



BKHD-1338NAS-17 Motherboard User Manual

VER 1.2

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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.

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Product Profile

The BKHD-1338NAS-17 is a compact NAS-oriented industrial motherboard based on the Intel Celeron N Series platform in a Mini-ITX form factor. It features 6x SATA 6Gb/s ports, 1x M.2 Key-M 2280 slot, and 4x Intel I226V 2.5GbE LAN ports, making it ideal for NAS, private cloud, file server, edge storage, and multi-LAN applications. It supports up to 16GB DDR4 SO-DIMM and uses a JMB585 controller via PCIe Gen3 x2 for expanded storage. With DP/HD, USB 3.0/2.0, COM, audio, and fan headers, plus a -20°C to 55°C range, it ensures stable industrial-grade storage performance.

Main features:

Compact NAS-Oriented Platform Design

Adopts a compact 170 x 170 mm motherboard layout, making it suitable for small NAS systems, private cloud devices, compact storage servers, and customized network storage appliances. Based on the Intel Celeron Processor N Series platform, it provides a balanced combination of power-efficient computing and stable embedded operation for storage-focused workloads.

Six SATA Ports for High-Capacity Storage

Provides 6 x SATA 6Gb/s data connectors for multi-drive storage configuration. With the integrated JMB585 SATA controller using PCIe Gen3 x2 bandwidth, the board supports expanded SATA connectivity for HDDs or SSDs, making it suitable for NAS arrays, backup systems, file servers, surveillance storage, and local data archiving applications.

Four 2.5GbE Intel LAN Ports

Equipped with 4 x Intel I226V 2.5GbE controllers, the BKHD-1338NAS-17 delivers high-speed wired networking for storage access, data transfer, network segmentation, and multi-service deployment. The four RJ45 ports are well suited for NAS systems, edge servers, multi-LAN storage gateways, virtualization networks, and link aggregation scenarios.

Flexible Storage and PCIe Expansion

In addition to 6x SATA ports, the board includes one M.2 Key-M 2280 SSD slot for system installation, caching, or high-speed local storage. The PCIe x4 slot with PCIe 3.0 x2 signal provides further expansion capability for compatible adapter cards, enabling flexible customization for storage, network, or application-specific system requirements.

Industrial-Oriented Reliability

Designed for long-term embedded operation, the motherboard supports an operating temperature range of -20°C to 55°C and 5% to 95% relative humidity, non-condensing. With ATX 24-pin and ATX 4-pin power input, plus CPU and system fan connectors, the board is suitable for continuous operation in NAS, storage server, and industrial edge storage environments.

Motherboard Specifications

Processor	Product Collection	Intel Celeron Processor N Series
	Sockets Supported	FCBGA1338
Memory specifications	Memory Type	DDR4 SO-DIMM
	Maximum Capacity	16GB
	Maximum Frequency	2933 MHz
Storage specifications	SATA	6*SATA 6Gb/s
	SATA Controller	JMB585 (PCIe Gen3 x2 to x5 SATA 6Gb/s)
	M.2	1*M.2 Key-M 2280 SSD
Network features	Ethernet	4*2.5GbE
	Controller	4*Intel I226V
Extension interface	PCIe	1*PCIe x4 (PCIe 3.0 x2 signal)
Display functions	Ports	1*HD/1*DP
	Chip	Intel UHD Graphics
Backplane I/O	USB	2*USB-A 3.0, 2*USB-A 2.0
	Ethernet	4*RJ45
	Audio	1*3.5mm Audio Jack
	Button	1*Clear CMOS button
Onboard I/O	SATA	6*SATA Data connector
	Fan	1*CPU_FAN, 2*SYS_FAN
		1*F_PANEL
	Pins	1*J_COM
		1*F_USB 2.0 (can expand 2x USB2.0 ports)
		1*J_LAN
Power supply mode	Power Connector	1*ATX 24-pin, 1*ATX 4-pin
Motherboard size	Specification	170*170 (mm)
Work Environment	Temperature	-20~55°C (Operating); -20°C~60°C (Storage)
	Humidity	5%~95% (Relative humidity, no condensation)

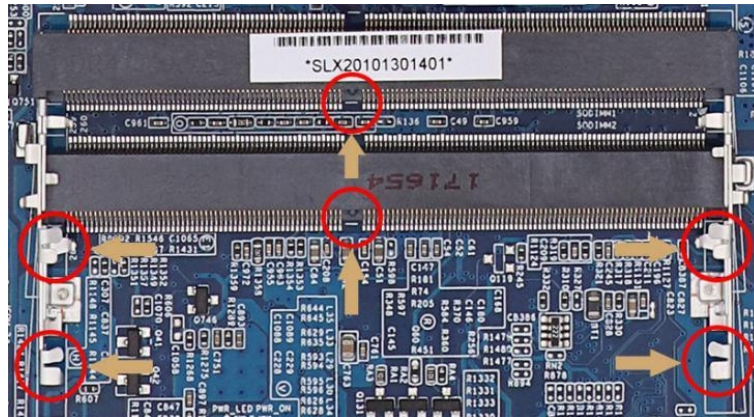
Motherboard Installation

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:

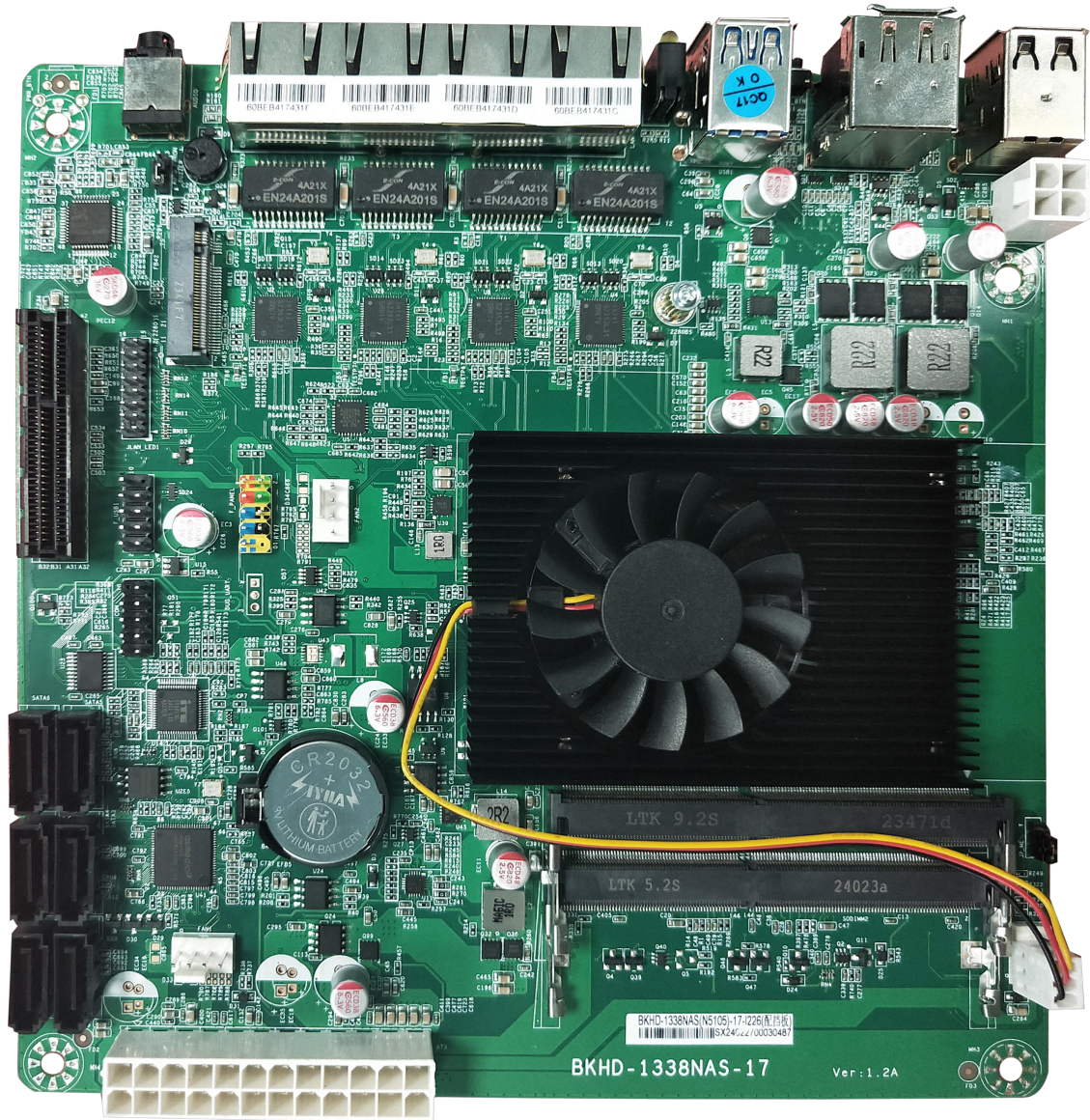
1. Before installing or removing memory, please turn off the power and unplug the power cord.
2. Carefully hold the two ends of the Memory Stick and do not touch the metal contacts on the Memory Stick.
3. Align the metal contacts of the memory with the memory slot, making sure that the concave hole is 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.

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.



Jumper Setting

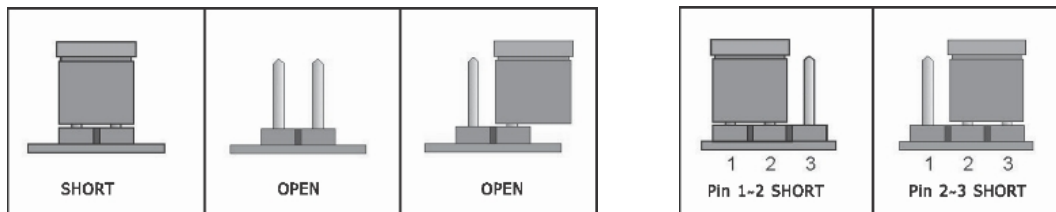
Before installing the hardware device, you can set the corresponding jumpers according to your needs based on the following table.

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.



Restore on AC/Power Loss (AUTO_ON)

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


ME Flashing Selection Jumper (J_ME)

Image	Status	Setting
	1-2	Disable
	2-3	Enable (Default)

Motherboard Pin Definition

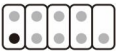
SATA Data

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_RXN	6	SATA_RXP
	7	GND		-

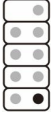
Serial Port Header (COM)

The motherboard provides COM pins (2*5-pin, 2.54 mm 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#		

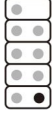
Front Panel Connectors (F_PANEL)

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	GND
	7	RESET	8	POWER-SW
	9	GND		

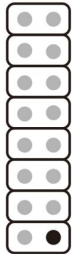
USB Connectors Pins (F_USB1)

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	GND


- This header supports USB 2.0 specifications. Through a USB expansion bracket, one header can provide two USB ports. USB expansion brackets are optional accessories; please contact your local dealer for purchase.
- **Important:** Before connecting the USB expansion bracket, be sure to turn off the computer's power and unplug the power cord from the outlet to avoid damaging the USB expansion bracket.

LAN Status LED Header (JLAN_LED1)

Image	PIN	Definition	PIN	Definition
	1	ACT#_LED2_LAN 1	2	+3.3V
	3	LED0_LAN 1	4	LED1_LAN 1
	5	ACT#_LED2_LAN 2	6	+3.3V
	7	LED0_LAN 2	8	LED1_LAN 2
	9	ACT#_LED2_LAN 3	10	+3.3V
	11	LED0_LAN 3	12	LED1_LAN 3
	13	ACT#_LED2_LAN 4	14	+3.3V
	15	LED0_LAN 4	16	LED1_LAN 4

Cooling Fan Power Socket (CPU_FAN/SYS_FAN)

The motherboard provides CPU/SYS_FAN pins (1*4-pin, 2.54mm pitch)

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

- Be sure to connect the fan header to avoid the CPU and system operating in an overheated environment. Excessive temperature may cause the system to crash.
- These fan headers are not jumpers; do not place jumpers on the pins.

ATX Power Connector (Power Supply)

Before connecting the power cord to the outlet, ensure the power supply is turned off and all components are properly installed. The connector features a mistake-proof (keyed) design; please verify the correct orientation before plugging it in.

(Note: Do not use this power supply and the panel's DC IN connector to power the motherboard simultaneously.)



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

Image	PIN	Definition	PIN	Definition
	1	+3.3V	2	+3.3V
	3	GND	4	+5V
	5	GND	6	+5V
	7	GND	8	PW_OK
	9	+V5SB	10	+12V
	11	+12V	12	+3.3V
	13	+3.3V	14	-12V
	15	GND	16	PS_ON
	17	GND	18	GND
	19	GND	20	N/A
	21	+5V	22	+5V
	23	+5V	24	GND

BIOS User Guide

BIOS Description

This motherboard features an AMI BIOS (Basic Input/Output System). Stored on a ROM chip on the motherboard, the BIOS contains essential low-level programs, including the power-on self-test (POST), system boot routines, and basic I/O configurations. It reads and writes system setting data via the CMOS, with the primary function of providing immediate, fundamental hardware control for the computer.

When the computer is powered on, the BIOS is the first program to run, performing the following core functions:

- Executes the Power-On Self-Test (POST): Checks and verifies that all essential hardware components are functioning properly.
- Initializes System Hardware: Tests peripheral devices and loads the operating system during bootup.
- Provides Low-Level Control: Delivers the most fundamental, direct control over the computer hardware.
- Manages Configuration: Allows users to configure and customize system parameters via the BIOS Setup utility.

BIOS data is stored in the CMOS RAM chip on the motherboard and maintained by a 3.3V coin cell battery (CR2032). It contains critical system configuration and the BIOS Setup utility used to adjust system parameters. Under normal operating conditions, modifying the BIOS is unnecessary. However, if CMOS data is lost or corrupted due to unforeseen factors, the BIOS settings must be reconfigured.

Note:

Incorrect BIOS configurations can cause severe hardware damage or motherboard failure. Users unfamiliar with system settings are strongly advised to proceed with caution. Because the motherboard BIOS is continuously updated, the screenshots and descriptions in this manual are for reference only. We cannot guarantee that the information herein will perfectly match your motherboard's actual BIOS version.

BIOS Settings

When the computer powers on or reboots, the following prompt will appear on the POST screen: Press "DEL" to enter BIOS Setup.



If the prompt disappears before you can respond, you may restart the system to try again by using one of the following methods: Press <Ctrl> + <Alt> + simultaneously. Press the Reset button on the chassis. Power off the system and turn it on again.

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. 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/	