



BKHD-C246-8L Motherboard User Manual

VER 1.0

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Safety Guide

To ensure optimal performance of BKHD products, please read the user manual in its entirety. Before checking product-specific details, we kindly ask that you carefully read these safety instructions.

Product Version Identification

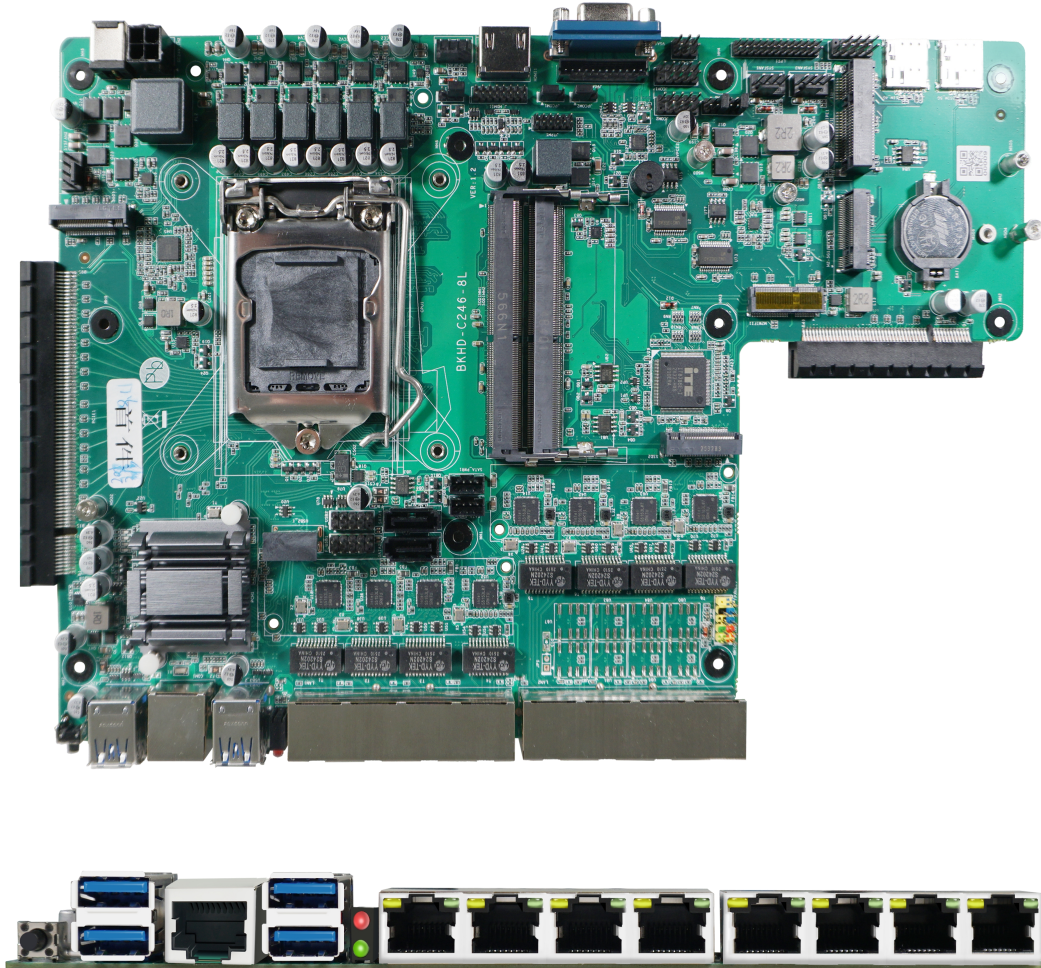
You can find the version of this motherboard on the motherboard itself, marked as "REV: X.X". X.X represents numbers, for example, "REV: 1.0" means the motherboard version is 1.0. When updating the motherboard's BIOS, drivers, or referring to other technical data, please pay attention to the product version marking.

Catalog

Copyright	2
Disclaimer	2
Safety Guide	2
Product Version Identification	2
Product Images	4
Product Profile	5
Motherboard Specifications	6
Motherboard Installation	7
Memory Installation	8
Jumper Setting	9
CMOS Content Clear/Keep Setting (JCMOS)	10
Restore on AC/Power Loss (JAT)	10
Bypass Setting (JP1)	10
Motherboard Pin Definition	11
SATA Data	11
SATA PWR	11
Front Panel Connectors (F_PANEL)	12
Serial Port Header (COM)	12
JPCOM 1~2 Settings	13
JPCOM 3 Setting	13
JRS485 Setting	13
USB Connectors Pins (F_USB1)	14
Trusted Platform Module (J_TPM)	14
Line Print Terminal (LPT)	15
Cooling Fan Power Socket (CPU_FAN/SYS_FAN)	15
VGA Header (J_VGA)	16
HDMI Header (J_HDMI)	16
LPC Debug Header (J_LPC)	17
BIOS User Guide	18
BIOS Description	18
BIOS Settings	19
Common fault analysis and solutions	20
Useful Links	21

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 C246-8L is a high-performance motherboard built on the Intel C246 chipset. It supports Intel LGA1151 socket processors and features 8x 2.5GbE RJ45 Ethernet ports, versatile expansion slots, and multiple storage interfaces. Designed for demanding applications, it is optimized for networking, data storage, edge computing, and industrial automation. With its wide operating temperature range and industrial-grade reliability, the C246-8L is ideally suited for data centers, industrial IoT deployments, and professional embedded systems.

Main features:

Powerful Computing and Memory Support

Compatible with Intel® 8th and 9th Generation processors on the FCLGA1151 socket. Supports dual-channel DDR4 memory up to 64GB at 2666 MT/s, delivering stable and efficient multi-tasking performance.

High-Performance Networking

Equipped with 8 onboard 2.5GbE ports powered by the Intel® I226V controller, supporting link aggregation, redundancy, and virtualized network deployments. Ideal for building firewalls, routers, SD-WAN solutions, virtualized infrastructures, and multi-port test platforms in laboratory environments.

Flexible Storage Expansion

Provides dual SATA 6Gb/s interfaces for high-capacity storage and backup. Dual M.2 NVMe SSD slots enable high-speed storage acceleration or system disk deployment for enhanced performance.

Comprehensive Expansion Options

Includes PCIe x16 and PCIe x8 slots for adding Ethernet adapters, feature cards, or accelerator cards. M.2 Key-E and M.2 Key-B slots support wireless or cellular modules, while the onboard mPCIe interface offers additional PCIe/USB expansion capabilities.

Versatile I/O Connectivity

Features a wide range of interfaces including 4x USB 3.0, dual display outputs, RJ45 console ports, 8x RJ45 Ethernet ports, and an integrated Clear CMOS button for convenient system maintenance and debugging. Onboard TPM, LPT, GPIO, and other interfaces further support industrial control and security applications.

Industrial-Grade Reliability

Wide-range input voltage ensures compatibility with various power environments. Support for extended operating temperature and humidity ranges makes it well-suited for industrial and edge deployments. Multiple fan connectors enhance cooling efficiency and guarantee long-term system stability.

Motherboard Specifications

Processor	Product Collection	Intel C240 Series Chipsets
	Sockets Supported	FCLGA1151
Memory specifications	Memory Type	DDR4 SODIMM
	Maximum Capacity	64GB
	Maximum Frequency	2666 MT/s
Storage specifications	SATA	2*SATA 6Gb/s
	M.2	2*M.2 Key-M 2280 SSD
Network features	Ethernet	8*2.5GbE
	Controller	8*Intel I226V
I/O Chip		ITE IT8786E-I
Extension interface	PCIe 3.0	1*PCIe x16 (x8 rate); 1*PCIe x8 (x4 rate);
	M.2 Key-E	1*M.2 Key-E 2230 (PCIe/USB Signal)
	M.2 Key-B	1*M.2 Key-B 3052 (USB Signal)
	mPCIe	1*mPCIe (PCIe/USB Signal)
Display functions	Port	1*VGA, 1*HDMI
	Chip	Depends on the processor (processor integrated graphics)
Backplane I/O	Ethernet	8*RJ45
	USB	4*USB-A 3.0
	Display	1*VGA, 1*HDMI
	Console	1*RJ45 COM RS232
	Button	1*Clear CMOS Button
	Power socket	1*ATX 24-pin Connector or 1*Jack DC 5.5/2.5mm
Onboard I/O	SATA	2*SATA Data connector, 2*SATA Power socket
	Pins	1*F_PANEL
		2*JCOM
		2*F_USB 2.0
		1*TPM
		1*LPT, 1*LPC
		1*JVGA, 1*JHDMI
	USB	1*USB-A 2.0
	Fan	1*CPU_FAN, 3*SYS_FAN
Power supply mode	DC	12V~24V
Motherboard size	Specification	287*190 (mm)
Work Environment	Temperature	-20℃~60℃;
	Humidity	5%~90% (Relative humidity, no condensation)

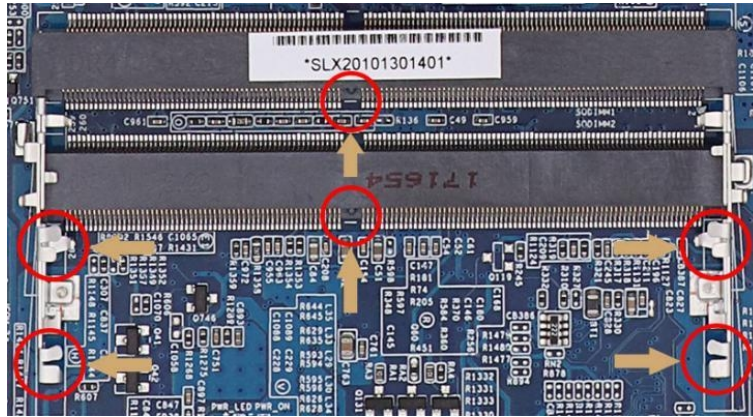
Motherboard Installation

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 DDR4 SODIMM memory slot.



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

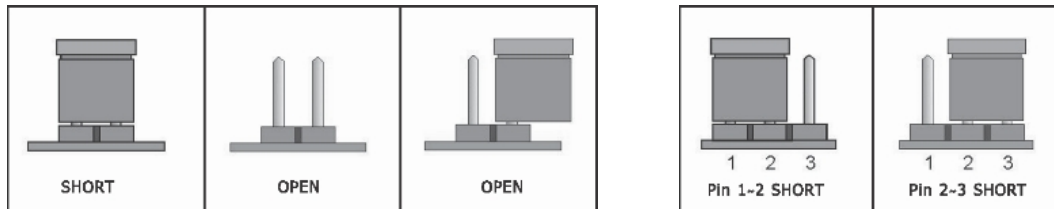
Before installing the hardware device, you can set the corresponding jumpers according to your needs based on the following table.

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.



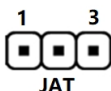
CMOS Content Clear/Keep Setting (JCMOS)

The motherboard provides a JCOMS button.

Image	Setting
	Restore all BIOS settings to factory defaults

Restore on AC/Power Loss (JAT)

The motherboard provides JAT pins (1*3-pin, 2.54 mm pitch)

Image	Status	Setting
	1-2	Automatic power on
	2-3	ATX Mode (Default)

Bypass Setting (JP1)

The motherboard provides BayPass pins (1*2-pin, 2.54 mm pitch)

Image	Status	Setting
	Default	Bypass ON
	Short	Bypass OFF

Note:

Bypass functionality requires an additional purchase (please contact sales before ordering).

The **JP1** settings work in conjunction with the Bypass option in the **BIOS**.

To enable Bypass, JP1 must remain in its default position, and the Bypass option in the BIOS must also be enabled.

Motherboard Pin Definition

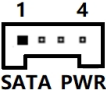
SATA Data

The motherboard provides 7-pin SATA data socket:

Image	PIN	Definition	PIN	Definition
	1	GND	2	SATA_TXP
	3	SATA_TXN	4	GND
	5	SATA_RX-	6	SATA_RXP
	7	GND		-

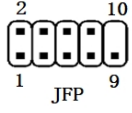
SATA PWR

The motherboard provides SATA power socket (1*4-pin, 2.00 mm pitch):

Image	PIN	Definition
	1	+12V
	2	GND
	3	GND
	4	+5V

Front Panel Connectors (F_PANEL)

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

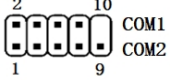
Image	PIN	Definition	PIN	Definition
	1	HDD_LED+	2	PWR_LED+
	3	HDD_LED-	4	PWR_LED-
	5	GND	6	PWR_ON
	7	RESET	8	GND
	9	GND		

Serial Port Header (COM)

The motherboard provides RJ45 COM port:

Image	PIN	Definition	PIN	Definition
	1	RTS#	2	DTR#
	3	TXD	4	N/A
	5	GND	6	RXD
	7	DSR#	8	CTS#

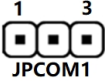
The motherboard provides COM pins (2*5-pin, 2.54mm pitch, 10th pin is empty):

Image	PIN	Definition	PIN	Definition
	1	DCD#	2	RXD
	3	TXD	4	DTR#
	5	GND	6	DSR#
	7	RTS#	8	CTS#
	9	RI#		

JPCOM 1~2 Settings

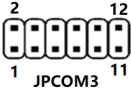
The JPCOM1–JPCOM2 jumpers are used to configure the transmission mode of COM1 and COM2. Both RS232 and RS485 modes are supported, allowing you to select the configuration based on your requirements. The default transmission mode is RS232.

COM_JP1/2 (1*3-pin, 2.00 mm pitch)

Image	Status	Definition
 JPCOM1	1-2 Short	RS-232
	2-3 Short	RS-485

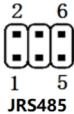
JPCOM 3 Setting

The JPCOM3 jumper is used to set the 9th pin of COM1 and COM2 to be powered.

Image	PIN	Definition
 JPCOM3	1-2	RS232 (COM1)
	3-4	5V
	5-6	12V
	7-8	RS232 (COM2)
	9-10	5V
	11-12	12V

JRS485 Setting

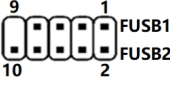
The JRS485 pin is used to link COM1 and COM2 for RS485 data signal transmission.

Image	PIN	Definition	PIN	Definition
 JRS485	1	GND	2	5V
	3	TXDN_1	4	TXDP_1
	5	TXDN_2	6	TXDP_2

USB Connectors Pins (F_USB1)

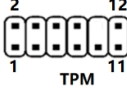
Before connecting the USB expansion board, be sure to turn off the computer and unplug the power cord from the socket to avoid damaging the USB expansion board.

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

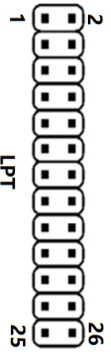
Image	PIN	Definition	PIN	Definition
	1	VCC	2	VCC
	3	USB1_DATA-	4	USB2_DATA-
	5	USB1_DATA+	6	USB2_DATA+
	7	GND	8	GND
			10	GND

Trusted Platform Module (J_TPM)

The motherboard provides TPM pins (2*6-pin, 2.00 mm pitch):

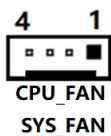
Image	PIN	Definition	PIN	Definition
	1	3VSB	2	SPI_CS2_N
	3	SPI_MISO	4	SPI_MOSI
	5	NC	6	SPI_CLK
	7	GND	8	PLTRST_N_BUF
	9	NC	10	NC
	11	NC	12	IRQ_TPM_N

Line Print Terminal (LPT)

Image	PIN	Definition	PIN	Definition
	1	R_STB	2	R_AFD-
	3	R_PD0	4	R_ERR-
	5	R_PD1	6	R_INIT-
	7	R_PD2	8	R_SLIN-
	9	R_PD3	10	GND
	11	R_PD4	12	GND
	13	R_PD5	14	GND
	15	R_PD6	16	GND
	17	R_PD7	18	GND
	19	R_ACK-	20	GND
	21	R_BUSY	22	GND
	23	R_PE	24	GND
	25	R_SLCT	26	GND

Cooling Fan Power Socket (CPU_FAN/SYS_FAN)

The motherboard provides SYS_FAN and CPU_FAN pins (1*4-pin, 2.54mm pitch):

Image	PIN	Definition
	1	Ground
	2	+12V
	3	FAN_TACH
	4	FAN_PWM

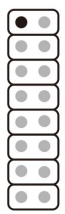
VGA Header (J_VGA)

The motherboard provides J_VGA pins (1*12-pin, 2.00 mm pitch):

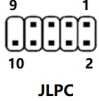
Image	PIN	Definition	PIN	Definition
	1	GND	2	CRT_VSYNC
	3	HSync	4	GND
	5	Red	6	GND
	7	Green	8	GND
	9	Blue	10	VGA_DET_N
	11	DCC_Data	12	SCL

HDMI Header (J_HDMI)

The motherboard provides JHDMI pins (2*8-pin, 2.00 mm pitch):

Image	PIN	Definition	PIN	Definition
	1	HDMI_TXP2	2	HDMI_SCLDDC
	3	HDMI_TXN2	4	HDMI_SDADDC
	5	HDMI_TXP1	6	NC
	7	HDMI_TXN1	8	HDP
	9	HDMI_TXP0	10	HDMI_5V
	11	HDMI_TXN0	12	GND
	13	HDMI_TXCP	14	GND
	15	HDMI_CN	16	GND

LPC Debug Header (J_LPC)

Image	PIN	Definition	PIN	Definition
 JLPC	1	L_AD3	2	VCC3
	3	L_AD2	4	PLTRST_N_BUF
	5	L_AD1	6	L_FRAME_N
	7	L_AD0	8	CLK_PCI_DUG
	9	NC	10	GND

BIOS User Guide

BIOS Description

This motherboard uses AMI BIOS. BIOS stands for (Basic Input Output System). It is a set of programs stored on a ROM (Read Only Memory) 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.

When you turn on your computer, the BIOS is the first program to run. It has the following main functions:

- The Power-On Self-Test (POST) checks whether the computer is functioning properly.
- It initializes and tests some external devices and loads your operating system.
- It provides the lowest-level, most basic control of your computer hardware.
- You manage your computer through the SETUP function in the BIOS.

The BIOS data is stored in a CMOS/RAM chip on the motherboard, maintained by a 3.3V button battery. It contains important system information and the BIOS Setup program for setting system parameters. When the system is operating normally, the BIOS does not need to be modified. However, if the CMOS data is lost due to other reasons, the BIOS must be reset.

Note:

Incorrect BIOS settings can directly damage the computer hardware and even burn out the motherboard. Those unfamiliar with the system are advised to modify the settings with caution. Because the motherboard BIOS is constantly being updated, the BIOS information in this manual is for reference only. We cannot guarantee that the BIOS information in this manual will be consistent with the actual BIOS information on the motherboard.

BIOS Settings

When the motherboard is powered on or the system is restarted, the following prompt will appear on the display screen in the Post interface. Press "DEL" on the keyboard to enter BIOS Setup.



If this message disappears before you respond, you can press <Ctrl> + <Alt> + 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.

Keyboard keys	Functional Description
← / →	Move the Left and Right arrows to select the screen.
↑ / ↓	Move the Up and Down arrows to select the item.
+ / -	Increase/Decrease value or Change selection
<Enter>	Select, Confirm this option or Enter the submenu
<ESC>	Return to Main page, or End the setup process from Main page
<F1>	Show related Help instructions
<F2>	Restore previous settings
<F9>	Load the optimized settings (BIOS defaults)
<F10>	Save the changed settings and reboot

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. Make sure that the power supply you are using meets the power supply requirements of the motherboard. Try to reinsert the Memory Stick. Try to replace the Memory Stick. Try to clear the CMOS of the main board. 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. Make sure the monitor and host power cables are properly connected. Make sure the monitor and host cables are properly connected. Check to see if the monitor is in "Sleep" mode. Try changing the monitor interface or replacing the monitor.
BIOS Setup cannot be saved	Check that the CMOS battery is installed Try to replace the CMOS battery (CR2032) 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. Make sure the operating system is installed on the drive. 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. Try removing the newly installed hardware and uninstalling the newly installed driver or software. Try replacing the memory with a different specification.
Slow entry into the operating system	Check if the CPU cooling fan is running normally. Check if the remaining space of the system partition is insufficient. Use software to check for bad sectors on the hard drive.
System restarts automatically	Confirm that the CPU cooling fan is rotating normally. Confirm that the switch/reset button has not been accidentally touched. Confirm that the Memory Stick and external card are loose. Confirm that the power supply has sufficient load capacity, try to replace the power supply Check if the system is infected with viruses.
Unable to detect USB device	Confirm that the USB device requires separate power. Confirm that the USB interface has poor contact. 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/	