倍控®
BKHD

BKHD-1264-SFP Motherboard

VER 1.1

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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

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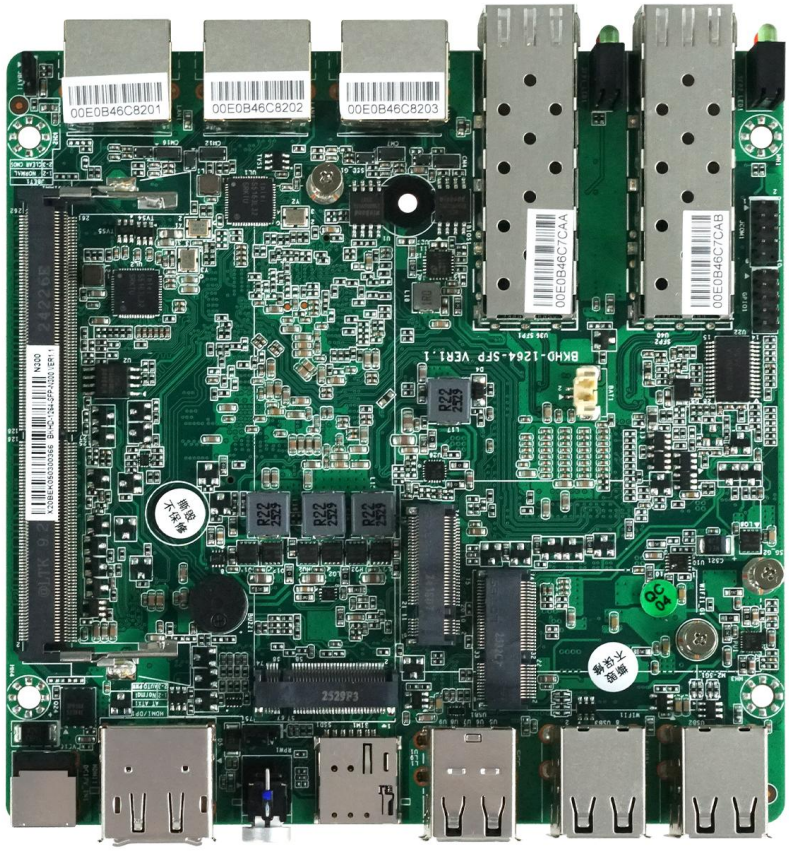
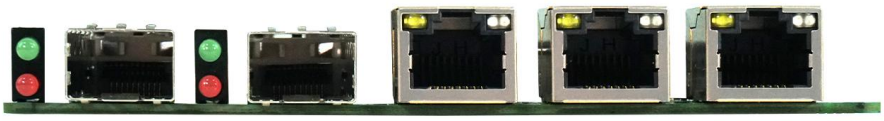
Product Images

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.





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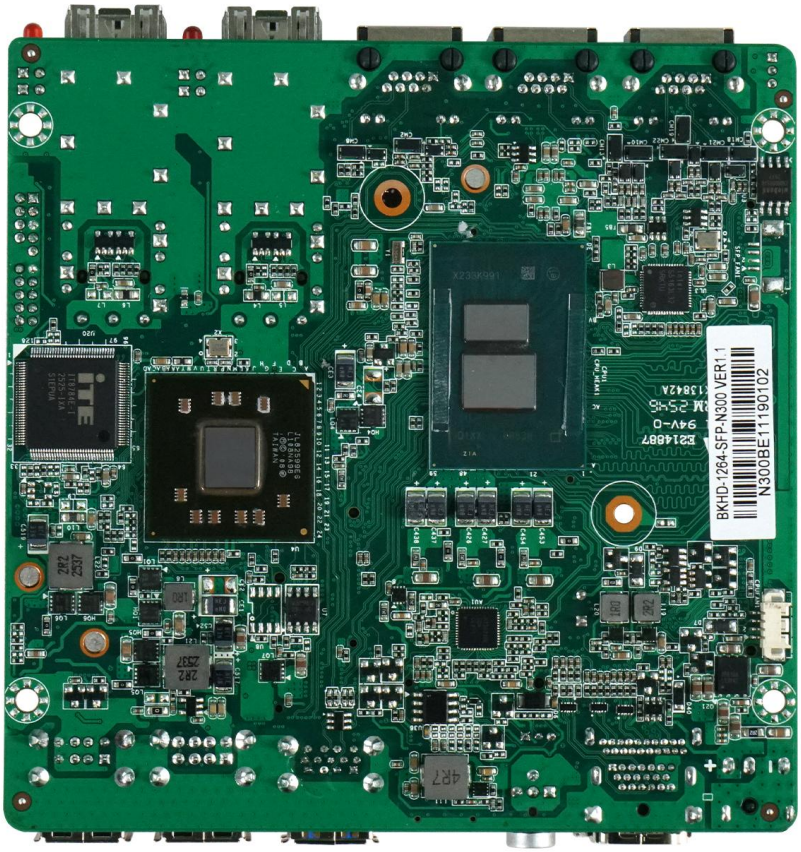

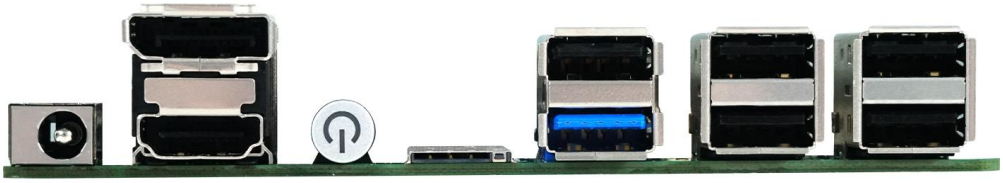

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Product Profile

BKHD-1264-SFP is an ultra-compact, industrial-grade network motherboard built on the Intel Processor N-series platform. It uniquely integrates 3x 2.5GbE RJ45 ports and 2x 10Gb SFP+ fiber ports, combining copper and optical connectivity for flexible, high-speed networking. Supporting DDR5 memory and multiple wireless/cellular expansion options, it serves as an ideal core platform for next-generation firewalls, soft routers, fiber gateways, and edge computing systems.

Main features:

Hybrid High-Speed Network Architecture: The board integrates three Intel I226-V 2.5GbE RJ45 ports for standard high-speed device connectivity, along with two Intel 82599-based 10Gb SFP+ fiber ports to support ultra-high-bandwidth, low-latency data transmission. This hybrid copper-and-fiber design provides exceptional flexibility for different cabling environments and transmission distances, making it an ideal solution for network upgrades and performance expansion.

Ultra-Compact Form Factor with Powerful Performance: All computing, networking, and expansion capabilities are integrated into a palm-sized footprint, significantly reducing system space requirements and making it ideal for size-constrained embedded applications. Powered by a new-generation, low-power Intel processor optimized for networking and embedded workloads, and supporting DDR5 SO-DIMM memory, the platform delivers ample performance for high-speed packet processing and demanding network tasks.

Integrated Wireless and Expansion Capabilities: An onboard M.2 Key-E slot prioritizes support for Intel CNVi-based Wi-Fi 6 (Gig+) modules, enabling high-throughput, low-latency wireless connectivity and seamless wired-wireless integration. An additional M.2 Key-B slot, along with multiple USB, COM, and GPIO headers, provides flexible expansion options for peripherals, wireless modules, and industrial control applications.

Industrial-Grade Reliability: Designed for stable operation across wide temperature and humidity ranges, the board includes reserved fan headers to ensure reliable thermal management in harsh environments. DC 12V power input ensures compatibility with industrial and telecommunications power systems, delivering dependable performance for long-term deployment.

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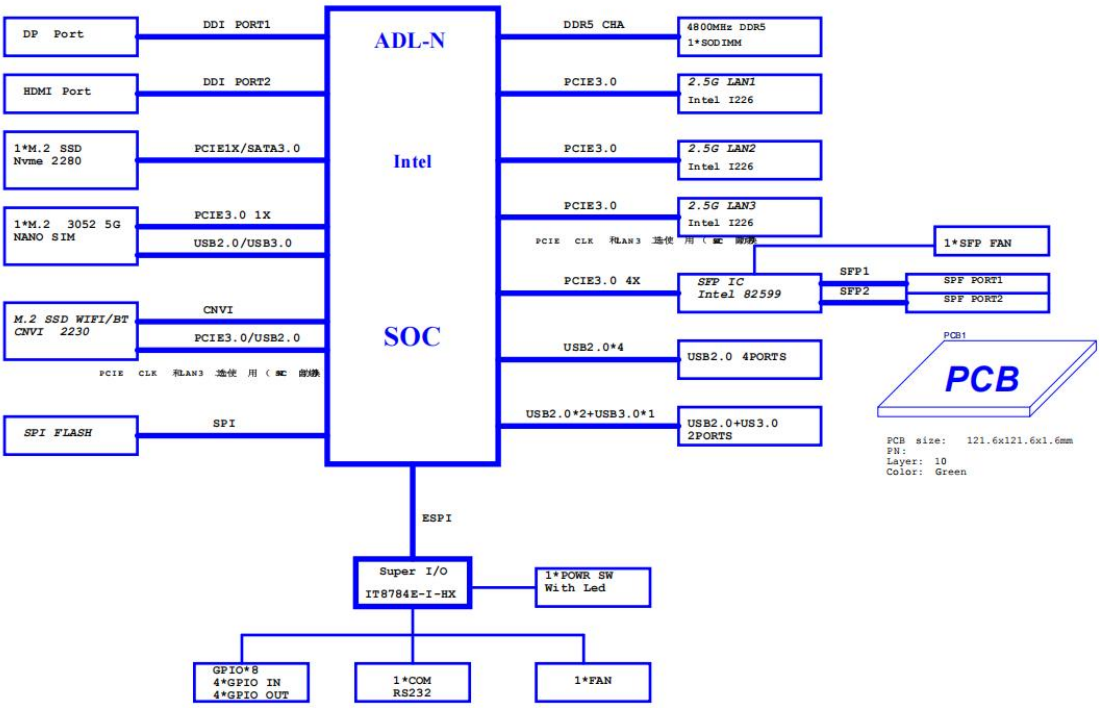
Block Diagram



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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	3*2.5GbE RJ45
	SFP	2*10Gb SFP+
	Controller	3*Intel I226V, 2*Intel 82599
Extension interface	M.2 Key-B	1*M.2 Key-B 3052 (PCIe x1, USB2.0/USB3.0)
	M.2 Key-E ①	1*M.2 Key-E 2230 (CNVi or PCIe x1+USB2.0)
Display functions	Port	1*DP/1*HD
	Chip	Intel UHD Graphics
I/O Chip	Chip	IT8784E-I
Backplane I/O	USB	5*USB-A 2.0/1*USB-A 3.0
	Display	1*DP/1*HD
	Ethernet	3*RJ45, 2*SFP+
	Power supply	1*Jack DC 5.5/2.5mm
	SIM	1*SIM Card solts
Onboard I/O	Fan	1*CPU_FAN, 1*SFP_FAN (Reserved)
	Pins	1*J_COM
		1*J_GPIO
Power supply mode	DC	12V
Motherboard size	Specification	120 mm*120 mm (Nano-ITX)
Work Environment	Temperature	Working: -10℃~60℃; Storage: -20℃~70℃;
	Humidity	5%~95% (Relative humidity, no condensation)

① It is recommended to use a CNVi-based Wi-Fi module. Using a PCIe-based WWAN module may cause the LAN1 port to become unavailable, as they share the same PCIe channel.

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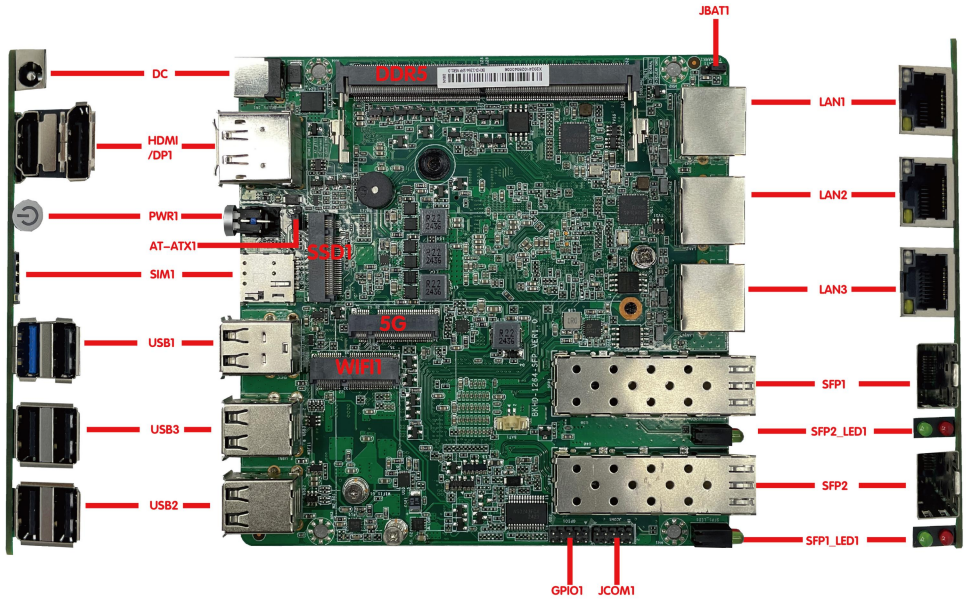
Motherboard layout diagram



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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.

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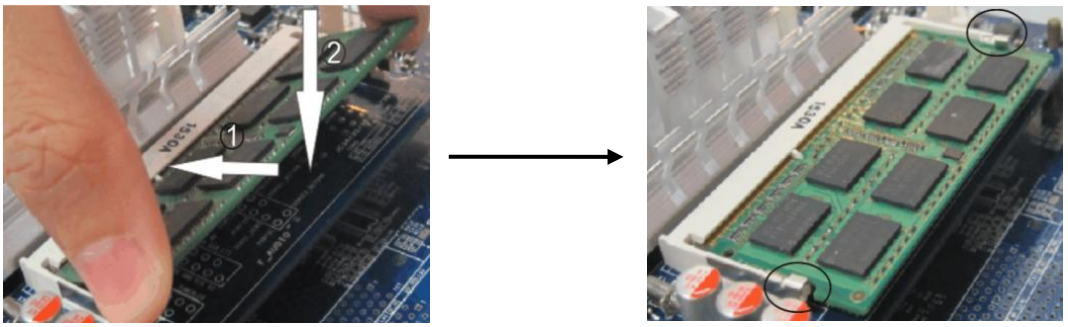
Memory Installation

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.

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Jumper Setting

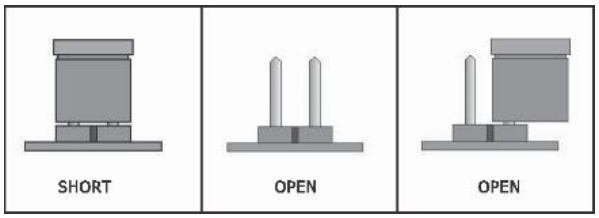
Before installing the hardware device, you can set the corresponding jumpers according to your needs based on the following table.

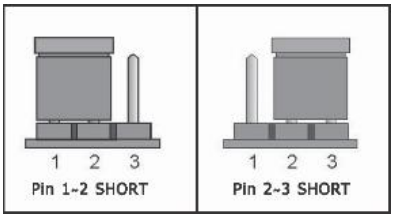
To identify the first pin of a jumper or connector

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.





AUTO_ON Jumper (AT-ATX)

AUTO_ON	PIN	Definition
3 1	1-2	Disable (Default)
	2-3	Enable Auto Power On

Clear CMOS Jumper (JBAT1)

CLR_CMOS	PIN	Definition
3 1	1-2	Normal (Default)
	2-3	Restore to factory defaults

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Motherboard Pin Definition

Serial Port (COM)

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

Image	PIN	Definition	PIN	Definition
	1	DCD (A)	2	RXD (B)
	3	TXD	4	DTR
	5	GND	6	DSR
	7	RTS	8	CTS
	9	RI	10	/

Cooling fan power socket (CPU_FAN)

The motherboard provides 4-pin cooling fan connectors (pin header spacing: 2.54mm)

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

The motherboard provides SFP_FAN1 fan header (**Optional**).

The SFP_FAN1 pin definitions are as follows; this fan has no PWM functionality:

Image	PIN	Definition
	1	GND
	2	+12V
	3	DET
	4	VCC5

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GPIO pins

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

Image	PIN	Definition	PIN	Definition
	1	GND	2	+5V
	3	GPO1	4	GPI1
	5	GPO2	6	GPI2
	7	GPO3	8	GPI3
	9	GPO4	10	GPI4

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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

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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.

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