

Mini-ITX SBC supports 16nm Zhaoxin KX-U6580/KXU6780A (70W)
on-board processor with PCIe Mini, VGA, DVI-I, USB 3.2 Gen 1,
SATA 6Gb/s, COM, Audio and RoHS

KINO-KX

Quick Installation Guide

Version 1.0

December 21, 2020

Package List

KINO-KX package includes the following items:

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



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Specifications

- Processor:
Zhaoxin KX-U6580 (8-core, 8 MB cache, 2.5 GHz, 70W)
Zhaoxin KX-U6780A (8-core, 8 MB cache, 2.7 GHz, 70W)
- Chipset: Zhaoxin ZX-200
- BIOS: AMI UEFI BIOS
- Memory:
Two 260-pin 2666 MHz DDR4 SDRAM SO-DIMM slots
(system max. 64 GB)
- Graphics:
C-960 Graphics Processing Unit with 2D/3D/video acceleration
- Display Output:
1 x VGA (up to 1920x1080@60Hz)
1 x DVI-I (up to 1920x1080@60Hz)
- Ethernet:
Dual Realtek RTL8111H PCIe GbE controller
2 x RJ-45 GbE port
- Super IO: Fintek F81866
- Serial Ports
2 x RS-232 by 10-pin (2x5) header
8 x RS-232 by two 40-pin (2x20) header
- Audio:
Realtek ALC888S HD audio codec
3 x Audio jack (line-in, line-out and mic-in)
- USB Ports:
4 x USB 3.2 Gen 1 (5Gb/s) on rear I/O
10 x USB 2.0 on rear I/O
- Keyboard/Mouse:
1 x PS/2 keyboard/mouse connector on rear I/O
- TPM:
1 x TPM connector by 20-pin (2x10) header

- Storage:
 - 4 x SATA 6Gb/s connectors
- Front Panel:
 - 1 x Front panel connector by 10-pin (1x10) header for power LED, HDD LED, power button and reset button
- Expansion :
 - 1 x Full-size PCIe Mini slot (USB 2.0 + PCIe 2.0 x1 signal)
 - 1 x PCIe x16 slot (with PCIe 3.0 x8 signal)
- Watchdog Timer:
 - Software programmable, support 1~255 sec. system reset
- Fan Connector:
 - 1 x CPU smart fan (1x4 pin)
 - 1 x System smart fan (1x4 pin)
- Power Supply:
 - Support AT/ATX mode
 - 1 x Internal power connector by 24-pin (2x12) connector
 - 1 x Internal power connector by 4-pin (2x2) connector
- Power Consumption:
 - 12V @ 3.38A, 3.3V @ 0.62A, 5V @ 9.81A, 5VSB @ 0.03A
(Zhaoxin KX-U6580 2.5 GHz CPU with 8 GB 2400 MHz DDR4 memory)
- Operating Temperature: -10°C ~ 50°C
- Storage Temperature: -20°C ~ 60°C
- Operation Humidity: 20% ~ 95%, non-condensing
- Dimensions: 170mm x 170 mm
- Weight: GW: 900g / NW: 400g
- Safety: CE/FCC compliant

Ordering Information

- **KINO-KX-U6580-R10:**
Mini-ITX SBC supports 16nm Zhaoxin KX-U6580 (70W) onboard processor with PCIe Mini, VGA, DVI, USB 3.2 Gen 1, SATA6Gb/s, COM, Audio and RoHS
- **KINO-KX-U6780A-R10:**
Mini-ITX SBC supports 16nm Zhaoxin KX-U6780A (70W) onboard processor with PCIe Mini, VGA, DVI, USB 3.2 Gen 1, SATA 6Gb/s, COM, Audio and RoHS
(By order production, MOQ: 100)
- **32200-025401-RS:**
Quad RS-232 cable, 300mm, p=2.0, 40-pin
- **32205-002000-100-RS:**
Quad RS-232/422/485 cable, 300mm, p=2.0, 40-pin
- **32205-002700-200-RS:**
RS-232 cable, 200mm, p=2.0
- **TPM-IN01-R20:**
20-pin Infineon TPM module, software management tool, firmware v4.4

All the drivers and utilities for the KINO-KX series are available on IEI Resource Download Center. Type the model name 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 |
|-------------------------------|--|
| CPU12V1 | 12 V DC-IN power connector |
| ATXPWR1 | ATX power connector |
| BAT1 | Battery connector |
| SP1 | Buzzer connector |
| CPU_FAN1 | Fan connector, CPU |
| SYS_FAN1 | Fan connector, system |
| F_PANEL1 | Front panel connector |
| CHA_DIMM1, CHB_DIMM1 | Memory slots |
| PCIEX16 | PCIe x16 slot |
| MPCIE1 | PCIe Mini slot |
| CN1, CN2 | RS-232 connectors |
| COM3-6, COM7-10 | Quad RS-232 connectors |
| SATA0, SATA1, SATA2, SATA3 | SATA 6Gb/s drive connector |
| JSP1 | SPI flash connector |
| TPM1 | TPM connector |
| AUDIO1 | Audio jacks |
| CON1 | KB/MS and USB 2.0 connector |
| LAN1_USB1, LAN2_USB2 | LAN and USB 3.2 Gen 1 combo connectors |
| USB2_1, USB2_2 | USB 2.0 connectors |
| U40 | VGA and DVI-I connectors |

| 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 Setup | |
|----------------------------------|---------------------------------------|
| PIN NO. | DESCRIPTION |
| Short 1-2 | Keep CMOS Setup (Normal Operation) |
| Short 2-3 | Clear CMOS Setup |

| CPU12V1: 12 V DC-IN Power Connector | | | |
|--|--------------------|----------------|--------------------|
| PIN NO. | DESCRIPTION | PIN NO. | DESCRIPTION |
| 1 | GND | 2 | GND |
| 3 | 12V | 4 | 12V |

| ATXPWR1: ATX Power Connector | | | |
|-------------------------------------|--------------------|----------------|--------------------|
| PIN NO. | DESCRIPTION | PIN NO. | DESCRIPTION |
| 1 | +3.3 V | 13 | +3.3 V |
| 2 | +3.3 V | 14 | -12 V |
| 3 | GND | 15 | GND |
| 4 | +5 V | 16 | PS-ON |
| 5 | GND | 17 | GND |
| 6 | +5 V | 18 | GND |
| 7 | GND | 19 | GND |
| 8 | PW-OK | 20 | NC |
| 9 | +ATX_5VSB | 21 | +5 V |
| 10 | +12 V | 22 | +5 V |
| 11 | +12 V | 23 | +5 V |
| 12 | +3.3 V | 24 | GND |

| BAT1: Battery Connector | | | |
|--------------------------------|--------------------|----------------|--------------------|
| PIN NO. | DESCRIPTION | PIN NO. | DESCRIPTION |
| 1 | RTC Battery+ | 2 | GND |

| SP1: Buzzer Connector | | | |
|------------------------------|--------------------|----------------|--------------------|
| PIN NO. | DESCRIPTION | PIN NO. | DESCRIPTION |
| 1 | +5V | 2 | Buzzer |

| CPU_FAN1, SYS_FAN1: Fan Connectors | | | |
|---|--------------------|----------------|--------------------|
| PIN NO. | DESCRIPTION | PIN NO. | DESCRIPTION |
| 1 | GND | 2 | +12V |
| 3 | FAN_IO | 4 | FAN_OUT |

| F_PANEL1: Front Panel Connector | | | | | |
|--|------------|--------------------|------------|--------------------|--------------|
| | PIN | DESCRIPTION | PIN | DESCRIPTION | |
| Power LED | 1 | PWR_LED+ | 6 | N/C | Power Button |
| | 2 | PWR_LED- | 7 | PWR_BTN+ | |
| | 3 | N/C | 8 | PWR_BTN- | |
| HDD LED | 4 | HDD_LED+ | 9 | RESET+ | Reset |
| | 5 | HDD_LED- | 10 | RESET- | |

| CN1: RS-232 Connector (COM1) | | | |
|-------------------------------------|--------------------|----------------|--------------------|
| PIN NO. | DESCRIPTION | PIN NO. | DESCRIPTION |
| 1 | DCD_COM1 | 2 | DSR_COM1 |
| 3 | SIN_COM1 | 4 | RTS_COM1 |
| 5 | SOUT_COM1 | 6 | CTS_COM1 |
| 7 | DTR_COM1 | 8 | RI_COM1 |
| 9 | GND | 10 | GND |

| CN2: RS-232 Connector (COM2) | | | |
|-------------------------------------|--------------------|----------------|--------------------|
| PIN NO. | DESCRIPTION | PIN NO. | DESCRIPTION |
| 1 | DCD_COM2 | 2 | DSR_COM2 |
| 3 | SIN_COM2 | 4 | RTS_COM2 |
| 5 | SOUT_COM2 | 6 | CTS_COM2 |
| 7 | DTR_COM2 | 8 | RI_COM2 |
| 9 | GND | 10 | GND |

| COM3-6: RS-232 Connector (COM3~COM6) | | | |
|---|--------------------|----------------|--------------------|
| PIN NO. | DESCRIPTION | PIN NO. | DESCRIPTION |
| 1 | DCD_COM3 | 2 | DSR_COM3 |
| 3 | SIN_COM3 | 4 | RTS_COM3 |
| 5 | SOUT_COM3 | 6 | CTS_COM3 |
| 7 | DTR_COM3 | 8 | RI_COM3 |
| 9 | GND | 10 | GND |
| 11 | DCD_COM4 | 12 | DSR_COM4 |
| 13 | SIN_COM4 | 14 | RTS_COM4 |
| 15 | SOUT_COM4 | 16 | CTS_COM4 |
| 17 | DTR_COM4 | 18 | RI_COM4 |
| 19 | GND | 20 | GND |
| 21 | DCD_COM5 | 22 | DSR_COM5 |
| 23 | SIN_COM5 | 24 | RTS_COM5 |
| 25 | SOUT_COM5 | 26 | CTS_COM5 |
| 27 | DTR_COM5 | 28 | RI_COM5 |
| 29 | GND | 30 | GND |
| 31 | DCD_COM6 | 32 | DSR_COM6 |
| 33 | SIN_COM6 | 34 | RTS_COM6 |
| 35 | SOUT_COM6 | 36 | CTS_COM6 |
| 37 | DTR_COM6 | 38 | RI_COM6 |
| 39 | GND | 40 | GND |

| COM7-10: RS-232 Connector (COM7~COM10) | | | |
|---|--------------------|----------------|--------------------|
| PIN NO. | DESCRIPTION | PIN NO. | DESCRIPTION |
| 1 | DCD_COM7 | 2 | DSR_COM7 |
| 3 | SIN_COM7 | 4 | RTS_COM7 |
| 5 | SOUT_COM7 | 6 | CTS_COM7 |
| 7 | DTR_COM7 | 8 | RI_COM7 |
| 9 | GND | 10 | GND |
| 11 | DCD_COM8 | 12 | DSR_COM8 |
| 13 | SIN_COM8 | 14 | RTS_COM8 |
| 15 | SOUT_COM8 | 16 | CTS_COM8 |
| 17 | DTR_COM8 | 18 | RI_COM8 |
| 19 | GND | 20 | GND |
| 21 | DCD_COM9 | 22 | DSR_COM9 |
| 23 | SIN_COM9 | 24 | RTS_COM9 |
| 25 | SOUT_COM9 | 26 | CTS_COM9 |
| 27 | DTR_COM9 | 28 | RI_COM9 |
| 29 | GND | 30 | GND |
| 31 | DCD_COM10 | 32 | DSR_COM10 |
| 33 | SIN_COM10 | 34 | RTS_COM10 |
| 35 | SOUT_COM10 | 36 | CTS_COM10 |
| 37 | DTR_COM10 | 38 | RI_COM10 |
| 39 | GND | 40 | GND |

| SATA0, SATA1, SATA2, SATA3: SATA 6Gb/s Connector | | | |
|---|--------------------|----------------|--------------------|
| PIN NO. | DESCRIPTION | PIN NO. | DESCRIPTION |
| 1 | GND | 2 | TX+ |
| 3 | TX- | 4 | GND |
| 5 | RX- | 6 | RX+ |
| 7 | GND | | |

| JSP1: BIOS SPI Flash Connector | | | |
|---------------------------------------|--------------------|----------------|--------------------|
| PIN NO. | DESCRIPTION | PIN NO. | DESCRIPTION |
| 1 | SPIVCC | 2 | SPI_CS# |
| 3 | SPI_MISO | 4 | SPI_CLK |
| 5 | SPI_MOSI | 6 | GND |

| TPM1: Trusted Platform Module Connector | | | |
|--|--------------------|----------------|--------------------|
| PIN NO. | DESCRIPTION | PIN NO. | DESCRIPTION |
| 1 | LCLK | 2 | GND |
| 3 | LFRAME# | 4 | KEY |
| 5 | LRERST# | 6 | +5V |
| 7 | LAD3 | 8 | LAD2 |
| 9 | +3.3V | 10 | LAD1 |
| 11 | LAD0 | 12 | GND |
| 13 | SCL | 14 | SDA |
| 15 | SB3V | 16 | SERIRQ |
| 17 | GND | 18 | GLKRUN# |
| 19 | LPCPD# | 20 | LDRQ# |

| AUDIO1: External Audio Jacks | |
|-------------------------------------|---|
| PIN NO. | DESCRIPTION |
| Line_In (Blue) | Connect this port to DVD player, or other audio devices |
| Line_Out (Green) | Connect this port to headphone or speaker |
| Microphone (Pink) | Connect this port to microphone |

| LAN1_USB1, LAN2_USB2: Ethernet and USB 3.2 Gen 1 Connectors | | | |
|--|--------------------|----------------|--------------------|
| External USB 3.2 Gen 1 (5Gb/s) 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+ |
| RJ-45 LAN Connectors | | | |
| PIN NO. | DESCRIPTION | PIN NO. | DESCRIPTION |
| 1 | MDIA0+ | 5 | MDIA2- |
| 2 | MDIA0- | 6 | MDIA1- |
| 3 | MDIA1+ | 7 | MDIA3+ |
| 4 | MDIA2+ | 8 | MDIA3- |

| CON1: External Keyboard/Mouse and USB 2.0 Connector | | | |
|--|--------------------|----------------|--------------------|
| External USB 2.0 Connectors | | | |
| PIN NO. | DESCRIPTION | PIN NO. | DESCRIPTION |
| 1 | 5V | 3 | USB_DATA+ |
| 2 | USB_DATA- | 4 | GND |
| External Keyboard/Mouse Connector | | | |
| PIN NO. | DESCRIPTION | PIN NO. | DESCRIPTION |
| 1 | KB DATA | 4 | VCC |
| 2 | MS DATA | 5 | KB CLOCK |
| 3 | GND | 6 | MS CLOCK |

| USB2_1, USB2_2: External USB 2.0 Connectors | | | |
|--|--------------------|----------------|--------------------|
| PIN NO. | DESCRIPTION | PIN NO. | DESCRIPTION |
| 1 | 5V | 3 | USB_DATA+ |
| 2 | USB_DATA- | 4 | GND |

| U40: External VGA and DVI-I Connector | | | |
|--|--------------------|----------------|--------------------|
| External VGA Connector | | | |
| PIN NO. | DESCRIPTION | PIN NO. | DESCRIPTION |
| 1 | RED | 2 | GREEN |
| 3 | BLUE | 4 | NC |
| 5 | GND | 6 | GND |
| 7 | GND | 8 | GND |
| 9 | VCC5V | 10 | GND |
| 11 | NC | 12 | DDCDATA |
| 13 | HSYNC | 14 | VSYNC |
| 15 | DDCCLK | | |
| External DVI-I Connector | | | |
| PIN NO. | DESCRIPTION | PIN NO. | DESCRIPTION |
| 1 | DATA2- | 2 | DATA2+ |
| 3 | GND | 4 | NC |
| 5 | NC | 6 | DDC CLK |
| 7 | DDC DATA | 8 | VSYNC |
| 9 | DATA1- | 10 | DATA1+ |
| 11 | GND | 12 | NC |
| 13 | NC | 14 | VCC5V |
| 15 | GND | 16 | HPDET |
| 17 | DATA0- | 18 | DATA0+ |
| 19 | GND | 20 | NC |
| 21 | NC | 22 | GND |
| 23 | CLK+ | 24 | CLK- |
| C1 | RED | C2 | GREEN |
| C3 | BLUE | C4 | HSYNC |
| C5 | GND | | |

Board Layout: Jumper and Connector Locations (Unit: mm)

