倍控®
BKHD

# BKHD-1264-10 Motherboard

VER 1.0

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# Safety Guide

To ensure optimal use of Beikong products, please review the user manual in its entirety. Before reviewing product-specific information, we kindly request that you carefully read the safety instructions.

## Product Version Identification

The product version number can be found on the motherboard, where X.X represents a number. For example, if the version is indicated as [VER1.0], it signifies that the current version of the motherboard is 1.0. The BIOS interface homepage provides information such as [XXXXNP-XXXX], which denotes the BIOS version number utilized by the current product. When updating the motherboard's BIOS, driver, or referencing other technical documents, please refer to the product version label for the most up-to-date information.

# Catalog

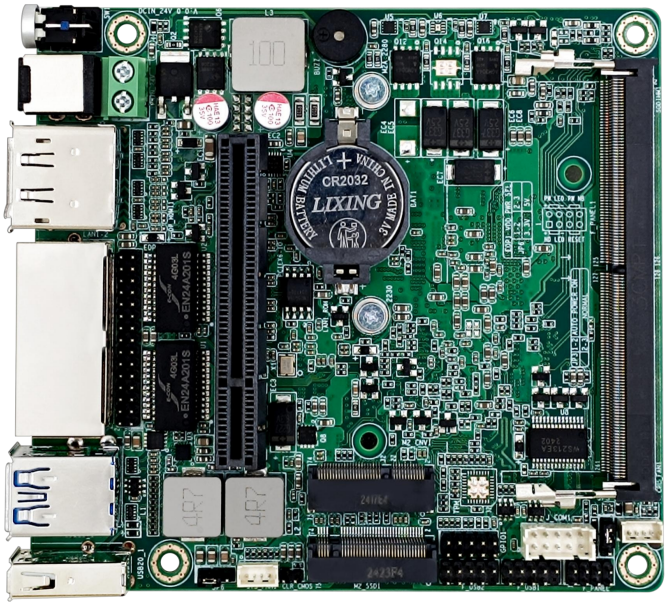


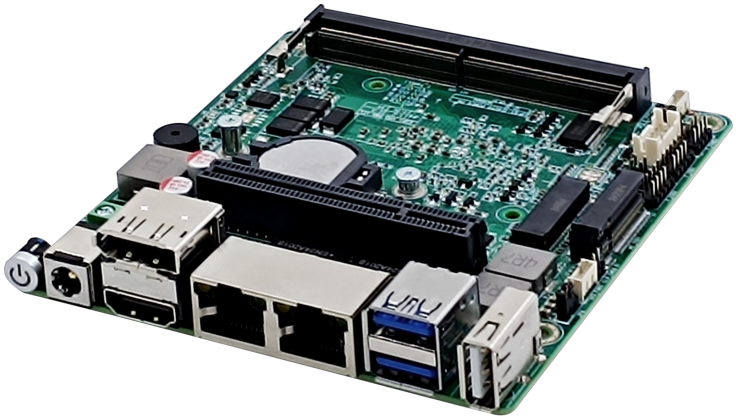


# Product Images

Please be advised that products manufactured in different batches may exhibit slight variations in appearance. To ensure the most accurate representation, please refer to the actual received goods.





# Product Profile

The 1264-10 is an ultra-compact, low-power industrial motherboard built on the Intel N-series processor platform. Despite its extremely small footprint, it integrates dual 2.5GbE high-speed networking, industrial-grade reliability, and a unique expansion interface, making it ideal for IoT gateways, edge computing nodes, industrial control systems, and network security applications deployed in space-constrained and harsh environments.

## Main features:

**High Efficiency, Low-Power Performance:** Powered by Intel Alder Lake-N processors, the platform delivers an excellent balance between performance and power efficiency. Most workloads can be handled with passive cooling, enabling completely fanless and silent system designs. Support for high-speed DDR5 memory ensures responsive system performance for modern embedded workloads.

**Ultra-Compact Design for Space-Constrained Systems:** Featuring an extremely small form factor, the board significantly reduces internal space requirements, offering high flexibility for compact and high-density embedded device designs. It can be easily integrated into a wide range of space-limited equipment and industrial terminals.

**Dual 2.5GbE High-Speed Networking:** Equipped with two Intel I226V 2.5GbE Ethernet controllers, the board provides up to 2.5× the bandwidth of traditional Gigabit networking. This ensures reliable and high-throughput connectivity for software routers, firewalls, IoT gateways, and edge computing nodes, easily handling multi-device concurrent access and large data transfers.

**Industrial Wide-Temperature and Wide-Voltage Design:** Designed for industrial reliability, the motherboard supports wide-temperature operation, enabling stable performance in harsh environments such as cold outdoor deployments and high-temperature industrial sites. The 12V–24V wide voltage input ensures compatibility with unstable industrial power systems while improving overall system resilience and reliability

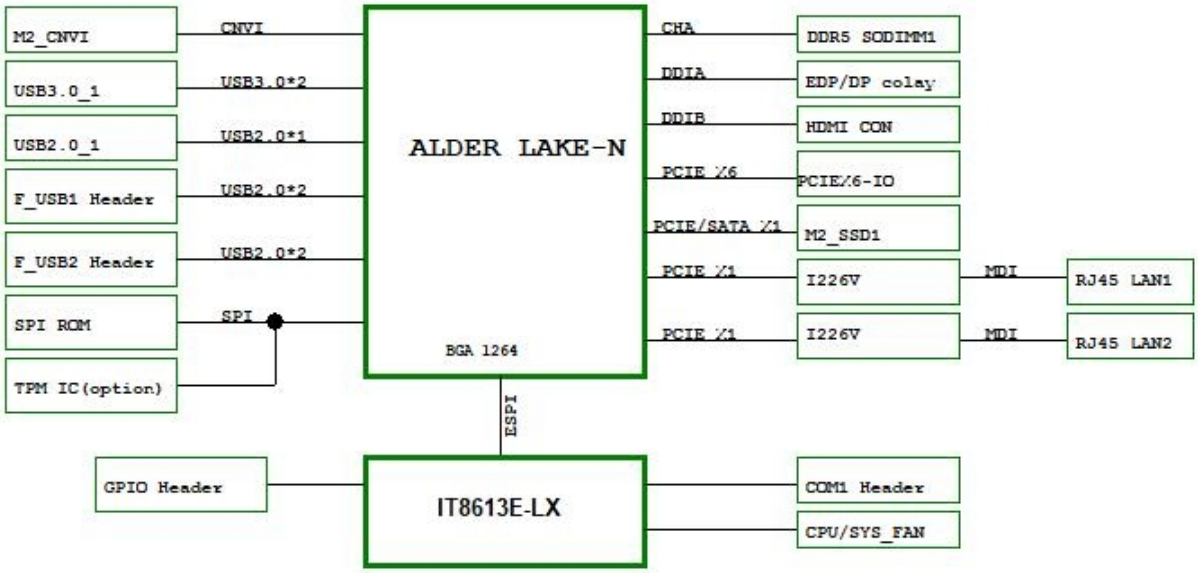
**Unique PCIe Expansion Interface:** The board features a custom PCIe x6-IO expansion interface, allowing the addition of specialized modules through adapter cards. This enables flexible expansion for multi-serial port cards, industrial I/O control cards, CAN bus interfaces, and other industry-specific modules, providing tailored solutions for specialized applications.

**Rich Display and Onboard Interfaces:** The motherboard supports dual display outputs for high-definition visualization and optional customizable eDP connectivity for direct integration with embedded LCD panels. Onboard COM headers and GPIO interfaces enable direct connection to PLCs, sensors, and industrial instruments, making the platform ideal for industrial control and data acquisition systems.



# Block Diagram





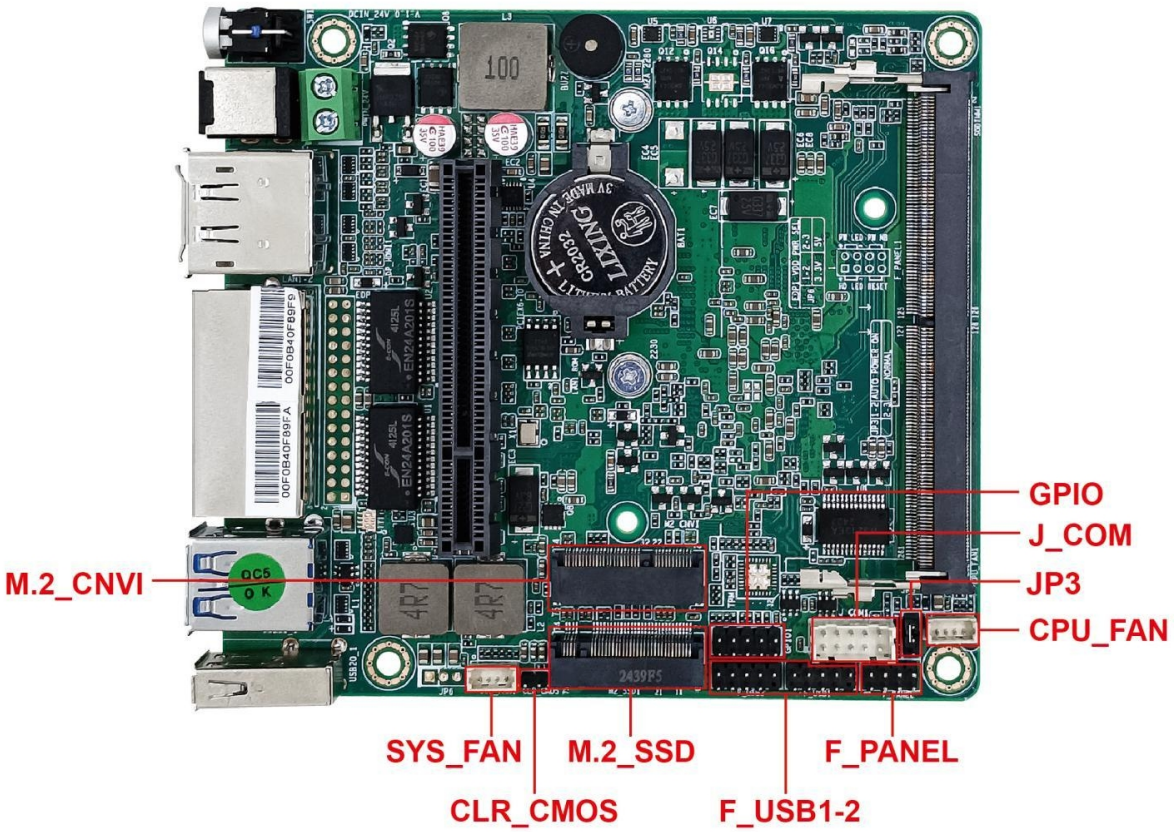
# Motherboard Specifications

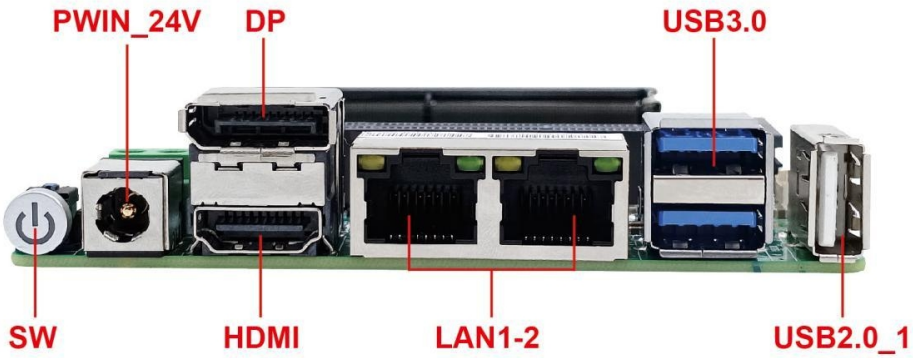
| | | |
|---|---|---|
| **Processor** | Product Collection | Intel Processor N-series |
| | Sockets Supported | FCBGA1264 |
| **Memory specifications** | Memory type | DDR5 SO-DIMM |
| | Maximum capacity | 16GB |
| | Maximum frequency | 4800 MT/s |
| **Storage specifications** | M.2 | 1*M.2 Key-B+M 2280 (PCIe x1/SATA 3.0) |
| **Network features** | Ethernet | 2*2.5GbE RJ45 |
| | Controller | 2*Intel I226V |
| **Extension interface** | PCI-E | 1*PCI-E x6-IO (Non-standard definition) |
| | M.2 Key-E | 1*M.2 Key-E 2230 (CNVi) |
| **Display functions** | Port | 1*DP/1*HD/1*eDP (Custom order) |
| | Chip | Intel UHD Graphics |
| **I/O Chip** | Chip | IT8613E-LX (for GPIO, COM, Fan control) |
| **Backplane I/O** | USB | 2*USB-A 3.2/1*USB-A 2.0 |
| | Display | 1*DP/1*HD |
| | Ethernet | 2*RJ45 |
| | Power supply | 1*Jack DC 5.5/2.5mm |
| **Onboard I/O** | Fan | 1*CPU_FAN, 1*SFP_FAN (Reserved) |
| | Pins | 2*F_USB 2.0 |
| | | 1*J_COM |
| | | 1*J_GPIO |
| **Power supply mode** | DC | 12V~24V |
| **Motherboard size** | Specification | 110 mm*100 mm |
| **Work Environment** | Temperature | Working: -20℃~60℃; Storage: -20℃~70℃; |
| | Humidity | 5%~90% (Relative humidity, no condensation) |



## Motherboard layout diagram





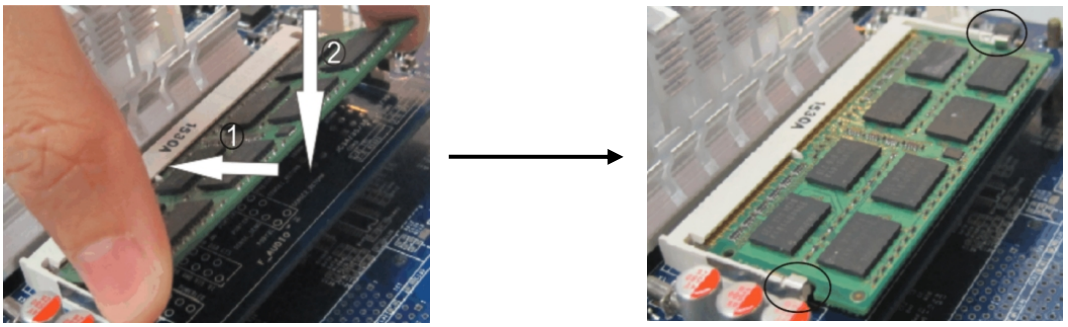
# Motherboard Installation

Safety Note

- Please do not remove the serial number and agent warranty sticker from the motherboard prior to installation. Doing so may affect the product's warranty recognition standard.
- Prior to installing or removing the motherboard or other hardware devices, please ensure that the power is turned off and the power cord is unplugged from the socket.
- When installing additional hardware devices on the motherboard interfaces, please ensure that the connectors and sockets are securely fastened.
- When handling the motherboard, please avoid contact with the metal wiring components to prevent the risk of short circuits.
- It is recommended that an anti-static wrist strap be worn when handling the motherboard, central processing unit (CPU), or memory. In the absence of an anti-static wrist strap, it is advisable to ensure that your hands are dry and to touch a metal object first in order to eliminate static electricity.
- Before installing the motherboard, we kindly request that place it on an antistatic mat or in an antistatic bag.
- Make sure the power adapter is turned off before unplugging the motherboard power connector.
- Before turning on the power, make sure the voltage of the adapter is within the standard voltage range.
- Before turning on the power, make sure all hardware device cables and power cords are properly connected.
- Do not allow the fixing screws to collide with the circuits or parts on the motherboard to avoid damage or malfunction of the motherboard.
- Make sure there are no loose screws or metal parts on the motherboard or inside the computer case before using the unit.
- Please secure the computer host in a stable location before starting the device.
- To prevent system failure, do not place the unit in an environment where the temperature is excessive.
- Turning on the power before installation is complete may damage the motherboard, other equipment, or yourself.
- If you are unfamiliar with how to perform the installation, or if you have any technical problems using this product, please contact a professional technician.

# Memory Installation

**The motherboard provides DDR5 SODIMM memory slots.**




**Before installing memory:**

1. Please confirm that the memory you purchased is compatible with the specifications supported by this motherboard.

2. Before installing or removing the memory, please make sure that the power of the computer is turned off to avoid damage.

3. The memory design has a foolproof mark. If you insert the memory in the wrong direction, the memory cannot be installed. Please change the direction.

**When installing memory:**

1. Before installing or removing memory, please turn off the power and unplug the power cord.

2. Carefully hold the two ends of the Memory Stick and do not touch the metal contacts on the Memory Stick.

3. Align the metal contacts of the memory with the memory slot, making sure that the concave hole is aligned with the convex point of the upper slot.

4. Insert the memory into the slot at an angle of 30 degrees, then press the Memory Stick down until you hear a "click," indicating that the memory has been successfully installed and is ready to use. (Note: Do not press the Memory Stick too hard to avoid damaging the memory).

5. To remove the Memory Stick, push out the tabs at both ends of the memory slot simultaneously, and then remove the Memory Stick.

**To remove the memory:**

Use two fingers to push the latches at either end of the slot outward, the memory will pop up, then remove the memory.



# Jumper Setting

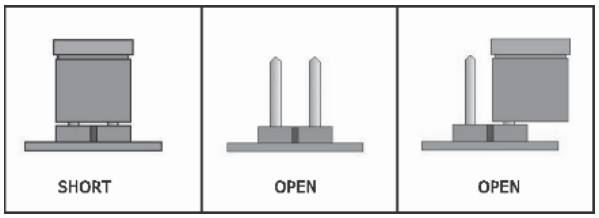
Before installing the hardware device, you can set the corresponding jumpers according to your needs based on the following table.

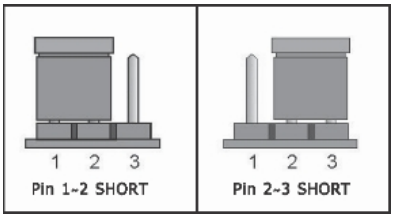
**To identify the first pin of a jumper or connector**

Look at the marking next to the jumper or connector. The triangle symbol "▲" or "1" or a bold line indicates the first pin; check the pad on the back of the motherboard. The square pad is the first pin. When connecting the connector to the device, be careful to distinguish the first pin. Mixing the pins will damage the motherboard.

**2-pin headers:** Insert a jumper cap into both pins turns them off (short).

**3-pin headers:** Insert a jumper cap into pins 1-2 or pins 2-3 to off (short) them.




## Clear CMOS Jumper (CLR_CMOS)

| CLR_CMOS | PIN | Definition |
|---|---|---|
|  | Open | Normal (Default) |
| | Short | Data Clear |

## Restore AC Power Loss Setting (JP3)

| Image | Status | Setting |
|---|---|---|
|  | 1-2 | Automatic power on (Default) |
| | 2-3 | Normal |

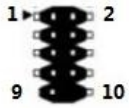


# Motherboard Pin Definition

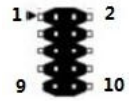
## Serial Port (COM)

The motherboard provides 2*5pin COM pin (pin header spacing: 2.00mm)

| Image | PIN | Definition | PIN | Definition |
|---|---|---|---|---|
|  | 1 | -NDCD | 2 | SIN |
| | 3 | TXD | 4 | DTR |
| | 5 | GND | 6 | DSR |
| | 7 | RTS | 8 | CTS |
| | 9 | RI | 10 | / |

## Programmable Input And Output Pins (J_GPIO)

The motherboard provides 2*5pin GPIO pin header (pin header spacing: 2.00mm)

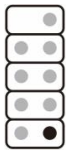
| Image | PIN | Definition | PIN | Definition |
|---|---|---|---|---|
|  | 1 | SIO_PD 0 | 2 | SIO_PD 4 |
| | 3 | SIO_PD 1 | 4 | SIO_PD 5 |
| | 5 | SIO_PD 2 | 6 | SIO_PD 6 |
| | 7 | SIO_PD 3 | 8 | SIO_PD 7 |
| | 9 | GND | 10 | VCC |



## Front Panel Pins (F_PANEL)

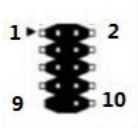
The motherboard provides F_PANEL pins (2*5-pin, 2.54 mm pitch, 10th pin is empty):

| Image | PIN | Definition | PIN | Definition |
|---|---|---|---|---|
|  | 1 | HDD_LED+ | 2 | PWR_LED+ |
| | 3 | HDD_LED- | 4 | PWR_LED- |
| | 5 | GND | 6 | GND |
| | 7 | RESET | 8 | PWR_ON |
| | 9 | GND | | |

## USB Expansion pins (F_USB)

Before connecting the USB expansion board, be sure to turn off the computer and unplug the power cord from the socket to avoid damaging the USB expansion board.

The motherboard provides F_USB pins (2*5-pin, 2.54 mm pitch, 9th pin is empty):

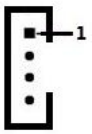
| Image | PIN | Definition | PIN | Definition |
|---|---|---|---|---|
|  | 1 | +5V | 2 | +5V |
| | 3 | USB1_DATA- | 4 | USB2_DATA- |
| | 5 | USB1_DATA+ | 6 | USB2_DATA+ |
| | 7 | GND | 8 | GND |
| | | | 10 | / |



## Cooling Fan Power Socket (CPU_FAN/SYS_FAN)

The motherboard provides 4-pin cooling fan connectors (pin header spacing: 1.25mm)

| Image | PIN | Definition |
|---|---|---|
|  | 1 | GND |
| | 2 | +12V |
| | 3 | DET |
| | 4 | PWM |



# BIOS User Guide

This motherboard uses AMI BIOS. BIOS stands for Basic Input Output System. It is a set of programs stored on a ROM chip on the computer's motherboard. It stores the computer's most important basic I/O programs, the power-on self-test program, and the system startup program. It can read and write specific information about system settings from the CMOS. Its primary function is to provide the most basic and immediate hardware settings and control for the computer.

Note: Because the BIOS version of the motherboard is constantly updated, the BIOS information in this manual is for reference only.

When the computer starts, the BIOS enters the power-on self-test (post) program. The self-test program is a series of diagnostic programs built into the BIOS. When the self-test program is complete, the following message appears: Press DEL to run Setup

If this message disappears before you respond, you can press <Ctrl> + <Alt> + <Del> at the same time to restart the computer, or shut down and then restart the computer, or press the power button on the case to restart the computer.

- Use the <↑><↓><←><→ arrow keys to move the item you want to change
- Press the <Enter> key to enter the sub-interface of the item.
- Use the <Enter> key to select the item to be changed and press the <Enter> key to change it.
- <Page Up/+>Increase value or change
- <Page Down/->Decrease value or change
- <F1>Set submenu help
- <F3>Set to default value (restore factory settings)
- <F4>Save BIOS settings



# Common fault analysis and solutions

We have compiled some frequently asked questions for your reference. Please check https://bkminipc.com/frequently-asked-questions-and-answers/

| Error | Inspection Method |
|---|---|
| Unable to start after power on | Make sure the power cord is properly connected.<br>Make sure that the power supply you are using meets the power supply requirements of the motherboard.<br>Try to reinsert the Memory Stick.<br>Try to replace the Memory Stick.<br>Try to clear the CMOS of the main board.<br>Please confirm if there is an external expansion card and if it is normal after removing the external card. |
| Unable to display after power on | Make sure the monitor is turned on.<br>Make sure the monitor and host power cables are properly connected.<br>Make sure the monitor and host cables are properly connected.<br>Check to see if the monitor is in "Sleep" mode.<br>Try changing the monitor interface or replacing the monitor. |
| BIOS Setup cannot be saved | Check that the CMOS battery is installed<br>Try to replace the CMOS battery (CR2032)<br>Adjust the time and date in BIOS setup |
| Unable to find a bootable device | Make sure the drive's power and data cables are properly connected.<br>Make sure the operating system is installed on the drive.<br>Make sure the hard drive is not physically damaged. |
| Blue screen or freeze when logging on to the system | Check if the Memory Stick and External Card are loose.<br>Try removing the newly installed hardware and uninstalling the newly installed driver or software.<br>Try replacing the memory with a different specification. |
| Slow entry into the operating system | Check if the CPU cooling fan is running normally.<br>Check if the remaining space of the system partition is insufficient.<br>Use software to check for bad sectors on the hard drive. |
| System restarts automatically | Confirm that the CPU cooling fan is rotating normally.<br>Confirm that the switch/reset button has not been accidentally touched.<br>Confirm that the Memory Stick and external card are loose.<br>Confirm that the power supply has sufficient load capacity, try to replace the power supply<br>Check if the system is infected with viruses. |
| Unable to detect USB device | Confirm that the USB device requires separate power.<br>Confirm that the USB interface has poor contact.<br>Confirm that the USB controller is enabled in the BIOS setup. |



# Useful Links

| | | |
|---|---|---|
| Submit your suggestions and ideas in the community | https://www.reddit.com/r/bkminipc/ |  |
| Watch our new product demos | https://www.youtube.com/@BKHD-PCs |  |
| Corporate News and Cooperation | https://www.linkedin.com/company/beikong/ |  |
| Get our latest news on Meta | https://www.facebook.com/people/%E5%80%8D%E6%8E%A7/61558406109357/ |  |

