUX_CTRL_DET_C
4	LANE1P	14	GND
5	LANE1N	15	AUXP
6	GND	16	GND
7	LANE2P	17	AUXN
8	GND	18	HPD
9	LANE2N	19	GND
10	LANE3P	20	+5V
External HDMI Connector			
PIN NO.	DESCRIPTION	PIN NO.	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_HPDP
30	HDMI_CLK		

COM1/VGA1			
External RS-232 Connector			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	DCD1	6	DSR1
2	RXD1	7	RTS1
3	TXD1	8	CTS1
4	DTR1	9	RI1
5	GND1		
External VGA Connector			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
V1	RED	V2	GREEN
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		

COM2			
External RS-232 Connector (COM2)			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	DCD1	6	DSR1
2	RXD1	7	RTS1
3	TXD1	8	CTS1
4	DTR1	9	RI1
5	GND1		
External RS-422/485 Connector (COM6)			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
12	RS422TX-/RS485D-	17	NC
13	RS422TX+/RS485D+	18	NC
14	RS422RX+	19	NC
15	RS422RX-	20	NC
16	GND		

CON1_USB1: External USB 3.2 Gen 1 & Gen 2 Connectors			
PIN NO.	DESCRIPTION	PIN NO.	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+

Board Layout: Jumper and Connector Locations



(Unit: mm)