倍控®
BKHD

BKHD-C612NP-6LAN Motherboard User Manual

VER 1.1

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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.

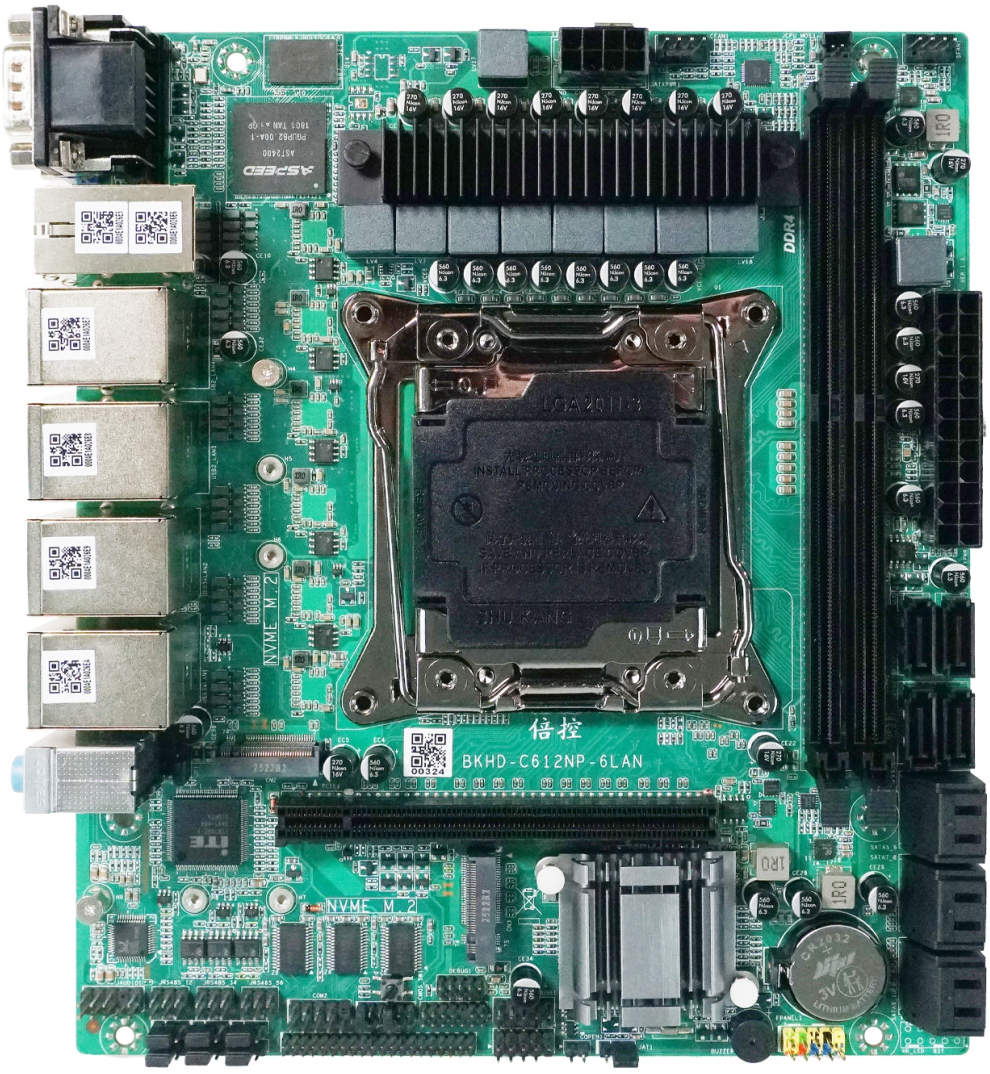
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Product Images

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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Product Profile

The C612NP-6LAN is a compact network and storage motherboard based on the Intel Xeon E5 v4 platform and FCLGA2011-3 socket. Designed for network appliances, storage servers, edge systems, and OEM/ODM platforms, it supports up to 64GB DDR4 memory. With 6× Intel I226V 2.5GbE LAN, 10× SATA 6Gb/s, dual M.2 SSD slots, PCIe Gen3 x16, ASPEED AST2400 graphics, TPM, COM, USB, audio, and multiple fan headers, it is ideal for NAS, backup servers, surveillance storage, industrial servers, and gateway applications.

Main features:

Intel Xeon E5 v4 Platform

The C612NP-6LAN supports Intel Xeon E5 v4 processors with the FCLGA2011-3 socket. This platform is suitable for network appliances, storage servers, industrial servers, edge computing systems, data-processing platforms, and multi-service server applications.

DDR4 Memory Support

The motherboard supports DDR4 DIMM memory with a maximum capacity of 64GB, providing sufficient memory for network services, storage management, file sharing, database applications, monitoring software, and general server workloads.

10-Port SATA Storage Architecture

The motherboard provides 10x SATA 6Gb/s interfaces for flexible multi-drive storage configurations. It is suitable for systems using multiple HDDs or SSDs, including NAS, backup servers, file servers, archive systems, surveillance storage, and local data servers.

Dual M.2 SSD Support

The motherboard provides 2x M.2 Key-M SSD slots for compatible solid-state drives. These slots can be used for operating system installation, application storage, system logs, local databases, cache storage, or other high-speed working data.

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Motherboard Specifications

Processor	Product Collection	Intel Xeon Processor E5 v4 Family
	Sockets Supported	FCLGA2011-3
Memory specifications	Memory Type	DDR4 DIMM
	Maximum Capacity	64GB
	Maximum Frequency	2400 MT/s
Storage specifications	SATA	10*SATA 6Gb/s (4x 7-pin SATA, 3x double-layer 7-pin SATA)
	M.2	2*M.2 Key-M SSD
Network features	Ethernet	6*2.5GbE
	Controller	6*Intel I226V
I/O Chip		ITE IT8786E-I
Extension interface	PCIe	1*PCIe x16 (Gen3)
Display functions	Port	1*VGA
	Chip	Based on onboard ASPEED AST2400 chip
Backplane I/O	Ethernet	6*RJ45
	USB	4*USB-A 3.0, 4*USB-A 2.0
	Display	1*VGA
	COM	1*DB9 COM
	Audio	3*Audio Jacks (Line-Out / MIC-In / Line-In)
Onboard I/O	SATA	10*SATA Data connector
	Pins	1*F_PANEL
		5*JCOM
		2*F_USB2.0

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		1*TPM
		1*F_AUDIO
		1*Case Open
	Fan	1*CPU_FAN, 2*SYS_FAN
	Power	1*ATX 24-pin Connector, 1*ATX 8-pin Connector
Power supply mode	ATX	24Pin+8Pin
Motherboard size	Specification	213*185 (mm)
Work Environment	Temperature	0℃~50℃;
	Humidity	5%~90% (Relative humidity, no condensation)

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Motherboard Installation

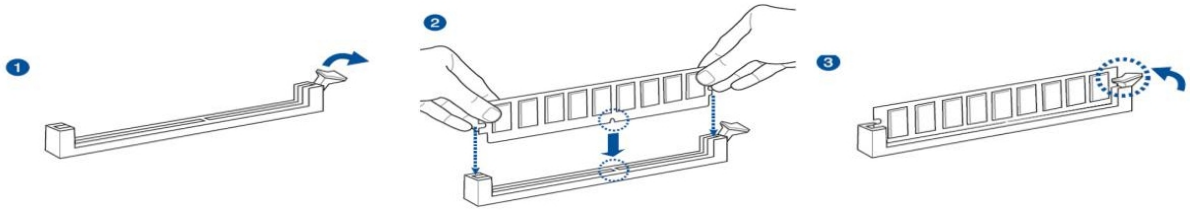
Safety Note

- 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 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.

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Jumper Setting

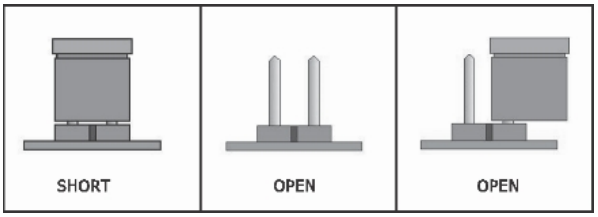
Before installing the hardware device, you can set the corresponding jumpers according to your needs based on the following table.

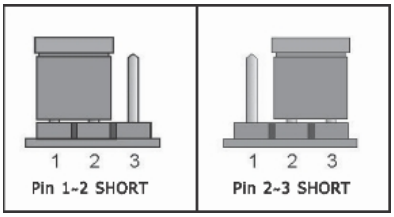
To identify the first pin of a jumper or connector

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.



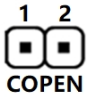


CMOS Content Clear/Keep Setting (JCMOS)

The motherboard provides a JCOMS button.

Image	Setting
	Restore all BIOS settings to factory defaults

Case Open Setting (COPEN 1)

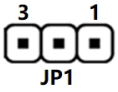
Image	Status	Setting
	1	Case open
	2	GND

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Restore on AC/Power Loss (JAT)

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

USB Voltage Setting (JP1)

Image	Status	Setting
	1-2	USB3_PWR (Default)
	2-3	+5VSB

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Motherboard Pin Definition

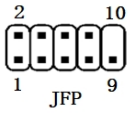
SATA Data

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 Connectors (F_PANEL)

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

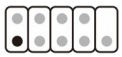
Image	PIN	Definition	PIN	Definition
	1	HDD_LED+	2	PWR_LED+
	3	HDD_LED-	4	PWR_LED-
	5	GND	6	PWR_ON
	7	RESET	8	GND
	9	GND		

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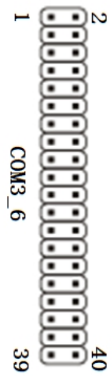
Serial Port (COM)

The motherboard panel provides a DB9 COM port.

The motherboard provides COM pin (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		

The motherboard provides a 4-in-1 built-in serial port (2*20-pin, 2.00mm pitch), combining 4x standard RS232 pins into a single connector.

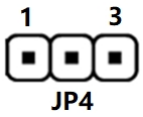
Image	PIN	Definition	PIN	Definition
	1	MDCD3	2	MSIN3
	3	MSO3	4	MDTR3
	5	GND	6	MDSR3
	7	MRTS3	8	MCTS3
	9	XRI3	10	NC
	11	MDCD4	12	MSIN4
	13	MSO4	14	MDTR4
	15	GND	16	MDSR4
	17	MRTS4	18	MCTS4
	19	XRI4	20	NC
	21	MDCD5	22	MSIN5
	23	MSO5	24	MDTR5
	25	GND	26	MDSR5
	27	MRTS5	28	MCTS5
	29	XRI5	30	NC
	31	MDCD6	32	MSIN6
	33	MSO6	34	MDTR6
	35	GND	36	MDSR6
	37	MRTS6	38	MCTS6
	39	XRI6	40	NC

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JP4~JP9 Settings

JP4~JP9 Jumpers are used to set the transmission mode of COM1-COM6. Both RS232 and RS485 transmission modes are supported. You can choose the setting according to your needs. The default transmission mode is RS232.

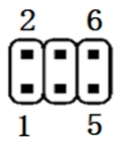
COM_JP4/5/6/7/8/9 (2*3-pin, 2.00mm pitch)

Image	PIN	Definition
	1-2	RS-232
	3-4	RS-485

PIN	Status
JP4	COM1
JP5	COM2
JP6	COM3
JP7	COM4
JP8	COM5
JP9	COM6

JRS485_12, JRS485_34, JRS485_56 Settings

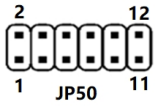
Used to connect COM1-COM6 RS485 data signal transmission.

Image	PIN	Definition	PIN	Definition
	1	GND	2	5V
	3	TXDN	4	TXDP
	5	TXDN	6	TXDP

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JP50 Setting

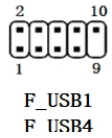
The JP50 jumper is used to set the 9th pin of COM1 and COM2 to be powered.

JP50	PIN	Definition
	1-2	RS232 (COM1)
	3-4	5V
	5-6	12V
	7-8	RS232 (COM2)
	9-10	5V
	11-12	12V

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USB Connectors Pins (F_USB)

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

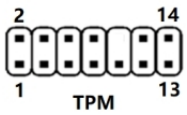
Image	PIN	Definition	PIN	Definition
	1	VCC	2	VCC
	3	USB1_DATA-	4	USB2_DATA-
	5	USB1_DATA+	6	USB2_DATA+
	7	GND	8	GND
			10	/

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.

Trusted Platform Module (TPM)

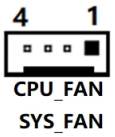
The motherboard provides TPM pins (2*7-pin, 2.00mm pitch)

Image	PIN	Definition	PIN	Definition
	1	TPM_CLK	2	3.3VSB
	3	PLTRST_PCIE_SLOTS_N	4	3.3V
	5	LAD0	6	SER_IRQ
	7	LAD1	8	5V
	9	LAD2	10	NC
	11	LAD3	12	GND
	13	LFRAME#	14	GND

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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_TACH
	4	FAN_PWM

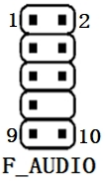
The motherboard provides SYS_FAN pins (1*2-pin, 2.54mm pitch)

Image	PIN	Definition
	1	5V
	2	GND

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Front Audio Connectors (F_AUDIO)

The motherboard provides Front Audio interface pins (2*5-pin, 2.54mm 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

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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.

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BIOS Settings

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

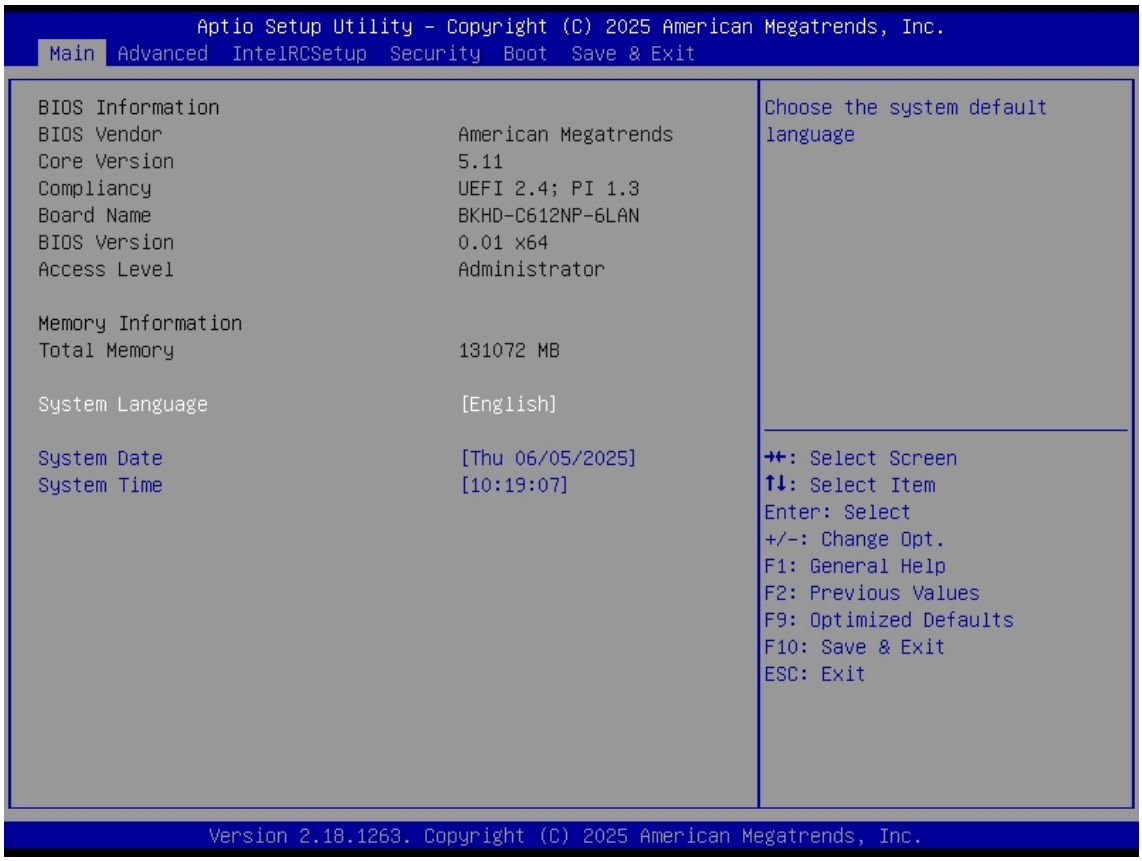


If the prompt disappears before you can respond, you may restart the system to try again by using one of the following methods:Press <Ctrl> + <Alt> + <Del> simultaneously.Press the Reset button on the chassis.Power off the system and turn it on again.

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

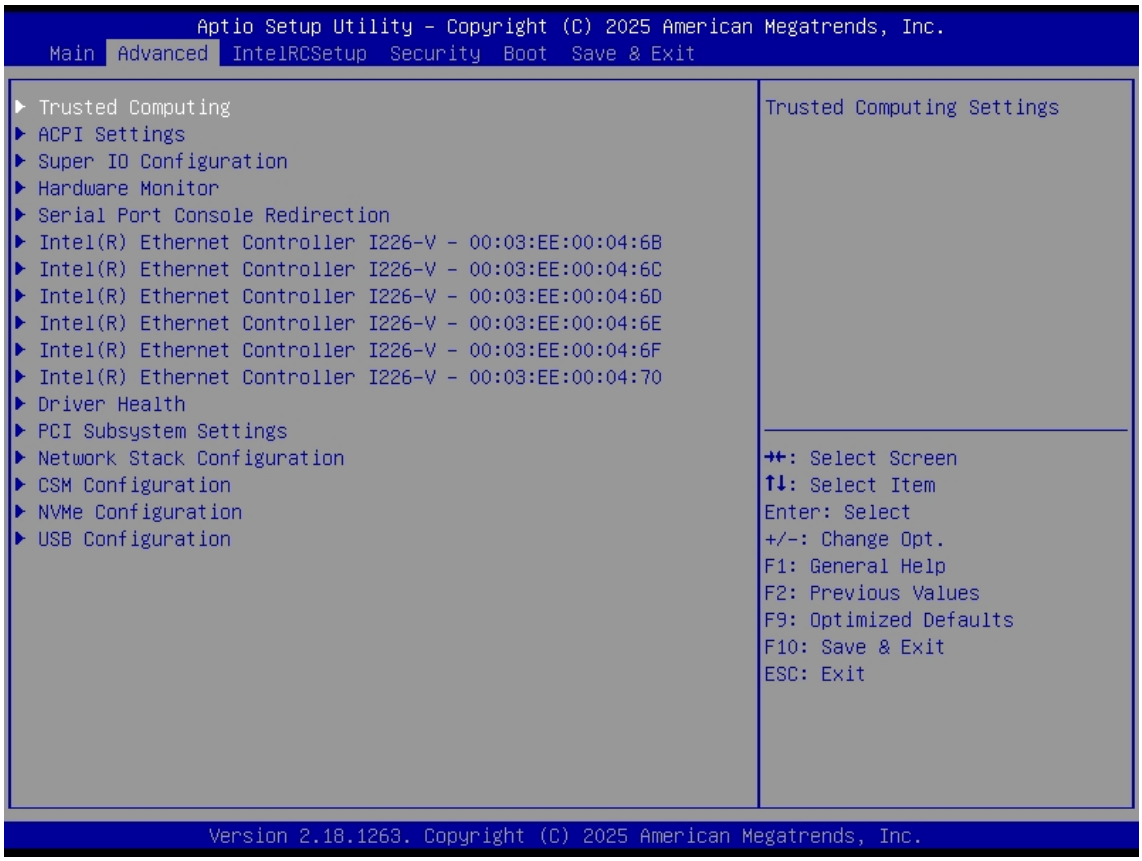
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Main Menu



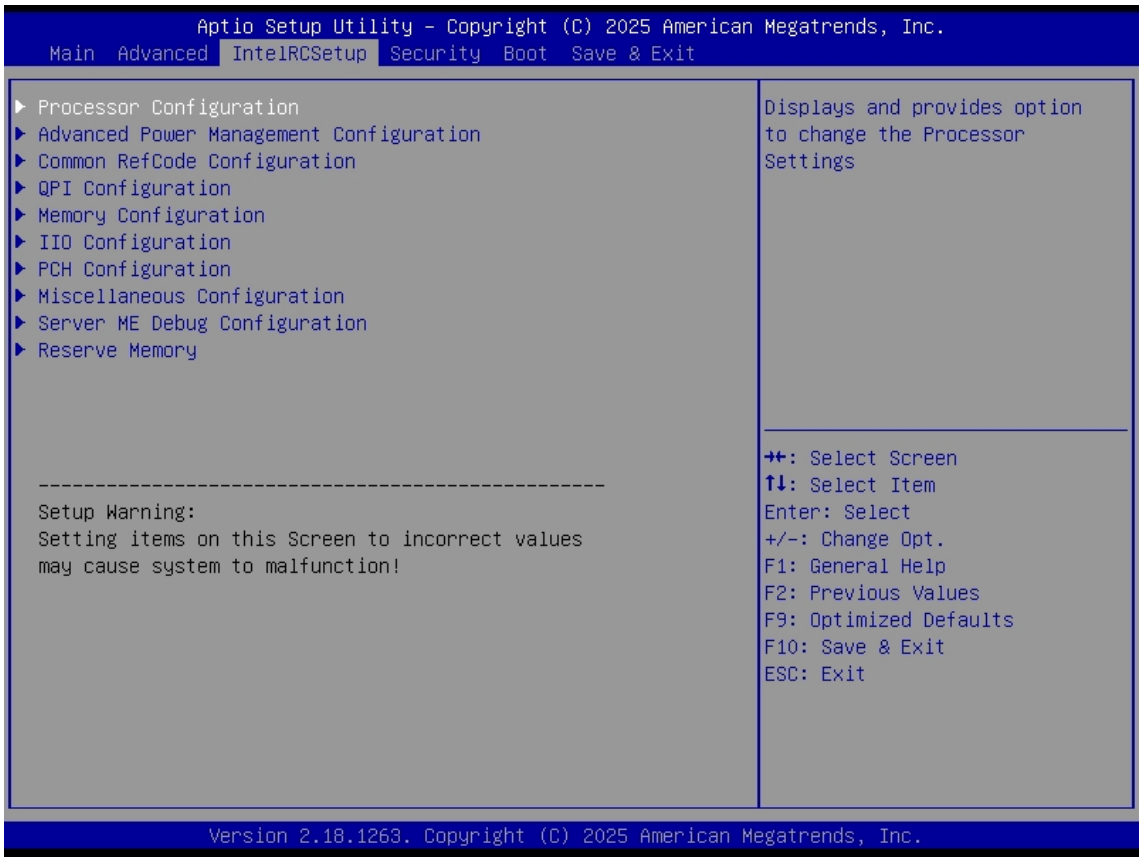
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Advanced Menu



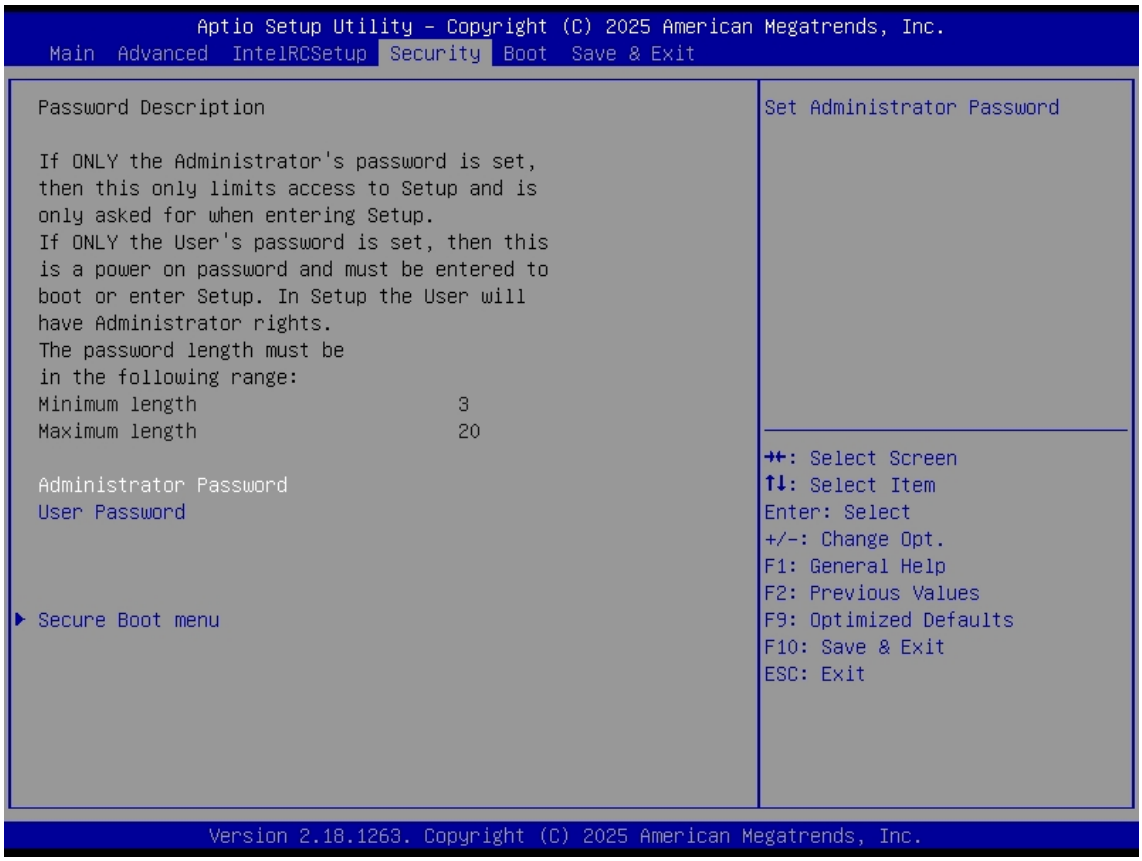
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Intel RC Settings



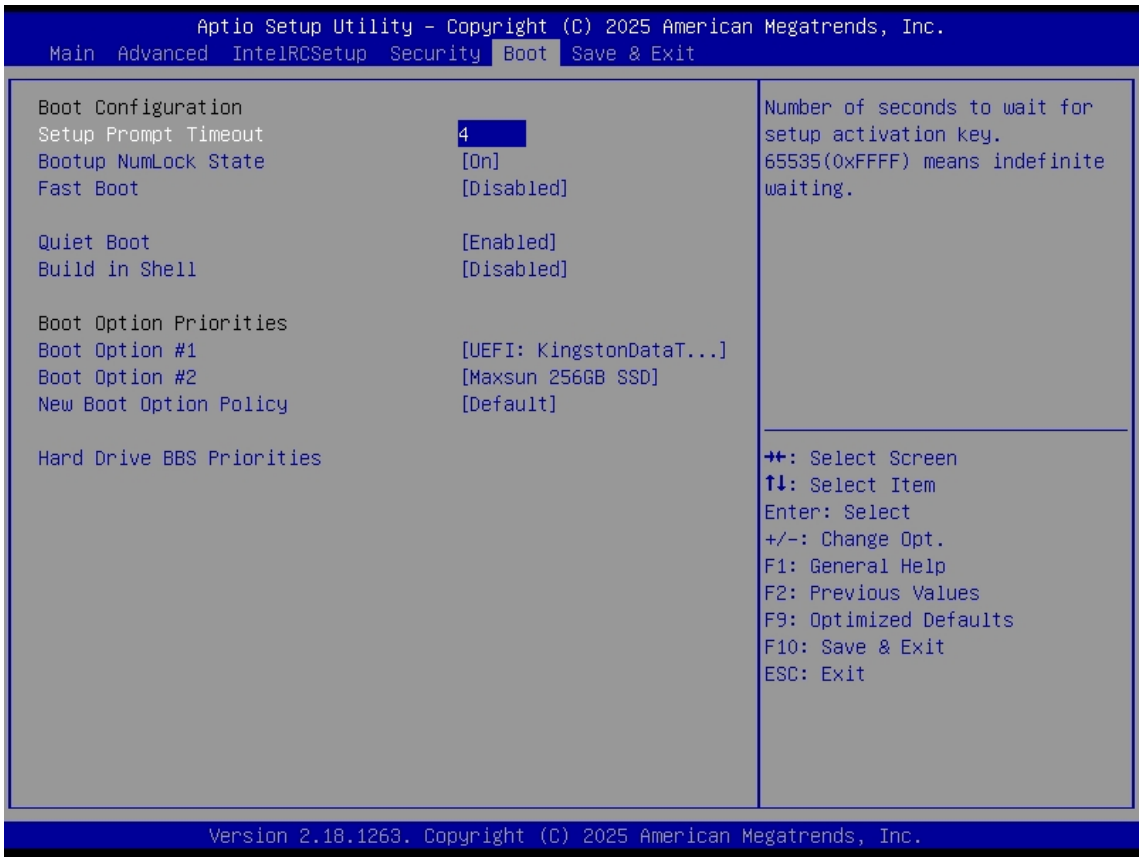
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Security



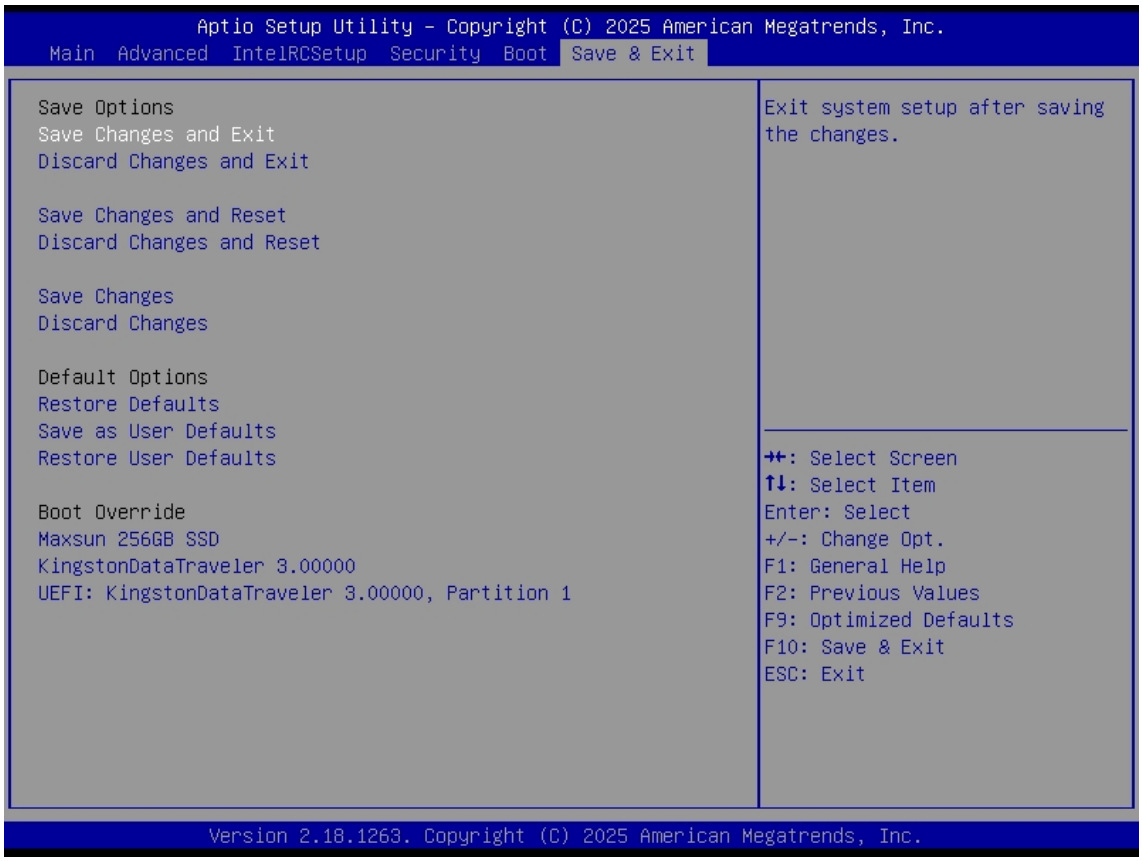
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Boot



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Save & Exit



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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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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/	
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