



BKHD-C246-NAS-ITX 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

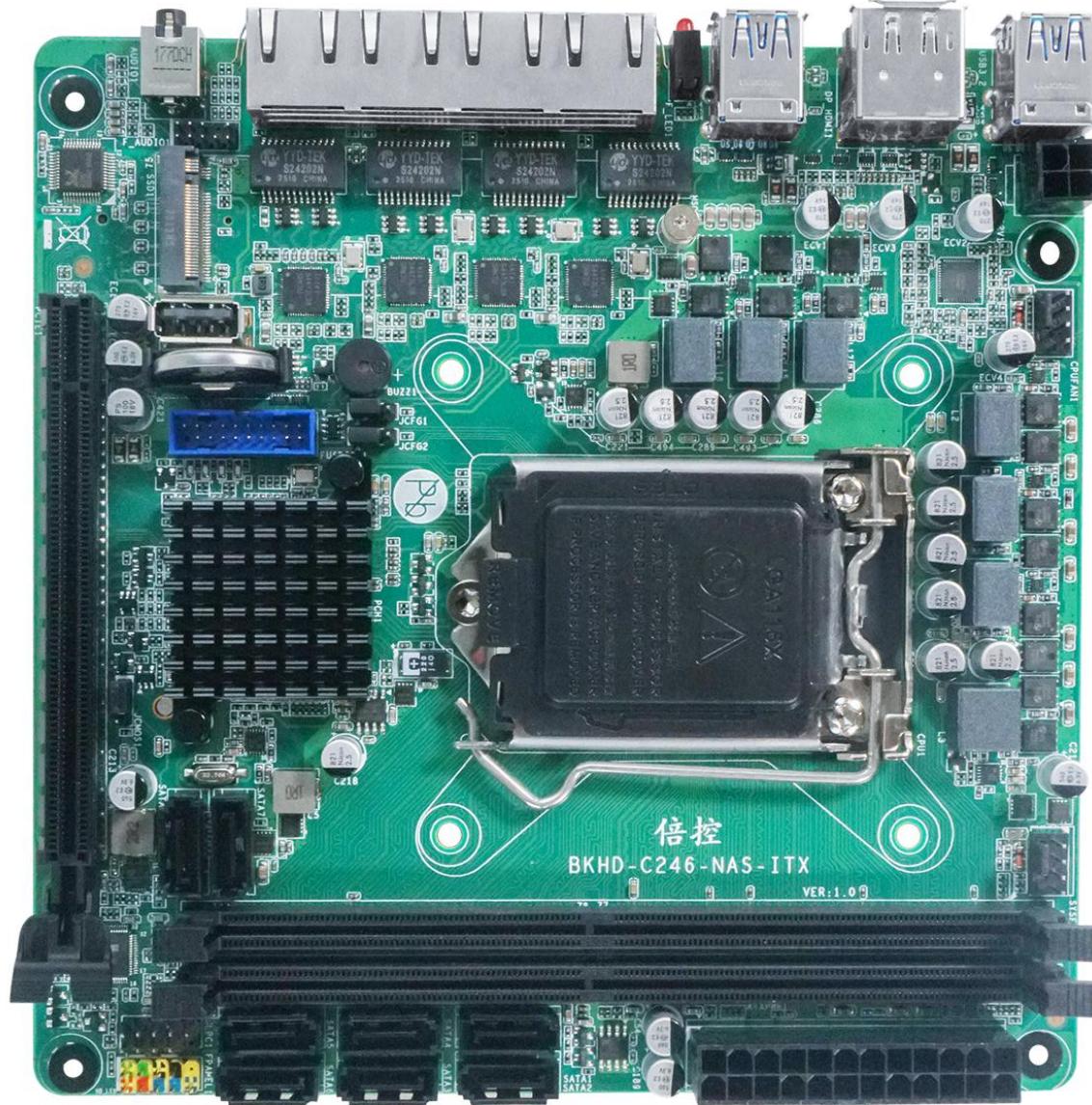
The product version number can be found on the motherboard, where X.X represents a number. For example, if the version is indicated as [VER1.0], it signifies that the current version of the motherboard is 1.0. The BIOS interface homepage provides information such as [XXXXNP-XXXX], which denotes the BIOS 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.

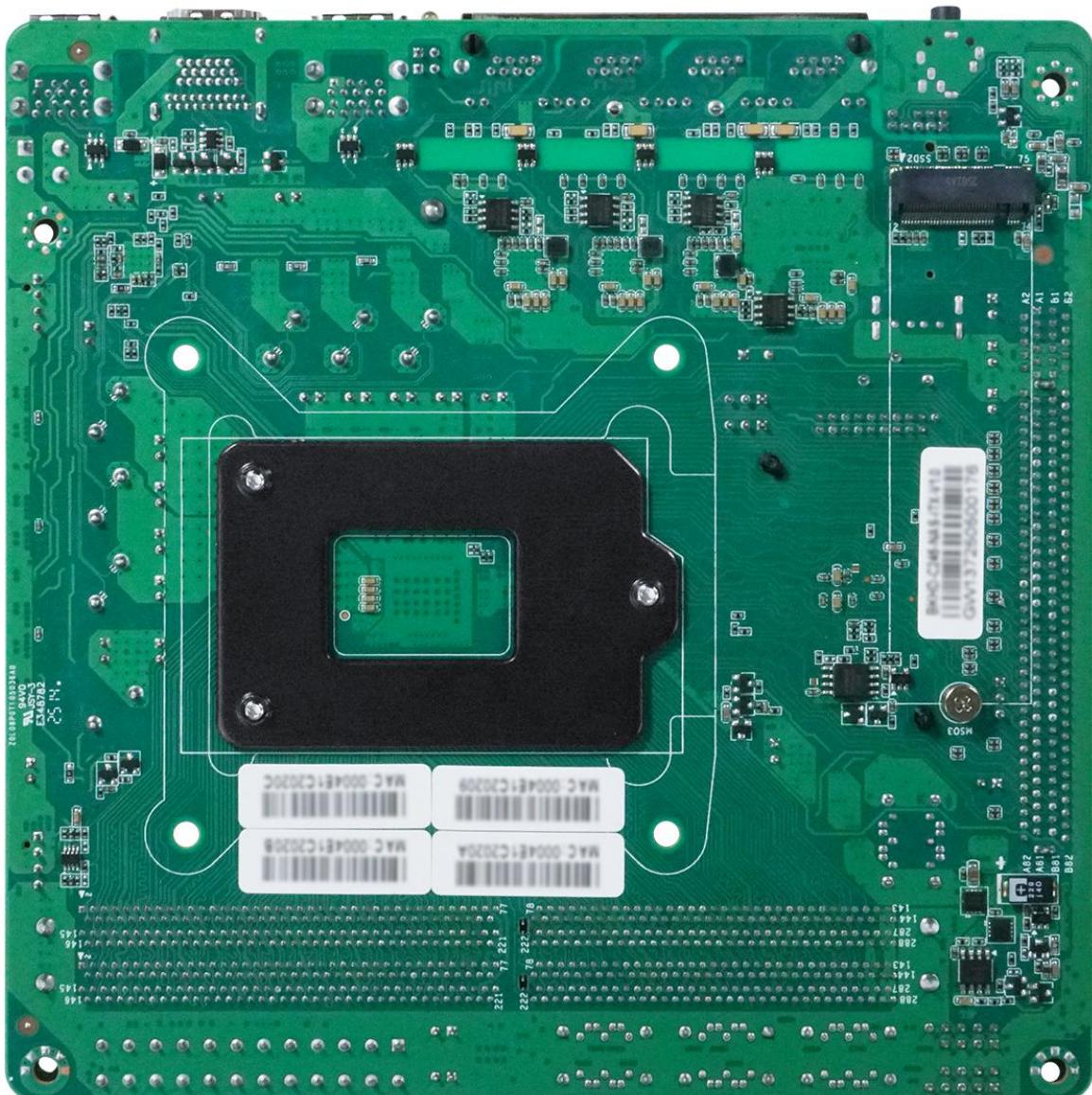
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Product Images

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-NAS-ITX is a high-performance Mini-ITX storage motherboard based on the Intel C246 chipset (FCLGA1151 socket). It supports Intel 8th/9th Generation Core and Xeon E-2100 series processors, and is compatible with UDIMM/DIMM DDR4 memory. Featuring 8x native SATA 3.0 slots, 4x 2.5GbE high-speed Ethernet ports, and a stable enterprise-grade design, it provides a robust hardware foundation for demanding NAS systems, lightweight servers, and professional workstation applications.

Main features:

Enterprise-Class Storage Expansion

Featuring up to 8x native SATA 6Gb/s interfaces, it allows direct connection to multiple hard drives without requiring additional controllers—delivering maximum convenience and native performance for building large-capacity NAS or RAID storage systems. 2x M.2 Key-M slots supporting PCIe 3.0 NVMe SSDs enable flexible configuration as high-speed cache drives for dramatically improved I/O performance, or as system drives for ultra-fast responsiveness.

Powerful Networking and Professional-Grade Reliability

Equipped with 4x onboard Intel® I226-V 2.5GbE network controllers, it provides stable, high-speed data transmission and supports Link Aggregation to overcome gigabit bandwidth limitations, ensuring smooth multi-user concurrent access. Support for ECC Unbuffered DIMM memory enables automatic detection and correction of bit errors, preventing system crashes or data corruption—greatly enhancing stability and data integrity in mission-critical applications.

Full-Size PCIe Expansion and Comprehensive Connectivity

A PCIe x16 slot allows the installation of 10GbE NICs, HBA cards, GPUs, or other professional expansion cards, offering unparalleled flexibility. The rear I/O panel includes 4x USB 3.0 ports, DisplayPort, and HDMI outputs, providing versatile and practical connectivity options.

Rugged Industrial-Grade Design and Efficient Cooling

Engineered for stability across a wide operating temperature range, it performs reliably in server rooms, wiring closets, and other non-temperature-controlled environments. With three two headers (one CPU and one system), it supports the creation of precise and efficient cooling solutions, ensuring long-term stability and low operating temperatures even under heavy workloads.

Motherboard Specifications

Processor	Product Collection	Intel C246 Chipsets
	Sockets Supported	FCLGA1151
Memory specifications	Memory Type	DDR4 (Support Non-ECC DIMM/ECC Unbuffered DIMM)
	Maximum Capacity	64GB
	Maximum Frequency	2666 MT/s
Storage specifications	SATA	8*SATA 6Gb/s
	M.2	2*M.2 Key-M 2280 SSD (PCIe 3.0)
Network features	Ethernet	4*2.5GbE
	Controller	4*Intel I226V
I/O Chip		IT8613E
Extension interface	PCIe	1*PCIe x16 (PCIe 3.0)
Display functions	Port	1*DP, 1*HDMI
	Chip	Depends on the processor (processor integrated graphics)
Backplane I/O	Ethernet	4*RJ45
	USB	4*USB-A 3.0
	Display	1*DP, 1*HDMI
Onboard I/O	Audio	1*Jack Audio (Line Out) Realtek ALC897 chip
	SATA	8*SATA Data connector
Pins		1*F_PANEL
		1*F_USB3 (can expand 2x USB3.0 ports)
		1*F_AUDIO
		1*J_LPC

	USB	1*USB-A 2.0
	Fan	1*CPU_FAN, 1*SYS_FAN
Power supply mode	ATX	24Pin+4Pin
Motherboard size	Specification	170*170 (mm) Mini-ITX
Work Environment	Temperature	-10°C~60°C;
	Humidity	10%~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 DIMM 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

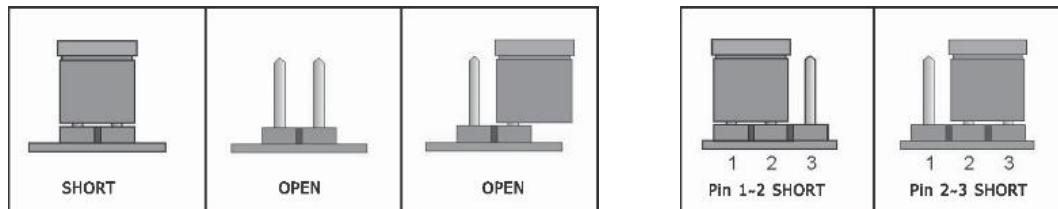
Before installing the hardware device, you can set the corresponding jumpers according to your needs based on the following table.

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.



Clear CMOS contents (JCMOS)

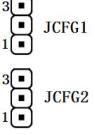
The motherboard provides JCOMS pins (1*3-pin, 2.54 mm pitch):

Image	Status	Setting
 JCMOS	1-2	Normal (Default)
	2-3	CMOS Data Clearance

PCIe lane split pins: JCFG1, JCFG2

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

This jumper needs to be set at the same time to split PCIe x16 into different signals.

Image	JCFG1 Status	JCFG2 Status	Setting
 JCFG1	2-3	2-3	X8, X4, X4
	1-2	2-3	X8, X8
	1-2	1-2	X16

Motherboard Pin Definition

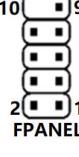
SATA Data

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		-

Front panel pin: F_PANEL

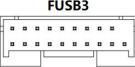
The motherboard provides F_PANEL pins (2*5-pin, 2.54 mm pitch, 10th pin is empty):

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		

USB3.0 Expansion pin: F_USB3

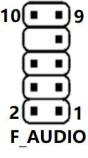
Before connecting the USB expansion board, be sure to turn off the computer and unplug the power cord from the socket to avoid damaging the USB expansion board.

Rear USB3.0 ports with wake-up function in S3 and S4.

Image	PIN	Definition	PIN	Definition
	1	VBUS	11	D+
	2	SSRX1-	12	D-
	3	SSRX1+	13	GND
	4	GND	14	SSTX2+
	5	SSTX1-	15	SSTX2-
	6	SSTX1+	16	GND
	7	GND	17	SSRX2+
	8	D-	18	SSRX2-
	9	D+	19	VBUS
	10	NC	20	NC

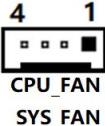
Audio interface: F_AUDIO

The motherboard provides Audio pins (2*5-pin, 2.00 mm pitch):

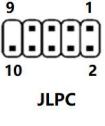
Image	PIN	Definition	PIN	Definition
	1	MIC2_L	2	GND
	3	MIC2_R	4	NC
	5	LINEOUT2_R	6	MIC2-JD
	7	SENSE_B	8	NC
	9	LINEOUT2_L	10	Line2-JD

Cooling fan power socket: **SYS_FAN, CPU_FAN**

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

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

(Low Pin Count) fault diagnostic card pins: **LPC**

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

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/	