microATX motherboard supports 14nm LGA1200 10th/11th Generation Intel® Core™ i9/i7/i5/i3, Celeron® and Pentium® processor, DDR4, triple independent displays, dual 2.5GbE LAN, M.2, 8 USB 3.2, 6 USB 2.0, 10 COM, SATA 6Gb/s, HD Audio and RoHS

IMB-H420

Quick Installation Guide

Version 1.0

August 10, 2023

Package List

IMB-H420 package includes the following items:

- 1 x IMB-H420 single board computer
- 2 x SATA cable
- 1 x I/O shielding
- 1 x QIG

Specifications

- CPU:

  LGA1200 socket supports 10th/11th generation Intel® Core™ i9/i7/i5/i3, Pentium® or Celeron® processor, up to 65W TDP
- System Chipset: Intel® H420 / H420E
- Memory:

  Two 288-pin 2933 MHz dual-channel unbuffered DDR4 SDRAM DIMMs slots supporting up to 64GB
- BIOS: AMI UEFI BIOS
- Graphics Engine: Intel® UHD Graphics
- Display Output:

  Triple independent display

  1 x VGA (up to 1920 x 1080 @60Hz)

  1 x DVI-D (800 x 600 @60Hz by default, up to 1920 x 1080 @60Hz)

  1 x Internal DP (up to 3840 x 2160 @60Hz)
- Ethernet:

  LAN1: Intel® I225-V 2.5GbE controller (colay I225-LM)

  LAN2: Intel® I225-V 2.5GbE controller (colay I225-LM)
- External I/O Interface:

  8 x USB 3.2 Gen 1

  6 x USB 2.0

  1 x PS/2 KB/MS
- Internal I/O Interface:

  4 x SATA 6Gb/s

  10 x RS-232 (two 2x20 pin, two 2x5 pin, P=2.54)

  1 x LPT (2x13 pin)
- SMBus: 1 x SMBus (1x4 pin)
- I²C: 1 x I²C (1x4 pin)
- Audio:

  Realtek ALC888S HD Audio codec

  3 x Audio Jack (Line-in, Line-out, Mic-in)

  1 x Analog audio (2x5 pin)

- Front Panel:

  1 x Front panel (2x7 pin, power LED, HDD LED, speaker, power button, reset button)
- LAN LED: 2 x LAN LED (1x2 pin)
- Expansions:

  1 x PCIe Gen3 x16

  1 x PCIe Gen3 x1

  1 x M.2 M key 2242/2280 (PCIe Gen3 x2)
- Digital I/O: 1 x 8-bit digital I/O (2x5 pin)
- TPM: 1 x TPM (2x10 pin)
- Fan Connector:

  1 x CPU fan connector (1x4 pin)

  1 x System fan connector (1x4 pin)
- Chassis Open: 1 x Chassis intrusion (1x2 pin)
- Power Supply:

  ATX/AT power supply

  Support AT/ATX mode
- Watchdog Timer:

  Software programmable, support 1~255 sec. system reset
- Power Consumption:

  3.3V@1.59A, 5V@10.18A, 12V@6.84A, 5VSB@0.23A (10th Gen. Intel® Core® i9-10900E 2.80 GHz 65W CPU with 32GB 2933MHz DDR4 memory, EUP enabled)
- Operation Temperature: 0°C ~ 60°C
- Storage Temperature: -30°C ~ 70°C
- Operation Humidity: 5% ~ 95%, non-condensing
- Dimensions: 244mm x 244mm
- Weight: GW:1200g / NW:680g

Ordering Information

- **IMB-H420-R10:**

  microATX motherboard supports 14nm LGA1200 10th/11th Generation Intel® Core™ i9/i7/i5/i3, Celeron® and Pentium® processor, DDR4, triple independent displays, dual 2.5GbE LAN, M.2, 8 USB 3.2, 6 USB 2.0, 10 COM, SATA 6Gb/s, HD Audio and RoHS

- **32102-000100-200-RS:**

  SATA power cable, MOLEX 5264-4P to SATA15P

- **19800-014700-100-RS:** RS-232 cable, 400mm, 2x20 pin, P=2.54

- **19800-020100-100-RS:** RS-232 cable, 230mm, P=2.54

- **19100-000318-00-RS:**

  High-performance LGA1155/1156/1200 cooler kit, 4U chassis compatible 125W, 0ºC~50ºC

- **CF-115XA-R10:**

  High-performance LGA1155/1156/1200 cooler kit, 1U chassis compatible 73W

- **CF-1156C-R20:**

  LGA1155/1156/1200 cooler kit, 1U chassis compatible, 45W

- **CF-1156D-R30:**

  LGA1155/1156/1200 cooler kit, 1U chassis compatible, 65W

- **CF-115XE-R10:**

  High-performance LGA1155/1156/1200 cooler kit, 95W

All the drivers and utility for the IMB-H420 are available on IEI Resource Download Center. Type IMB-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

Jumpers setting and connectors

LABEL	FUNCTION
ME_RTC2	Clear CMOS jumper
ME_RTC1	Clear ME jumper
J_ATX_AT1	AT/ATX power mode setting switch
J_FLASH1	Flash descriptor security override jumper
CPU12V1	+12V power source connector
ATX1	24-pin ATX power source connector
AUDIO1	Audio connector
DIO1	Digital I/O connector
CHASSIS1	Chassis status connector
CPU_FAN1	CPU fan connector
SYS_FAN1	System fan connectors
F_PANEL1	Front panel connector
LED_LAN1	LAN1 link LED connector
LED_LAN2	LAN2 link LED connector
LPT1	Parallel port connector
COM1-4, COM7-10 COM5, COM6	RS-232 serial port connectors
S_ATA1, S_ATA2 S_ATA3, S_ATA4	SATA 6Gb/s connectors
SMB1	SMBus connector
I2C1	I^2C connector (to EC)
TPM1	Trusted Platform Module connector
JSPI1	Flash SPI ROM connector
JEC1	Flash EC ROM connector
DBG_PORT1	Debug port connector
DEBUG_SPI1	EC debug port connector
EC_UART1	EC UART debug connector
DP1	Internal DisplayPort connector
M2_M1	M.2 M key 2242/2280 slot
PCIEX16_1	PCIe Gen3 x16 slot
PCIE1	PCIe Gen3 x4 slot
AUDIO_CV1	External HD Audio connector
U11	External VGA female connector and DVI-D

	connector
LAN1_USB1, LAN2_USB2	External RJ-45 2.5GbE LAN and dual USB 3.2 Gen 1 connector
K/M_USB1	External keyboard/mouse and dual USB 2.0 connector
USB_CN1	External quad-port USB 2.0 connector
CON_USB30	External quad-port USB 3.2 Gen 1 connector

ME_RTC2: Clear CMOS Jumper	
PIN NO.	**DESCRIPTION**
Open	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_ATX_AT1: AT/ATX Power Mode Setting	
PIN NO.	**DESCRIPTION**
Short 1 - 2	ATX Power Mode (default)
Short 2 - 3	AT Power Mode

J_FLASH1: Flash Descriptor Security Override	
PIN NO.	**DESCRIPTION**
Short 1 - 2	Disabled (default)
Short 2 - 3	Enabled

ATX1: 24-pin ATX Power Source 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: +12V Power Source Connector			
PIN NO.	**DESCRIPTION**	**PIN NO.**	**DESCRIPTION**
1	GND	5	+12V
2	GND	6	+12V
3	GND	7	+12V
4	GND	8	+12V

AUDIO1 : 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

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

CHASSIS1: Chassis Status Connector			
PIN	**DESCRIPTION**	**PIN**	**DESCRIPTION**
1	+3.3VSB	2	CHASSIS OPEN

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

SYS_FAN1: System Fan Connector			
PIN NO.	**DESCRIPTION**	**PIN NO.**	**DESCRIPTION**
1	GND	3	FANIO
2	+12V	4	PWM

F_PANEL1: Front Panel Connector					
	PIN	**DESCRIPTION**	**PIN**	**DESCRIPTION**	
PWR LED	1	+5V	2	BEEP_PWR	SPKR
	3	NC	4	NC	
	5	GND	6	NC	
PWR BTN	7	PWRBTN_SW#	8	PC_BEEP	
	9	GND	10	NC	
HDD LED	11	+5V	12	EXTRST-	RESET
	13	SATA_LED#	14	GND	

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

LPT1: Parallel Port Connector			
PIN NO.	**DESCRIPTION**	**PIN NO.**	**DESCRIPTION**
1	STB	2	SIO_AFD#
3	RPD0	4	SIO_ERR#
5	RPD1	6	SIO_INIT#
7	RPD2	8	SIO_SLIN#
9	RPD3	10	GND
11	RPD4	12	GND
13	RPD5	14	GND
15	RPD6	16	GND
17	RPD7	18	GND
19	SIO_ACK#	20	GND
21	SIO_BUSY	22	GND
23	SIO_PE	24	GND
25	SIO_SLCT	26	NC

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

COM1-4: Quad-port RS-232 Connector			
PIN NO.	**DESCRIPTION**	**PIN NO.**	**DESCRIPTION**
1	DCD1	2	DSR1
3	RXD1	4	RTS1
5	TXD1	6	CTS1
7	DTR1	8	RI1
9	GND1	10	GND1
11	DCD2	12	DSR2
13	RXD2	14	RTS2
15	TXD2	16	CTS2
17	DTR2	18	RI2
19	GND2	20	GND2
21	DCD3	22	DSR3
23	RXD3	24	RTS3
25	TXD3	26	CTS3
27	DTR3	28	RI3
29	GND3	30	GND3
31	DCD4	32	DSR4
33	RXD4	34	RTS4
35	TXD4	36	CTS4
37	DTR4	38	RI4
39	GND4	40	GND4

COM7-10: Quad-port RS-232 Connector			
PIN NO.	**DESCRIPTION**	**PIN NO.**	**DESCRIPTION**
1	DCD7	2	DSR7
3	RXD7	4	RTS7
5	TXD7	6	CTS7
7	DTR7	8	RI7
9	GND7	10	GND7
11	DCD8	12	DSR8
13	RXD8	14	RTS8
15	TXD8	16	CTS8

17	DTR8	18	RI8
19	GND8	20	GND8
21	DCD9	22	DSR9
23	RXD9	24	RTS9
25	TXD9	26	CTS9
27	DTR9	28	RI9
29	GND9	30	GND9
31	DCD10	32	DSR10
33	RXD10	34	RTS10
35	TXD10	36	CTS10
37	DTR10	38	RI10
39	GND10	40	GND10

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

I2C1: I²C Connector			
PIN NO.	**DESCRIPTION**	**PIN NO.**	**DESCRIPTION**
1	GND	3	I2C_CLK
2	I2C_DAT	4	+5V

TPM1: Trusted Platform Module Connector			
PIN NO.	**DESCRIPTION**	**PIN NO.**	**DESCRIPTION**
1	NC	2	SPI_CS#0
3	SPI_TPM_GPIO	4	SPI_CS#1
5	GND	6	+3.3V
7	SPI_CLK	8	SPI_IO2
9	SPI_IO3	10	SPI_SO
11	SPI_HOLD	12	SPI_SI
13	SPI_CS#2	14	GND
15	SPI_WP	16	SERIRQ
17	SPI_PIRQ	18	+3.3V
19	PLTRST#	20	NC

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	VCC3.3	2	SPI_CS#
3	SPI_SO	4	NC
5	EC_DET_FLASH	6	SPI_CLK
7	GND	8	SPI_SI

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

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

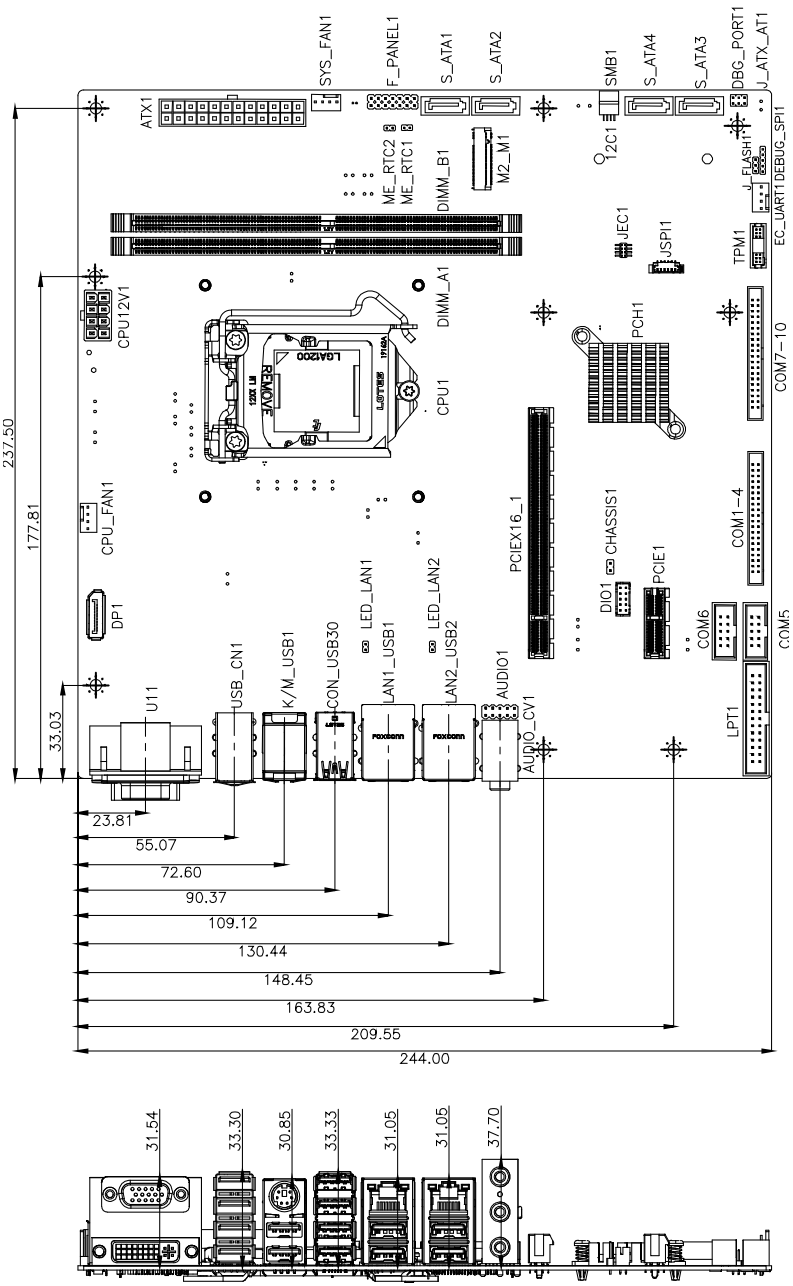
EC_UART1: EC UART Debug Connector			
PIN NO.	**DESCRIPTION**	**PIN NO.**	**DESCRIPTION**
1	UART_TX	3	UART_RX
2	VCC3.3	4	GND

M2_M1: M.2 M Key 2242/2280 Slot			
PIN NO.	**DESCRIPTION**	**PIN NO.**	**DESCRIPTION**
1	GND	2	+V3.3
3	GND	4	+V3.3
5	PCIE_3_RX_DN	6	NC
7	PCIE_3_RX_DP	8	NC
9	GND	10	NGFF_ACT_N
11	PCIE_3_TX_DN	12	+V3.3
13	PCIE_3_TX_DP	14	+V3.3
15	GND	16	+V3.3
17	PCIE_2_RX_DN	18	+V3.3
19	PCIE_2_RX_DP	20	NC
21	GND	22	NC
23	PCIE_2_TX_DN	24	NC
25	PCIE_2_TX_DP	26	NC
27	GND	28	NC
29	PCIE_1_RX_DN	30	NC
31	PCIE_1_RX_DP	32	NC
33	GND	34	NC
35	PCIE_1_TX_DN	36	NC
37	PCIE_1_TX_DP	38	SATA_SSD_SLP
39	GND	40	NC

41	PCIE_0_RX_DN	42	NC
43	PCIE_0_RX_DP	44	NC
45	GND	46	NC
47	PCIE_0_TX_DN	48	NC
49	PCIE_0_TX_DP	50	SLOT_RST
51	GND	52	NC
53	PCIE_CLK_DN	54	NC
55	PCIE_CLK_DP	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	NC	70	+V3.3
71	GND	72	+V3.3
73	GND	74	+V3.3
75	GND		

AUDIO_CV1 : Audio Jack Connector	
PIN NO.	**DESCRIPTION**
Line-in (Blue)	CD/DVD or other audio source input port
Line-out (Green)	Connect this port to headphone or speaker
Microphone (Pink)	Connect this port to microphone

Board Layout: Jumper and Connector Locations



(Unit: mm)