

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

# **IMBA-ADL-H610**

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

September 1, 2022

### **Package List**

IMBA-ADL-H610 package includes the following items:

- 1 x IMBA-ADL-H610 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 65W TDP)
- Chipset:  
Intel® H610/H610E
- Memory:  
Two 288-pin dual-channel unbuffered DDR4 SDRAM DIMM slots supporting up to 64 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:  
LAN1: Intel® I219 LM controller  
LAN2: Intel® I225V 2.5GbE controller
- External I/O Interface:  
2 x USB 3.2 Gen 2 (Type-A) (10Gb/s)  
2 x USB 3.2 Gen 1 (Type-A) (5Gb/s)  
4 x USB 2.0 (Type-A)  
2 x RS-232/422/485 (RS-485 support AFC)
- Internal I/O Interface:  
4 x SATA 6Gb/s  
2 x USB 2.0 (2x4 pin, p=2.54)  
4 x RS-232 (2x5 pin, p=2.54)

- Audio:
  - 1 x iAUDIO supports IEI AC-KIT-888S Audio Kit (2x5 pin, p=2.0)
- 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 Gen5 x16 slot
  - 1 x PCIe Gen4 x4 open-end slot
  - 2 x PCIe Gen3 x1 slot
  - 2 x PCI slot
- 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)
- Power Supply:
  - ATX/AT power supply
  - Support AT/ATX mode
  - ErP/EuP compliant
- Power Consumption:
  - 3.3V@0.36A, 5V@7.04A, 12V@5.62A, 5VSB@0.7A
  - (Intel® Core™ i7-12700E 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:900 g / NW:400 g
- Safety: CE/FCC compliant

All the drivers and utility for the IMBA-ADL-H610 are available on IEI Resource Download Center. Type IMBA-ADL-H610 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-H610-R10:**  
ATX motherboard supports LGA1700 12th/13th Generation Intel® Core™ i9/i7/i5/i3, Pentium® and Celeron® processor, DDR4, triple independent display, dual GbE LAN, USB 3.2, SATA 6Gb/s, and RoHS
- **AC-KIT-888S-R10:**  
Realtek ALC888S 7.1 Channel HD Audio board, RoHS
- **CB-USB02A-RS:**  
Dual-port USB cable with bracket, 300mm, p=2.0
- **32102-000100-200-RS:**  
SATA power cable, MOLEX 5264-4P to SATA15P
- **32205-000702-100-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)
- **19100-000323-00-RS:**  
LGA1700 CPU cooler, 65W

## Jumpers Setting and Connectors

LABEL	FUNCTION
J_ATX_AT1	AT/ATX power mode setting
J_CMOS1	Clear CMOS jumper
ME_FLASH1	Flash descriptor security override 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_DIMM1, 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
J1	RAA229134 FW flash connector
J2	LT86101X FW flash connector
SATA1, SATA2, SATA3, SATA4	SATA 6Gb/s connectors
J_SMB1	SMBus connector
JSPI1	Flash SPI ROM connector
JEC1	Flash EC ROM connector
USB2_CN1	Internal USB 2.0 connector
IDPM	IEI iDPM slot
PCI1, PCI2	PCI slots
PCIE2, PCIE4	PCIe x1 slots
PCIE3	PCIe x4 slot
PCIE1	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 1GbE 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
USB2_1	External quad USB 2.0 connector

**J\_ATX\_AT1: AT/ATX Power Mode Setting**

PIN NO.	DESCRIPTION
Short A - B	ATX Power Mode (default)
Short B - C	AT Power Mode

**J\_CMOS1: Clear CMOS Button**

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

**ME\_FLASH1: Flash Descriptor Security Override Jumper**

PIN NO.	DESCRIPTION
Open	Disabled (default)
Short	Enabled

**IAUDIO: Audio Connector for IEI AC-KIT-888S kit**

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
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	LAN1_LED_LNK#_ACT

<b>JLAN_LED2: 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>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	RST
5	TXD	6	CTS
7	DTR	8	RI
9	GND	10	GND

<b>J1: RAA229134 FW Flash Connector</b>			
<b>PIN NO.</b>	<b>DESCRIPTION</b>	<b>PIN NO.</b>	<b>DESCRIPTION</b>
1	SDA	2	SCL
3	GND		

<b>J2: LT86101X FW Flash Connector</b>			
<b>PIN NO.</b>	<b>DESCRIPTION</b>	<b>PIN NO.</b>	<b>DESCRIPTION</b>
1	SDA	2	SCL
3	GND		

<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>JEC1: Flash EC ROM Connector</b>			
<b>PIN NO.</b>	<b>DESCRIPTION</b>	<b>PIN NO.</b>	<b>DESCRIPTION</b>
1	FSCE#	2	+3.3V
3	FMISO	4	NC
5	EC_DET_FLASH	6	FSCK
7	GND	8	FMOSI

<b>USB2_CN1: Internal USB 2.0 Connector</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>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	CONFIG_A_1
4	LANE1P	14	CONFIG_A_2
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_DATA2P	31	GND
22	GND	32	HDMI_CLKN
23	HDMI_DATA2N	33	N/C
24	HDMI_DATA1P	34	N/C
25	GND	35	HDMI_CLK
26	HDMI_DATA1N	36	HDMI_SDA
27	HDMI_DATA0P	37	GND
28	GND	38	+5V
29	HDMI_DATA0N	39	HDMI_HPDP
30	HDMI_CLKP		

<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>1GbE RJ-45 Connector</b>			
<b>PIN NO.</b>	<b>DESCRIPTION</b>	<b>PIN NO.</b>	<b>DESCRIPTION</b>
20	LAN1_MD0+	26	LAN1_MD3+
21	LAN1_MD0-	27	LAN1_MD3-
22	LAN1_MD1+	29	VCC
23	LAN1_MD1-	30	ACT
24	LAN1_MD2+	31	100-
25	LAN1_MD2-	32	1000-

<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	LAN2_MD0+	26	LAN2_MD3+
21	LAN2_MD0-	27	LAN2_MD3-
22	LAN2_MD1+	29	VCC
23	LAN2_MD1-	30	ACT
24	LAN2_MD2+	31	2500-
25	LAN2_MD2-	32	1000-

<b>USB2_1: External Quad USB 2.0 Connector</b>			
<b>PIN NO.</b>	<b>DESCRIPTION</b>	<b>PIN NO.</b>	<b>DESCRIPTION</b>
11	USB_VCC	31	USB_VCC
12	D-	32	D-
13	D+	33	D+
14	GND	34	GND
21	USB_VCC	41	USB_VCC
22	D-	42	D-
23	D+	43	D+
24	GND	44	GND

