

**ATX Motherboard Supports 10<sup>th</sup>/11<sup>th</sup> Gen. LGA1200 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**

# **IMBA-Q471**

## **Quick Installation Guide**

**Version 1.0**

January 21, 2022

### **Package List**

IMBA-Q471 package includes the following items:

- 1 x IMBA-Q471 single board computer
- 2 x SATA cable
- 1 x I/O shielding
- 1 x QIG



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## Specifications

- CPU:  
10<sup>th</sup>/11<sup>th</sup> Generation LGA1200 Intel® Core™ i9/i7/i5/i3, Celeron® and Pentium® processors
- Chipset:  
Intel® Q470
- 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 1080 @ 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  
LAN3: Intel® I225V 2.5GbE controller
- External I/O Interface:  
1 x RS-232 DB-9  
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:  
6 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-422/485 (1x4 pin, p=2.0)
- 5 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:
  - 2 x PCIe x16 slot (x8 signal)
  - 3 x PCIe x4 slot
  - 2 x PCIe x1 slot
  - 1 x M.2 M-key 2242/2280 (PCIe x2, SATA)
- 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 (1x3 pin)
- Power Supply:
  - ATX/AT 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™ i5-10500TE CPU with four 8 GB 2933 MHz DDR4 DIMMs)

- 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-Q471 are available on IEI Resource Download Center. Type IMBA-Q471 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-Q471-R10:**  
ATX Motherboard Supports 10<sup>th</sup>/11<sup>th</sup> Gen. LGA1200 Intel® Core™ i9/i7/i5/i3, Celeron® and Pentium® Processors, DDR4, Triple Independent Display, Triple 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
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 <sup>2</sup> C connector
LED_LAN1	LAN1 link LED connector
LED_LAN2	LAN2 link LED connector
LED_LAN3	LAN3 link LED connector
COM2	RS-422/485 serial port connector
COM3, COM4	RS-232 serial port connectors
S_ATA1, S_ATA2, S_ATA3, S_ATA4, S_ATA5	SATA 6Gb/s connectors
SMB1	SMBus connector
JSPI1	Flash SPI ROM connector
JEC1	Flash EC ROM connector
ATXPWR2	PCIe power connector
JUSB4, JUSB5, JUSB6	Internal USB 2.0 connectors
JUSB3-1	Internal USB 3.2 Gen 1 connector
M2_M1	M.2 M-key slot
PCIE1, PCIE2	PCIe x1 slots
PCIEX4_1, PCIEX4_2, PCIEX4_3	PCIe x4 slots
PCIEX8_1, PCIEX8_2	PCIe x16 slots (x8 signal)

PWR_SW1	Onboard power button
AUDIO_CV1	External HD Audio jack
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
LAN3_USB2	External 2.5GbE RJ-45 and dual USB 2.0 combo connector
COM1/VGA1	External RS-232 and VGA combo connector
HDMI_DP1	External HDMI and DP++ combo connector

<b>J_ATX_AT1: AT/ATX Power Mode Setting</b>	
<b>PIN NO.</b>	<b>DESCRIPTION</b>
Short 1 - 2	ATX Power Mode (default)
Short 2 - 3	AT Power Mode

<b>ME_RTC2: Clear CMOS Jumper</b>	
<b>PIN NO.</b>	<b>DESCRIPTION</b>
Open (default)	Keep CMOS Setup (Normal Operation)
Short	Clear CMOS Setup

<b>ME_RTC1: Clear ME Jumper</b>	
<b>PIN NO.</b>	<b>DESCRIPTION</b>
Open	Keep RTC (default)
Short	Clear RTC

<b>J_FLASH1: Flash Descriptor Security Override Jumper</b>	
<b>PIN NO.</b>	<b>DESCRIPTION</b>
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
<p>Use the <b>USB Power SW1</b> and <b>USB Power SW2</b> 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 <b>Power Saving Function (ERP)</b> BIOS option is disabled.</p> <ul style="list-style-type: none"> <li>- <b>USB Power SW1</b> for CON1_USB1 and LAN3_USB2 connectors</li> <li>- <b>USB Power SW2</b> for JUSB4, JUSB5, JUSB6 and JUSB3-1 connectors</li> </ul>	

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

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



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

<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_SPI1: EC Debug Connector</b>			
<b>PIN NO.</b>	<b>DESCRIPTION</b>	<b>PIN NO.</b>	<b>DESCRIPTION</b>
1	GND	2	EDICS
3	EDICLK	4	EDIDI
5	EDIDO		

<b>EC_UART1: EC UART Debug Connector</b>			
<b>PIN NO.</b>	<b>DESCRIPTION</b>	<b>PIN NO.</b>	<b>DESCRIPTION</b>
1	UART_TX	2	VCC3.3
3	UART_RX	4	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

<b>SYS_FAN1: System Fan Connector</b>			
<b>PIN NO.</b>	<b>DESCRIPTION</b>	<b>PIN NO.</b>	<b>DESCRIPTION</b>
1	FANIO	2	PWM
3	GND		

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

<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	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-	

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

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

<b>LED_LAN3: LAN3 Link LED Connector</b>			
<b>PIN</b>	<b>DESCRIPTION</b>	<b>PIN</b>	<b>DESCRIPTION</b>
1	+3.3V	2	LAN3_LED_LNK#_ACT

<b>COM3, COM4: 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	RST
5	TXD	6	CTS
7	DTR	8	RI
9	GND	10	GND

<b>COM2: RS-422/485 Serial Port Connector</b>			
<b>PIN NO.</b>	<b>DESCRIPTION</b>	<b>PIN NO.</b>	<b>DESCRIPTION</b>
1	RXD422-	2	TXD422+/TXD485+
3	RXD422+	4	TXD422-/TXD485-

<b>S_ATA1, S_ATA2, S_ATA3, S_ATA4, S_ATA5: 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>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>ATXPWR2: PCIe Power Connector</b>			
<b>PIN NO.</b>	<b>DESCRIPTION</b>	<b>PIN NO.</b>	<b>DESCRIPTION</b>
1	+12V	3	GND
2	GND	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>JEC1: Flash EC ROM Connector</b>			
<b>PIN NO.</b>	<b>DESCRIPTION</b>	<b>PIN NO.</b>	<b>DESCRIPTION</b>
1	+3.3V	2	SPI_CS#
3	SPI_SO	4	NC
5	EC_DET_FLASH	6	SPI_CLK
7	GND	8	SPI_SI

<b>JUSB4, JUSB5, JUSB6: 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>JUSB3-1: Internal USB 3.2 Gen 1 Connector</b>			
<b>PIN NO.</b>	<b>DESCRIPTION</b>	<b>PIN NO.</b>	<b>DESCRIPTION</b>
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		

<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	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		

<b>AUDIO_CV1: External Audio Jacks</b>	
<b>Jack Color</b>	<b>DESCRIPTION</b>
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

<b>JP1: External 2.5GbE RJ-45 Connectors</b>			
<b>PIN NO.</b>	<b>DESCRIPTION</b>	<b>PIN NO.</b>	<b>DESCRIPTION</b>
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

<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	LANE1N	15	AUXP
6	GND	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_HPDP
30	HDMI_CLK		



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

<b>LAN3_USB2</b>			
<b>External 2.5GbE Connector</b>			
<b>PIN NO.</b>	<b>DESCRIPTION</b>	<b>PIN NO.</b>	<b>DESCRIPTION</b>
1	LAN3_I225_MDIO_P	5	LAN3_I225_MDIO2_P
2	LAN3_I225_MDIO_N	6	LAN3_I225_MDIO2_N
3	LAN3_I225_MDIO1_P	7	LAN3_I225_MDIO3_P
4	LAN3_I225_MDIO1_N	8	LAN3_I225_MDIO3_N
<b>External USB 2.0 Connector</b>			
<b>PIN NO.</b>	<b>DESCRIPTION</b>	<b>PIN NO.</b>	<b>DESCRIPTION</b>
1	VCC	5	VCC
2	USB_DATA-	6	USB_DATA-
3	USB_DATA+	7	USB_DATA+
4	GND	8	GND

<b>CON1_USB1: External USB 3.2 Gen 1 &amp; Gen 2 Connectors</b>			
<b>PIN NO.</b>	<b>DESCRIPTION</b>	<b>PIN NO.</b>	<b>DESCRIPTION</b>
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+

