

ATX Motherboard Supports 16nm Zhaoxin KX-U6580/KXU6780A On-board Processor with Triple Independent Display, DDR4, Dual GbE LAN, M.2, PCIe Mini, USB 3.2, SATA 6Gb/s, COM, Audio and RoHS

IMBA-KX

Quick Installation Guide

Version 1.0

January 13, 2022

Package List

IMBA-KX package includes the following items:

- 1 x IMBA-KX single board computer with CPU cooler
- 2 x SATA cable
- 1 x I/O shielding
- 1 x QIG



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Specifications

- CPU:
Zhaoxin Kaixian KX-6000 series 8-core processor
 - Zhaoxin KX-U6580 on-board processor (8-core, 8MB cache, 2.5GHz, 70W)
 - Zhaoxin KX-U6780A on-board processor (8-core, 8MB cache, 2.7GHz, 70W)
- Chipset:
Zhaoxin ZX-200
- Memory:
Four 288-pin 3200 MHz dual-channel DDR4 SDRAM unbuffered DIMMs (system max. 64GB)
- BIOS:
AMI UEFI BIOS
- Graphics Engine:
C-960 Graphics Processing Unit with 2D/3D/video acceleration
- 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 2.0/1.4 (up to 4096 x 2304 @ 30 Hz)
- Ethernet:
LAN1: Realtek RTL8111H PCIe GbE controller
LAN2: Realtek RTL8111H PCIe GbE controller
- Super I/O:
Fintek F81866D
- External I/O Interface:
 - 1 x RS-232 DB-9
 - 6 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)
 - 1 x PS/2 keyboard/mouse

- Internal I/O Interface:
 - 4 x USB 2.0 (2x4 pin, p=2.54)
 - 1 x USB 3.2 Gen 1 (Type-A)
 - 5 x RS-232 (2x5 pin, p=2.0)
 - 4 x RS-232 (via 2x20 pin, p=2.0)
 - 4 x SATA 6Gb/s (with 5V/12V SATA power connector, 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 (1x10 pin, p=2.54; power LED, HDD LED, power button, reset button)
- Expansions:
 - 1 x PCIe x16 slot (x8 signal) (slot 1)
 - 2 x PCIe x4 slot (open ended, slot 2 & slot 3)
 - 4 x PCI slot (slot 4 – 7)
 - 1 x M.2 3042/3052/2242/2280 B Key w/ SIM holder (PCIe x2, USB 3.2 Gen 1, SATA)
 - 1 x Full-size PCIe Mini (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)
- Fan Connector:
 - 1 x CPU fan connector (1x4 pin)
 - 2 x System fan connector (1x4 pin & 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@0.81A, 5V@3.36A, 12V@3.02A
(Zhaoxin KX-U6580 CPU with 4 GB 2133 MHz DDR4 memory)
- 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-KX are available on IEI Resource Download Center. Type IMBA-KX 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-KX-U6580-R10:**
ATX motherboard supports 16nm Zhaoxin KX-U6580 (70W) on-board processor with triple independent display, DDR4, dual GbE LAN, M.2, PCIe Mini, USB 3.2, SATA 6Gb/s, COM, audio and RoHS
- **IMBA-KX-U6780A-R10:**
ATX motherboard supports 16nm Zhaoxin KX-U6780A (70W) on-board processor with triple independent display, DDR4, dual GbE LAN, M.2, PCIe Mini, USB 3.2, SATA 6Gb/s, COM, audio and RoHS
- **19800-003100-100-RS:**
Dual port USB cable with bracket, 30mm, p=2.54
- **32102-000100-200-RS:**
SATA power cable, MOLEX 8981-4M to SATA15P, 150mm
- **32205-002700-200-RS:**
RS-232/422/485 cable, 200mm, p=2.0
- **TPM-IN01-R20:**
20-pin Infineon TPM module, S/W management tool, firmware v4.4

Jumpers Setting and Connectors

LABEL	FUNCTION
JATX_AT1	AT/ATX power mode setting
J_CMOS1	Clear CMOS jumper
BAT1	RTC battery holder
FRONT-PANEL1	Internal audio connector
ATXPWR1	ATX power connector
CPU12V1	ATX CPU 12V power connector
CHASSIS1	Chassis intrusion connector
DIO1	Digital I/O connector
CPU_FAN1, SYS_FAN1, SYS_FAN2	Fan connectors
F_PANEL1	Front panel connector
COM2, COM7, COM8, COM9, COM10	RS-232 serial port connectors
COM3-6	RS-232 serial port connector (quad port)
SATA0, SATA1, SATA2, SATA3,	SATA 6Gb/s connectors
SMB1	SMBus connector
JSP1	Flash SPI ROM connector
J_USB1, J_USB2	Internal USB 2.0 connectors
USB1	Internal USB 3.2 Gen 1 Type-A connector
TPM1	TPM connector
SIM1	SIM card socket
M2_1	M.2 B-key slot
MPCIE1	Full-size/Half-size PCIe Mini slot
PCI1, PCI2, PCI3, PCI4	PCI slots
PCIEX4_SLOT2, PCIEX4_SLOT3	PCIe x4 slots
PCIEX8_SLOT1	PCIe x16 slot (x8 signal)
PWR_SW1	Onboard power button
AUDIO_CV1	External HD Audio jack
PS/2	External USB 2.0 connectors and PS/2 keyboard/mouse connector

LAN1_USB1,	External GbE RJ-45 and dual USB 3.2 Gen 1 combo connector
LAN2_USB2	External GbE RJ-45 and dual USB 3.2 Gen 2 combo connector
USB2_1	External quad-port USB 2.0 connector
COM1/VGA1	External RS-232 and VGA combo connector
HDMI_DP1	External HDMI and DP combo connector

JATX_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 Jumper

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

CHASSIS1: Chassis Intrusion Jumper

PIN NO.	DESCRIPTION
Open (default)	Chassis close
Short	Chassis open

FRONT-PANEL1 : Internal Audio Connector

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	LMIC2-L	2	GND
3	LMIC2-R	4	PRESENCE#
5	LLINE2-R	6	MIC2-JD
7	FRONT-IO	8	NC
9	LLINE2-L	10	LINE2-JD

ATXPWR1: 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	3	+12V
2	GND	4	+12V

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

CPU_FAN1: CPU Fan Connector			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	GND	2	+12V
3	FANIO1	4	FANOUT1

SYS_FAN2: System Fan Connector			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	GND	2	+12V
3	FANIO2	4	FANOUT2

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+	6	NC	PWR BTN
	2	PWR_LED	7	PWR_BTN+	
	3	NC	8	PWR_BTN-	
HDD LED	4	HDD_LED+	9	Reset+	RESET
	5	HDD_LED-	10	Reset-	

COM2, COM7, COM8, COM9, COM10: 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

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

COM3-6: RS-232 Serial Port Connector (Quad Port)			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	DCD_COM3	2	DSR_COM3
3	RXD_COM3	4	RTS_COM3
5	TXD_COM3	6	CTS_COM3
7	DTR_COM3	8	RI_COM3
9	GND	10	GND
11	DCD_COM4	12	DSR_COM4
13	RXD_COM4	14	RTS_COM4
15	TXD_COM4	16	CTS_COM4
17	DTR_COM4	18	RI_COM4
19	GND	20	GND
21	DCD_COM5	22	DSR_COM5
23	RXD_COM5	24	RTS_COM5
25	TXD_COM5	26	CTS_COM5
27	DTR_COM5	28	RI_COM5
29	GND	30	GND
31	DCD_COM6	32	DSR_COM6
33	RXD_COM6	34	RTS_COM6
35	TXD_COM6	36	CTS_COM6
37	DTR_COM6	38	RI_COM6
39	GND	40	GND

SATA0, SATA1, SATA2, SATA3: 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

JSP1: 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

J_USB1: Internal USB 2.0 Connectors			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	VBUS10_0	2	GND
3	USB_DATA0-	4	USB_DATA2+
5	USB_DATA0+	6	USB_DATA2-
7	GND	8	VBUS10_2

J_USB2: Internal USB 2.0 Connectors			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	VBUS10_1	2	GND
3	USB_DATA1-	4	USB_DATA3+
5	USB_DATA1+	6	USB_DATA3-
7	GND	8	VBUS10_3

USB1: Internal USB 3.2 Gen 1 Type-A Connector			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	VBUS3_0	6	USBSSRXPO
2	USB_DATA6-	7	GND
3	USB_DATA6+	8	USBSSTXN0
4	GND	9	USBSSTXPO
5	USBSSRXN0		

TPM1: TPM Connector			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	LPC80_CLK	2	GND
3	-LPCFRAME	4	NC
5	-LPCRST	6	+5V
7	LPCAD3	8	LPCAD2
9	+3.3V	10	LPCAD1
11	LPCAD0	12	GND
13	SMBCLK	14	SMBDATA
15	+3.3VSUS	16	SERIRQ
17	GND	18	NC
19	-LPCDRQ0	20	NC

M2_1: M.2 B-key Slot			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	M2_WWAN_CONFI3	2	+3.3V
3	GND	4	+3.3V
5	GND	6	CARD_POWER_OFF
7	USBH_D4+	8	M2_WWAN_DISABLE
9	USBH_D4-	10	NC
11	GND	12	Module Key
13	Module Key	14	Module Key
15	Module Key	16	Module Key
17	Module Key	18	Module Key
19	Module Key	20	NC
21	M2_WWAN_CONFI0	22	NC
23	PEXWAKE	24	NC
25	SAR_DPR_WWAN	26	GNSS_DISABLE_N
27	GND	28	NC
29	USB3.0_RX-	30	SIM_RST
31	USB3.0_RX+	32	SIM_CLK
33	GND	34	SIM_IO
35	USB3.0_TX-	36	SIM_VCC
37	USB3.0_TX+	38	NC
39	GND	40	PCIE_B-KEY_SCL

41	SATA_B+_RX+	42	PCIE_B-KEY_SDA
43	SATA_B-_RX-	44	NC
45	GND	46	NC
47	SATA_A-_TX-	48	NC
49	SATA_A+_TX+	50	PERST_N
51	GND	52	CLKREQ_N
53	PCIE_CLK5N	54	PEWAKE_N
55	PCIE_CLK5P	56	NC
57	GND	58	NC
59	NC	60	NC
61	NC	62	NC
63	NC	64	NC
65	NC	66	NC
67	M2_WWAN_RST_N	68	NC
69	M2_WWAN_CONF1	70	+3.3V
71	NC	72	+3.3V
73	NC	74	+3.3V
75	M2_WWAN_CONF2		

MPCIE1: Full-size/Half-size PCIe Mini Slot			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	PCIE_WAKE #	2	+3.3V
3	N/C	4	GND
5	N/C	6	1.5V
7	CLKREQ#	8	N/C
9	GND	10	N/C
11	CLK_PCIE_N	12	N/C
13	CLK_PCIE_P	14	N/C
15	GND	16	N/C
17	NC	18	GND
19	NC	20	W_DISABLE#
21	GND	22	PERST#
23	PCIE_RXN0	24	+3.3V
25	PCIE_RXP0	26	GND

27	GND	28	1.5V
29	GND	30	SMB_CLK
31	PCIE_TXN1	32	SMB_DATA
33	PCIE_TXP1	34	GND
35	GND	36	USB_D7-
37	GND	38	USB_D7+
39	+3.3V	40	GND
41	+3.3V	42	N/C
43	GND	44	N/C
45	NC	46	N/C
47	NC	48	1.5V
49	NC	50	GND
51	NC	52	+3.3V

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 and PS/2 Keyboard/Mouse Connector

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	GND	8	VBUS10_5
2	USB_DATA4+	9	GND
3	USB_DATA4-	10	KDAT_C
4	VBUS10_4	11	MDAT_C
5	GND	12	+5V_KBMS
6	USB_DATA5+	13	KCLK_C
7	USB_DATA5-	14	MCLK_C

USB2_1: External Quad-port USB 2.0 Connector			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
11	VBUS_20_0	34	GND
12	USBH_D0-	41	VBUS_20_3
13	USBH_D0+	42	USBH_D3-
14	GND	43	USBH_D3+
21	VBUS_20_1	44	GND
22	USBH_D1-	1	GND
23	USBH_D1+	2	GND
24	GND	3	GND
31	VBUS_20_2	4	GND
32	USBH_D2-	5	GND
33	USBH_D2+	6	GND

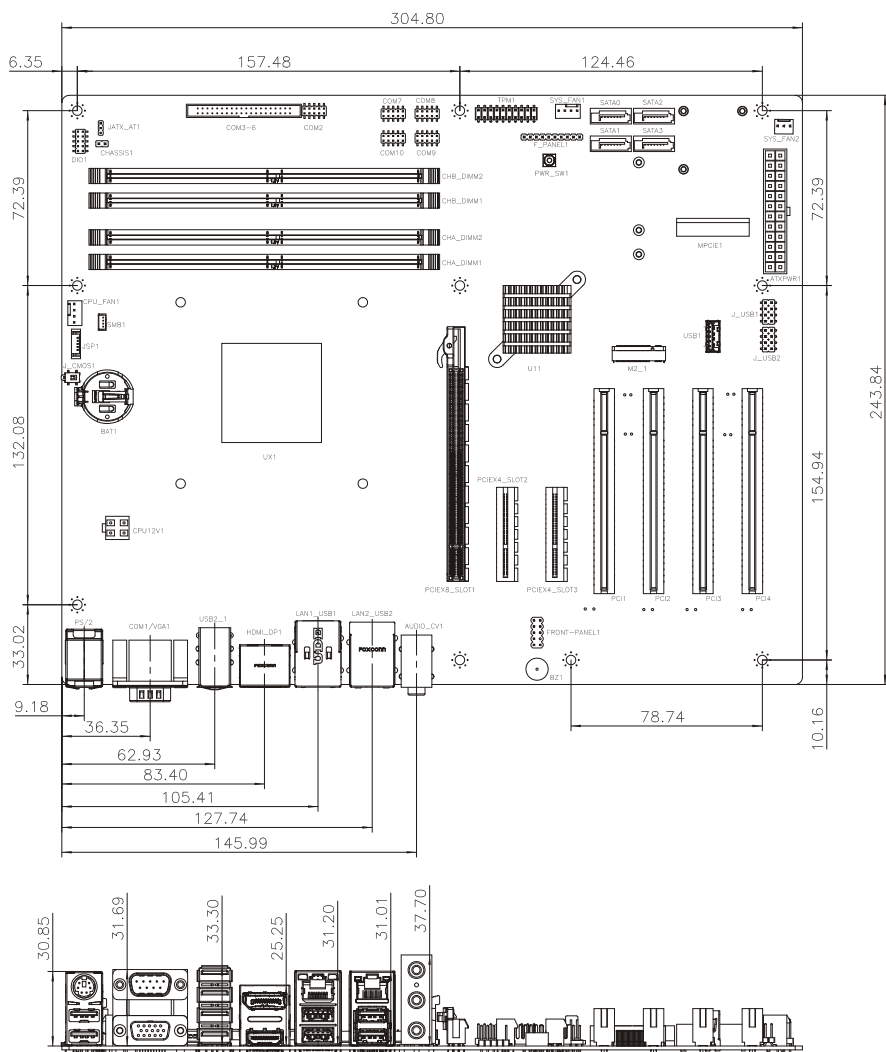
LAN1_USB1: Ethernet and USB 3.2 Gen 1 Connectors			
USB1: External USB 3.2 Gen 1 Connectors			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	VBUS_30_0	10	VBUS_30_1
2	USB_DATA-	11	USB_DATA-
3	USB_DATA+	12	USB_DATA+
4	GND	13	GND
5	USB3_RX-	14	USB3_RX-
6	USB3_RX+	15	USB3_RX+
7	GND	16	GND
8	USB3_TX-	17	USB3_TX-
9	USB3_TX+	18	USB3_TX+
LAN1: RJ-45 LAN Connector			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
R1	NC	R6	L0_TD2+
R2	L0_TD0+	R7	L0_TD2-
R3	L0_TD0-	R8	L0_TD3+
R4	L0_TD1+	R9	L0_TD3-
R5	L0_TD1-	R10	GND

LAN2_USB2: Ethernet and USB 3.2 Gen 2 Connectors			
USB2: External USB 3.2 Gen 2 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+
LAN2: RJ-45 LAN Connector			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
R1	NC	R6	L1_TD2+
R2	L1_TD0+	R7	L1_TD2-
R3	L1_TD0-	R8	L1_TD3+
R4	L1_TD1+	R9	L1_TD3-
R5	L1_TD1-	R10	GND

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	+3.3V
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		

Board Layout: Jumper and Connector Locations



(Unit: mm)