

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

IMBA-H420

Quick Installation Guide

Version 1.0

March 8, 2022

Package List

IMBA-H420 package includes the following items:

- 1 x IMBA-H420 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® H420
- Memory:
Two 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:
1 x VGA (up to 1920 x 1080 @ 60 Hz)
1 x Internal DP++ (up to 4096 x 2304 @ 60 Hz)
1 x HDMI (up to 4096 x 2304 @ 30 Hz)
- Ethernet:
1 x 2.5GbE RJ-45 port via Intel® I225V controller (colay I225-LM)
- External I/O Interface:
1 x RS-232 DB-9
2 x USB 2.0 (Type-A)
4 x USB 3.2 Gen 1 (5Gb/s) (Type-A)
1 x PS/2 keyboard/mouse connector
- Internal I/O Interface:
2 x USB 2.0 (2x4 pin, p=2.54)
4 x RS-232 (2x5 pin, p=2.54)
1 x RS-232/422/485 (2x5 pin, p=2.54)
4 x SATA 6Gb/s (no RAID)

- 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:
 - 1 x LAN LED (1x2 pin, p=2.0)
- Expansions:
 - 1 x PCIe Gen3 x16 slot
 - 1 x PCIe Gen3 x4 slot
 - 4 x PCI slot
- 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 (1x4 pin)
- Chassis Intrusion:
 - 1 x Chassis intrusion connector (1x2 pin, p=2.54)
- TPM
 - Intel® PTT (TPM 2.0)
- Power Supply:
 - ATX/AT power supply
 - Support AT/ATX mode
 - ErP/EuP compliant

- Power Consumption:
3.3V@0.84A, 5V@8.12A, 12V@3.77A, 5VSB@0A
(Intel® Core™ i5-10500TE CPU with two 32 GB 2933 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
- Safety: CE/FCC compliant

All the drivers and utility for the IMBA-H420 are available on IEI Resource Download Center. Type IMBA-H420 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-H420-R10:**
ATX Motherboard Supports 10th/11th Gen. LGA1200 Intel® Core™ i9/i7/i5/i3, Celeron® and Pentium® Processors, DDR4, Triple Independent Display, 2.5GbE, USB 3.2, SATA 6Gb/s, HD Audio and RoHS
- **IMBA-H420-ECO-R10:**
ATX Motherboard Supports 10th/11th Gen. LGA1200 Intel® Core™ i9/i7/i5/i3, Celeron® and Pentium® Processors, DDR4, Triple Independent Display, 2.5GbE, USB 3.2, SATA 6Gb/s, HD Audio, ECO packing and RoHS
- **19800-003100-100-RS:**
Dual-port USB cable with bracket, 30mm, p=2.54
- **19800-020100-100-RS:**
Dual-port RS-232 cable with bracket, 230mm, p=2.54
- **32205-000702-200-RS:**
RS-232/422/485 cable, 230mm, p=2.54
- **32102-000100-200-RS:**
SATA power cable, MOLEX 8981-4M to SATA15P, 150mm
- **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
J_CMOS1	Clear CMOS jumper
J_FLASH1	Flash descriptor security override jumper
FRONT-PANEL1	Internal audio connector
ATX1	ATX power connector
CPU12V1	ATX CPU 12V power connector
BAT1	RTC battery connector
CHASSIS1	Chassis intrusion connector
CHA_DIMM0, CHB_DIMM0	DDR4 DIMM slots
DBG_PORT2	Debug connector
DIO1	Digital I/O connector
DP1	Internal DisplayPort connector
DEBUG_SPI1	EC debug connector
CPU_FAN1, SYS_FAN1, SYS_FAN2	Fan connectors
F_PANEL1	Front panel connector
I2C1	I ² C connector
JP3	LAN1 link LED connector
COM2, COM3, COM4, COM6	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, J_CRTFW1	SMBus connectors
JSPI1	Flash SPI ROM connector
EC_SPI1	Flash EC ROM connector
ATXPWR1	PCIe power connector
USB2	Internal USB 2.0 connector
PCI1, PCI2, PCI3, PCI4	PCI slots
PCIEX4_1	PCIe x4 slot
PCIEX16_1	PCIe x16 slot
PWR_SW1	Onboard power button
AUDIO_CV1	External HD Audio jack

K/M_USB1	External keyboard/mouse and USB 2.0 combo connector
LAN1_USB1	External 2.5GbE RJ-45 and dual USB 3.2 Gen 1 combo connector
USB1	External dual USB 3.2 Gen 1 connector
COM1/VGA1	External RS-232 and VGA combo connector
HDMI1	External HDMI 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

J_CMOS1: Clear CMOS Button

Status	DESCRIPTION
NC	Keep CMOS Setup (Normal Operation)
Press	Clear CMOS Setup

J_FLASH1: Flash Descriptor Security Override Jumper

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

FRONT-PANEL1: 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

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

BAT1: RTC Battery Connector			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	VBATT	2	GND

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

DBG_PORT2: Debug Connector			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	+5V	2	SMBCLK_EC
3	NC	4	SMBDATA_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

DP1: Internal 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

DEBUG_SPI1: EC Debug Connector			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	NC	4	EDICLK
2	EDICS	5	EDIDI
3	EDIDO	6	GND

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

SYS_FAN1, SYS_FAN2: System Fan Connectors			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	GND	2	+12V
3	FANIO	4	PWM

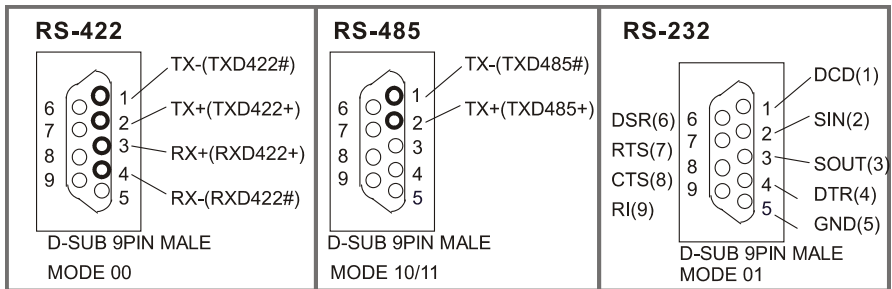
F_PANEL1: Front Panel Connector					
	PIN	DESCRIPTION	PIN	DESCRIPTION	
PWR LED	1	PWR_LED+	2	SPKR+	SPKR
	3	NC	4	NC	
	5	PWR_LED-	6	NC	
PWR BTN	7	PWR_BTN+	8	SPKR-	
	9	PWR_BTN-	10	NC	
HDD LED	11	HDD_LED+	12	Reset+	RESET
	13	HDD_LED-	14	Reset-	

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

JP3: LAN1 Link LED Connector			
PIN	DESCRIPTION	PIN	DESCRIPTION
1	+3.3V	2	LAN1_LED_LNK#_ACT

COM2, COM3, COM4, COM6: 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 Connector			
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

J_CRTFW1: SMBus Connector			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	SMB_CLK	3	GND
2	SMB_DATA		

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

EC_SPI1: Flash EC ROM Connector			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	SPI_CS#	2	+3.3V
3	SPI_SO	4	HOLD#_EC
5	EC_DET_FLASH	6	SPI_CLK
7	GND	8	SPI_SI

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

USB2: Internal USB 2.0 Connector			
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

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

LAN1_USB1			
External USB 3.2 Gen 1 Connectors			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
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+
2.5GbE RJ-45 Connector			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
20	LAN1_MDI0P	24	LAN1_MDI2P
21	LAN1_MDI0N	25	LAN1_MDI2N
22	LAN1_MDI1P	26	LAN1_MDI3P
23	LAN1_MDI1N	27	LAN1_MDI3N

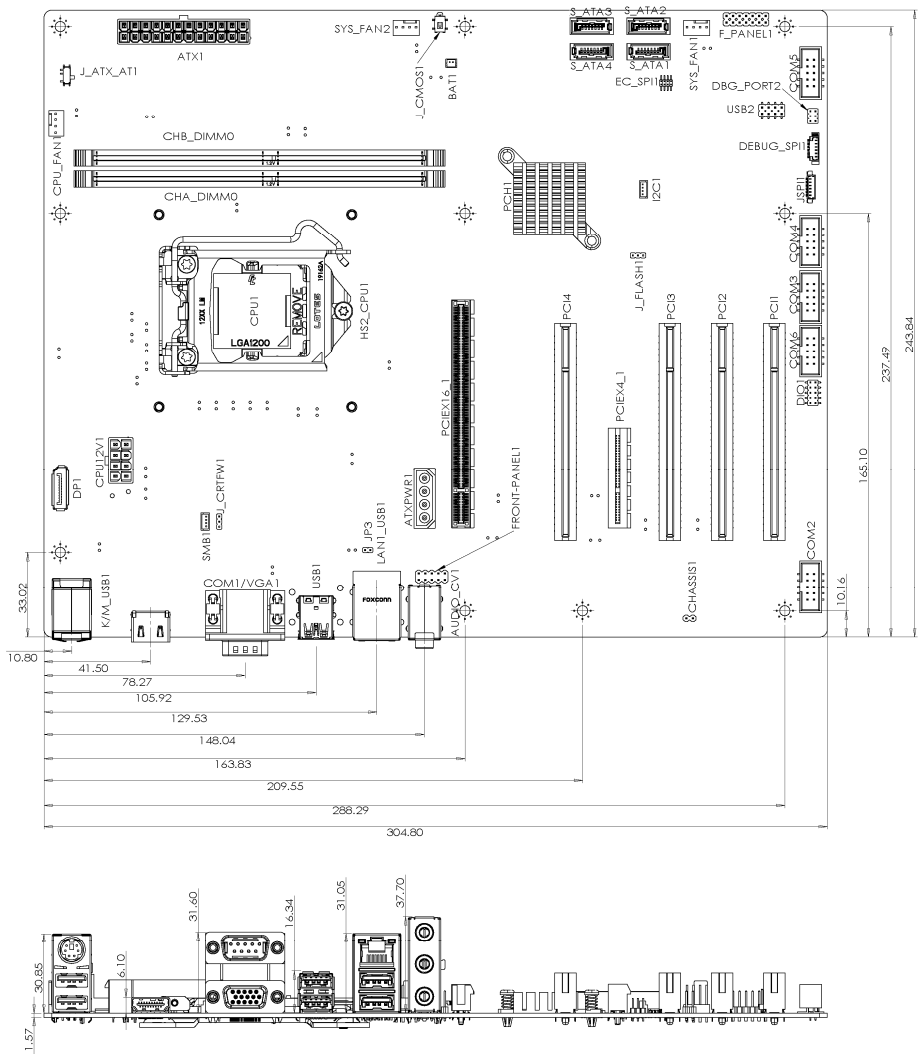
K/M_USB1			
External USB 2.0 Connector			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	GND	5	GND
2	USB_DATA+	6	USB_DATA+
3	USB_DATA-	7	USB_DATA-
4	VCC	8	VCC
External Keyboard/Mouse Connector			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
9	GND	12	VCC
10	KEYBOARD DATA	13	KEYBOARD CLOCK
11	MOUSE DATA	14	MOUSE CLOCK

HDMI1: 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_HPD
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		

USB1: External USB 3.2 Gen 1 Connectors			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
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+

Board Layout: Jumper and Connector Locations



(Unit: mm)