倍控®
BKHD

BKHD-1449NP-12-6L 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.

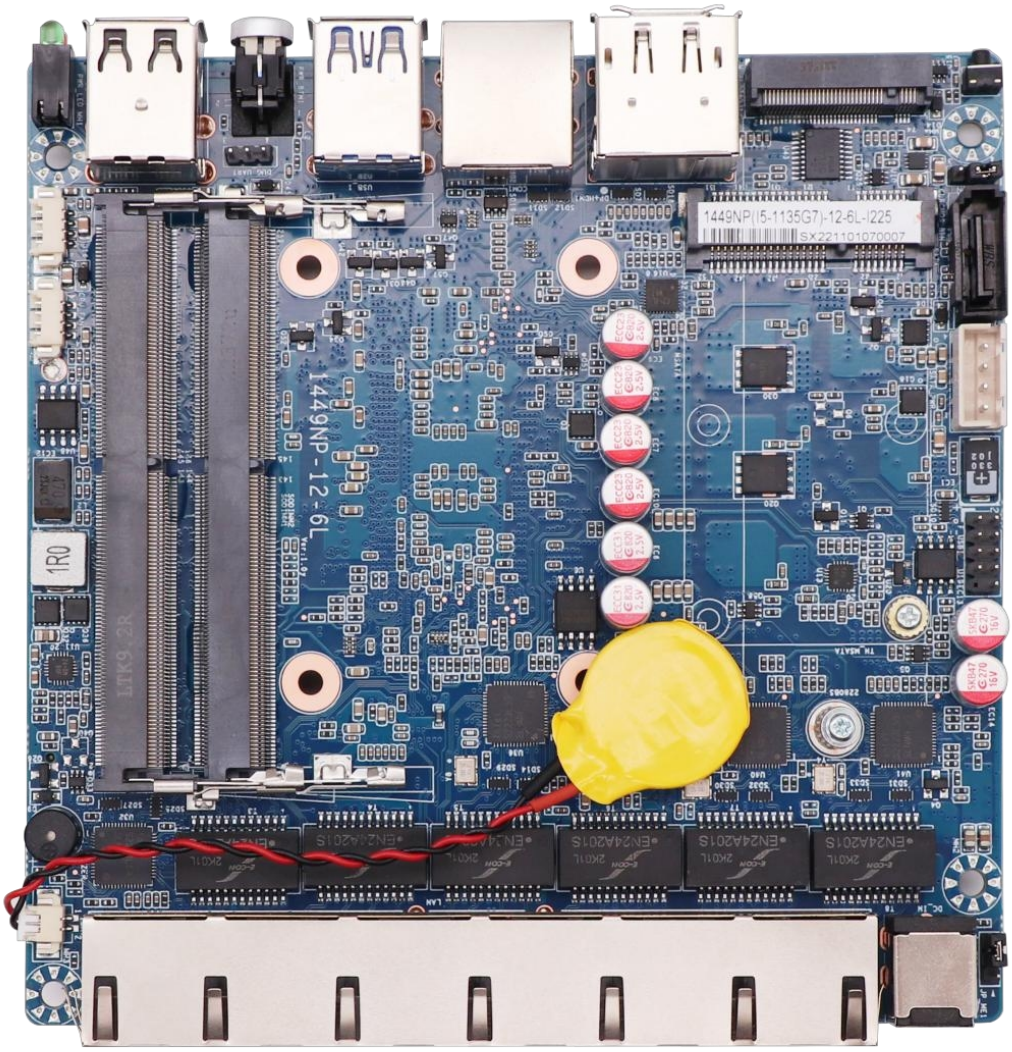
Product Version Identification

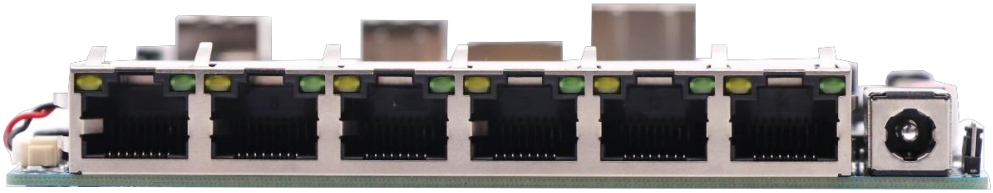
The product version number can be found on the motherboard, where X.X represents a number. For example, if the version is indicated as [VER1.0], it signifies that the current version of the motherboard is 1.0. The BIOS interface homepage provides information such as [XXXXNP-XXXX], which denotes the BIOS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

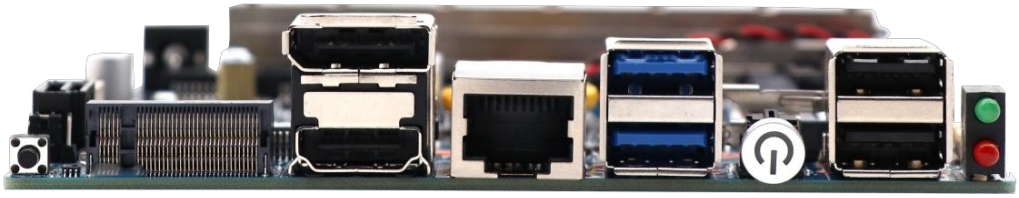
Catalog

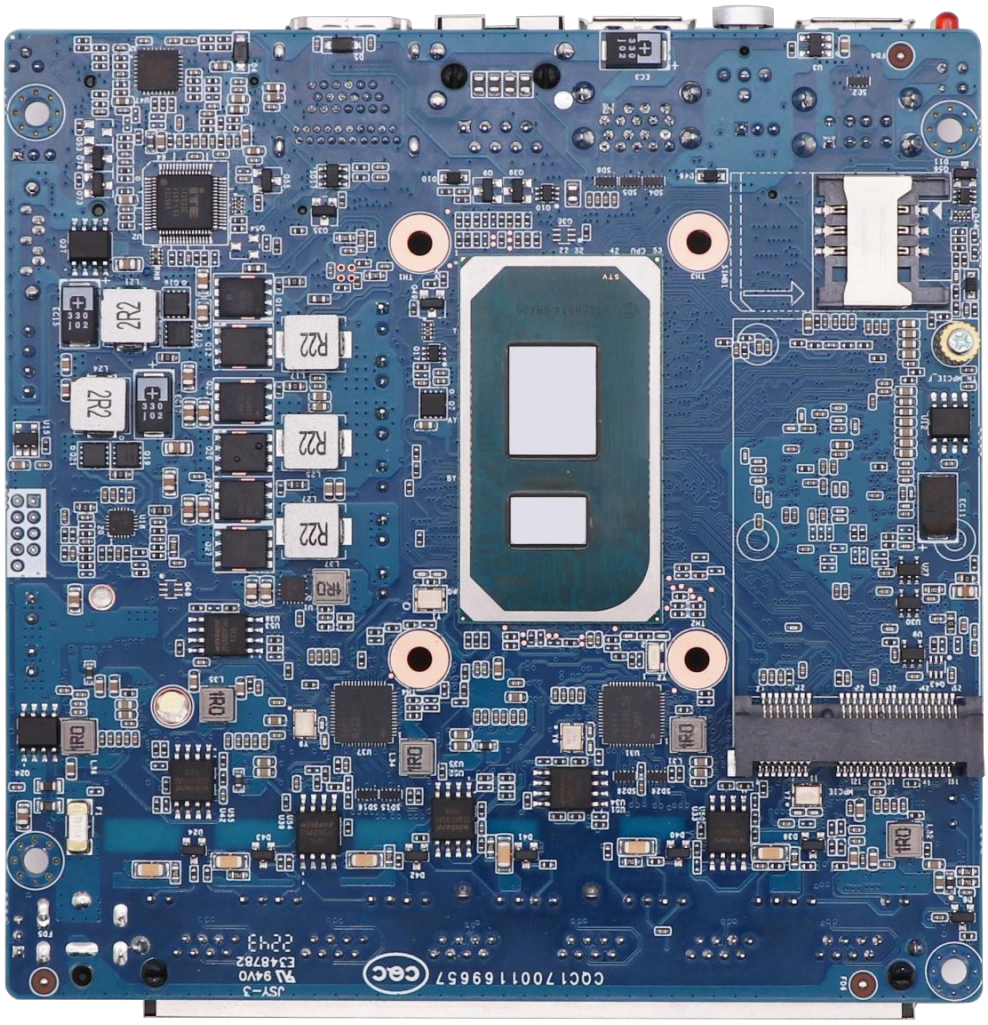
Product Images

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 1449NP-12-6L is a compact industrial motherboard designed on the 11th Gen Intel Tiger Lake processor platform. It integrates 6x 2.5GbE high-speed Ethernet ports, supports high-capacity dual-channel DDR4 memory, and offers multiple storage and expansion interfaces. By combining leading network performance, strong computing capability, and rugged industrial-grade design in a compact form factor, it is purpose-built for applications such as firewalls, software routers, edge computing nodes, and industrial networking equipment—achieving an ideal balance between performance, power efficiency, and stability.

Main features:

Redefining Density and Performance

Equipped with 6x Intel I226V 2.5GbE Ethernet controllers, the platform provides an unmatched hardware foundation for applications requiring extensive network isolation, multi-WAN access, or high aggregate bandwidth. The 2.5GbE speed bridges the gap between Gigabit and 10GbE networks, delivering ample total bandwidth and flexible port configurations for high-end software routers, aggregation switches, multi-service security gateways, network storage (NAS), and server virtualization. It fully supports complex VLAN segmentation and link aggregation scenarios.

Confidently Handling Complex Workloads

Powered by 11th Gen Intel Tiger Lake processors, the system delivers excellent single-core and multi-core performance and integrates Intel UHD Graphics. With support for up to 64GB dual-channel DDR4-3200 memory, it ensures smooth system responsiveness when running virtualization platforms, performing deep packet inspection, or hosting multiple network services simultaneously.

Triple Flexible Storage Options

Offers M.2 NVMe, mSATA, and SATA 6Gb/s storage interfaces, allowing users to flexibly configure high-speed system drives, cache drives, or high-capacity storage to achieve an optimal balance between performance and capacity.

Compact, Rugged, and Reliable

With an ultra-mini 120 mm x 120 mm footprint, the board can be easily integrated into extremely space-constrained systems such as short-depth 1U chassis, compact network appliances, or portable terminals. Designed for industrial-grade wide-temperature operation, it ensures stable 24/7 continuous operation in harsh environments. An onboard SIM card slot and mPCIe expansion slot enable easy integration of 4G/5G wireless connectivity, enhancing connection reliability for edge deployments.

Motherboard Specifications

Processor	Product Collection	11th Gen Intel Core Processors
	Sockets Supported	FCBGA1449
Memory specifications	Memory Type	DDR4 SO-DIMM
	Maximum Capacity	64GB
	Maximum Frequency	3200 MT/s
Storage specifications	SATA	1*SATA 6Gb/s
	mSATA	1*mSATA
	M.2	1*M.2 Key-M 2280
Network features	Ethernet	6*2.5GbE
	Controller	6*Intel I226V
Extension interface	mPCIe	1*mPCIe
Display functions	Port	1*DP/1*HD
	Chip	Intel UHD Graphics
Backplane I/O	USB	2*USB-A 2.0, 2*USB-A 3.0
	Display	1*DP/1*HD
	COM	1*RJ45 COM RS232
	Ethernet	6*RJ45
	SIM	1*SIM Card solt
	Power supply	1*Jack DC 5.5/2.5mm
Onboard I/O	SATA	1*SATA Data connector/1*SATA Power socket
	SIM	1*SIM Card solts
	Fan	1*CPU_FAN/1*SYS_FAN
	Pin	1*F_USB2.0
Power supply mode	DC	12V
Motherboard size	Specification	120*120 (mm)
Work Environment	Temperature	-20~55℃
	Humidity	5%~90% (Relative humidity, no condensation)

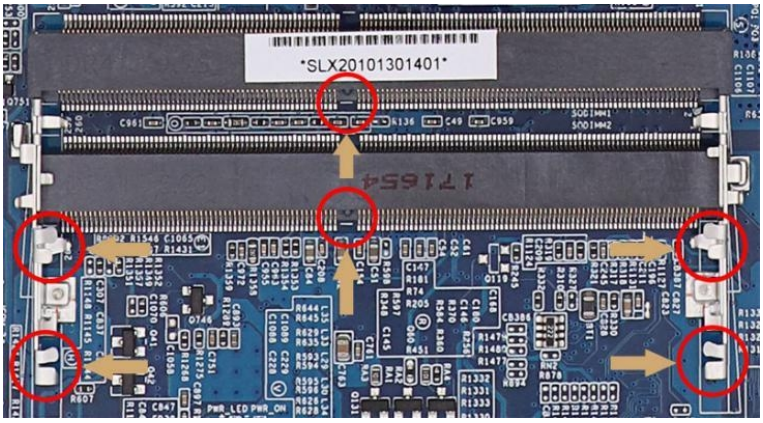
Motherboard Installation

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.

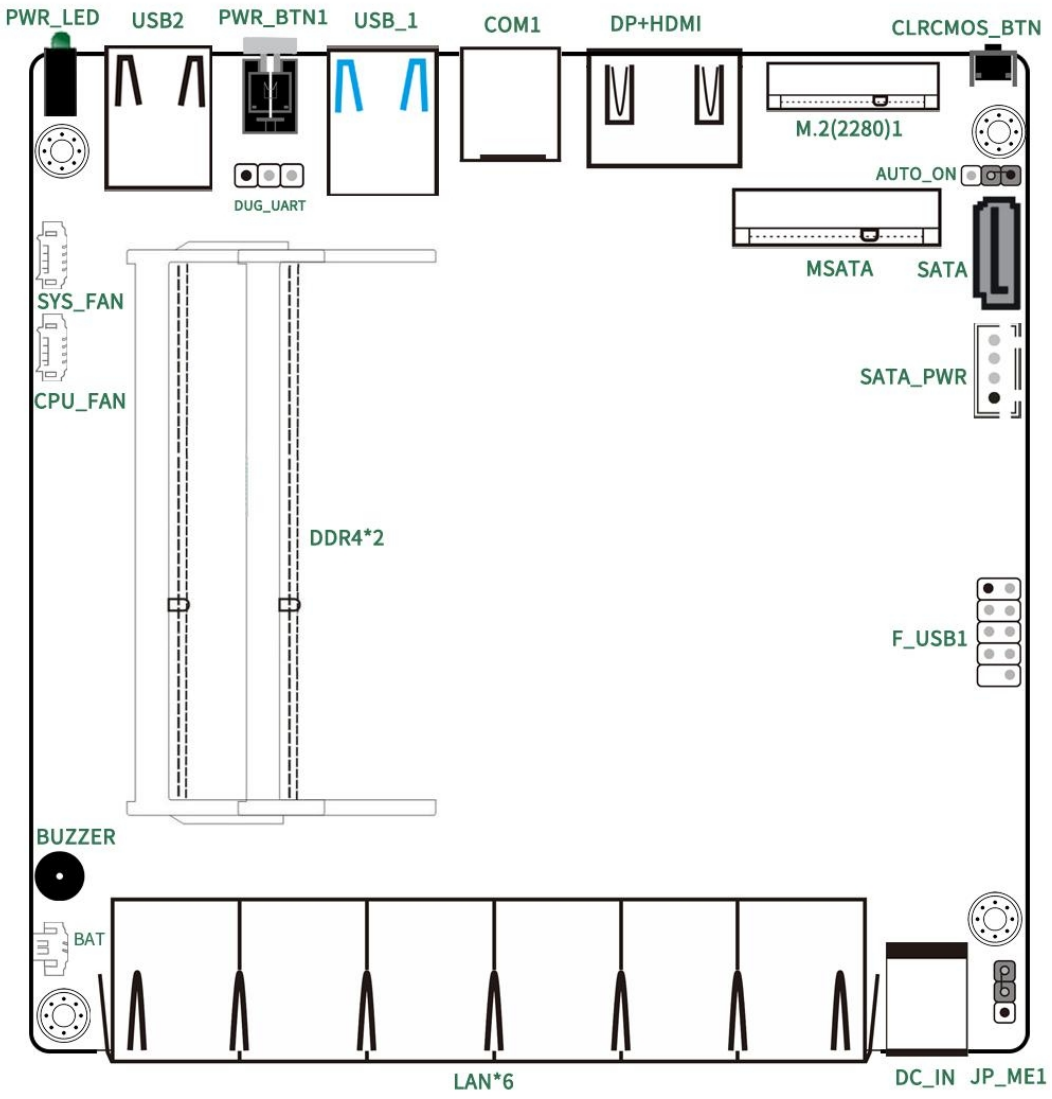
4. Insert the memory into the slot at an angle of 30 degrees, then press the Memory Stick down until you hear a "click," indicating that the memory has been successfully installed and is ready to use. (Note: Do not press the Memory Stick too hard to avoid damaging the memory).

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:

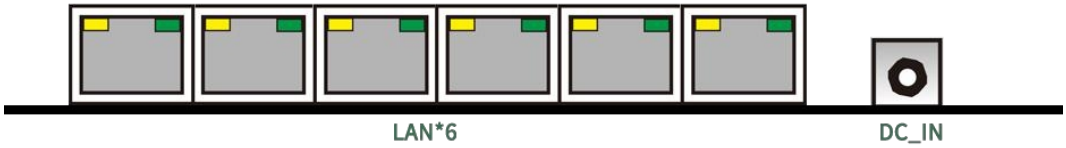
Use two fingers to push the latches at either end of the slot outward, the memory will pop up, then remove the memory.

Motherboard Interface & Pin Description

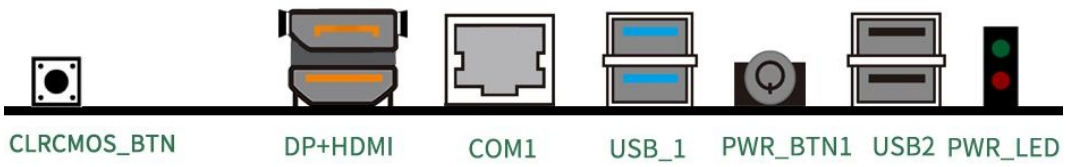


Item	Describe
M2_2280	M.2 Key-M Storage SSD slot
AUTO_ON	Jumper used to enable or disable automatic power-on
SYS_FAN	Chassis fan power socket, used to install the cooling fan.
CPU_FAN	Processor fan power socket, used to install the processor fan
MSATA	Mini SATA Storage SSD slot

SATA	SATA HDD/SSD data connectors
SATA_PWR	SATA HDD/SSD power socket
DDR4	DDR4 SO-DIMM memory slot (RAM)
F_USB	Can be used to expand USB2.0 ports
BUZZER	The buzzer on the mainboard prompts different system status
BAT	Connect the power socket of CMOS battery
JP_ME	Used to set whether to allow ME program flash jumper



Item	Describe
LED	LED indicator: Green light for power, Red light for hard disk
RJ45_COM	RJ45 port for COM RS232 standard
DC_JACK	Power adapter for connecting Jack DC 5.5/2.5mm 12V
LAN	RJ45 Ethernet port for LAN/WAN
	Link LED: Green and solid, indicating the network is connected Active LED: Orange flashing, indicating data transmission



Item	Describe
CLR_CMOS	Clear CMOS Button
DP+HDMI	DP and HDMI display ports
COM 1	RJ45 port for COM RS232 standard
USB 1	Double-layer USB-Type-A 3.0 port
PWR_BTN	Button to turn the device ON or OFF
USB 2	Double-layer USB-Type-A 2.0 port
PWR_LED	LED indicator: Green light for power, Red light for hard disk

Jumper Setting

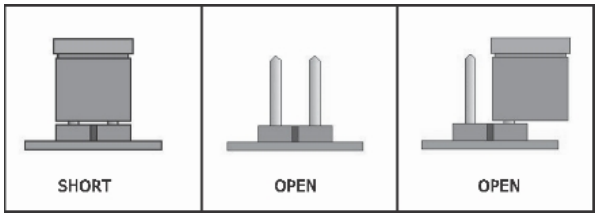
Before installing the hardware device, you can set the corresponding jumpers according to your needs based on the following table.

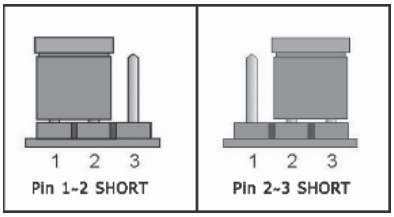
To identify the first pin of a jumper or connector

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.





ME Write Protection Settings (JME)

Image	Status	Setting
	1-2	Close
	2-3	Open (Default)

Restore AC Power Loss Setting (AUTO_ON)

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

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	-	

SATA PWR

The motherboard provides SATA power socket (1*4-pin, 2.54mm pitch)

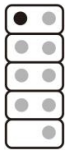
Image	PIN	Definition
	1	+12V
	2	GND
	3	GND
	4	+5V

Tip: The 1st pin of the SATA_PWR hard disk power supply interface is +12V output, and the 4th pin is +5V output.

USB Expansion pin (F_USB)

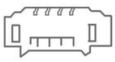
Before connecting the USB expansion board, be sure to turn off the computer and unplug the power cord from the socket to avoid damaging the USB expansion board.

The motherboard provides F_USB pins (2*5-pin, 2.00mm 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	/

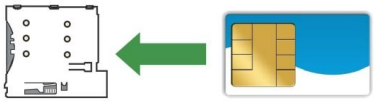
Processor cooling fan power socket: CPU_FAN / SYS_FAN

The motherboard provides Cooling fan power socket (1*4-pin, 1.25mm pitch)

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

SIM card slot (SIMB)

The motherboard provides SIM card slot (on the back) for installing an LTE SIM card.



Note: When inserting the SIM card, make sure the chip is facing downwards (the chip faces the motherboard).

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> + <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.

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/