倍控®
BKHD

BKHD-1264L-NAS 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

Copyright Notice: 1
Responsibility Statement: 1
Safety Guide 1
Product Version Identification 1
Product Images 3
Block Diagram 4
Product Profile 5
Motherboard Specifications 6
Motherboard Installation 7
Memory Installation 8
Jumper Setting 9
Motherboard Pin Definition 13
SATA interface. 13
CPU cooling fan power socket: CPU_FAN 13
System cooling fan power socket: SYS_FAN 13
GPIO pins 14
Serial Port (COM) 14
Front panel pin: F_PANEL 14
USB Expansion pin: F_USB 15
TPM Expansion pin: TPM 15
Power socket (ATX powered) 16
BIOS User Guide 17
Advanced Settings 18
ACPI Settings 18
Network Stack Settings 19
Chipset Settings 19
Security Settings 20
Boot Settings 21
Save&Exit Settings 22
Common fault analysis and solutions 23
Useful Links 24

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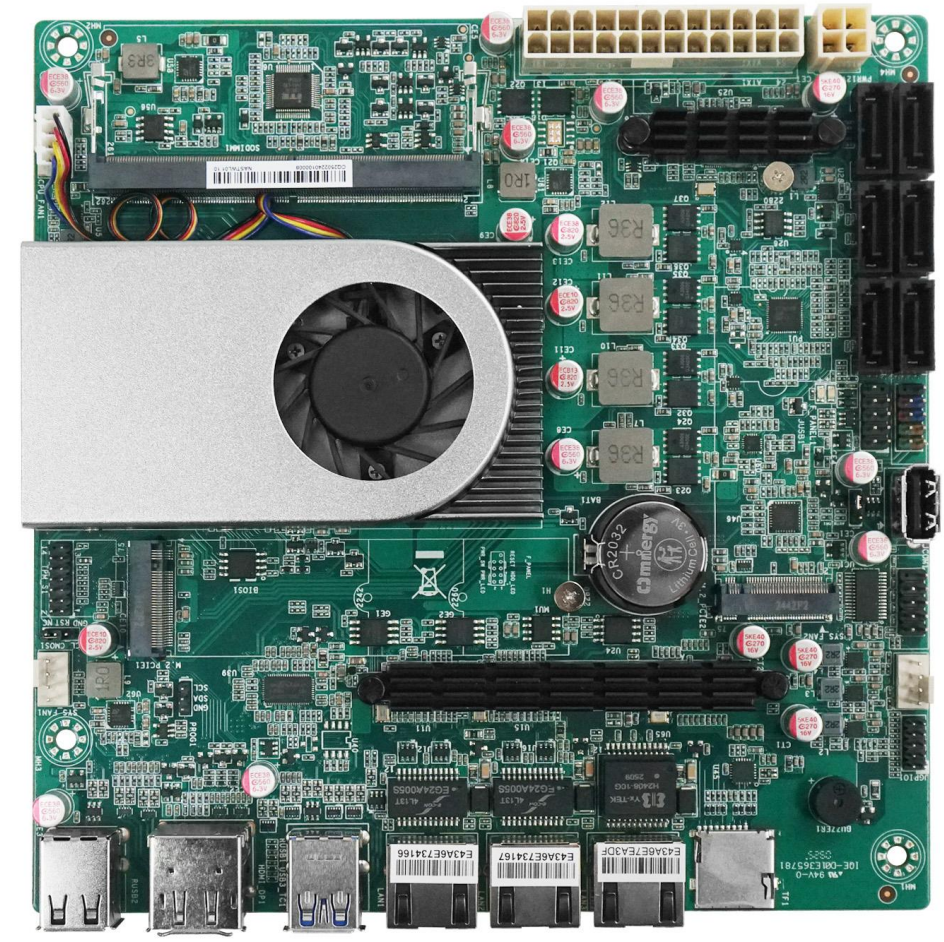
Product Images

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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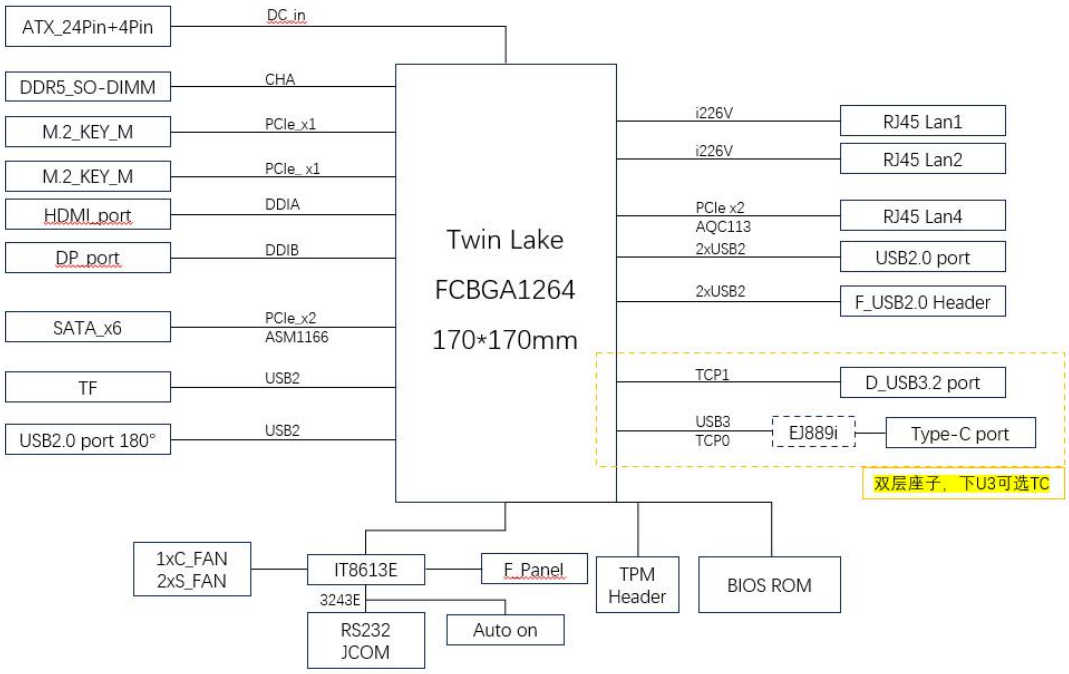
Block Diagram



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Product Profile

The 1264L-NAS is a Mini-ITX motherboard designed for storage servers, network security, and edge computing applications. Powered by an Intel® N-series processor, it integrates six SATA storage interfaces, dual 2.5GbE and single 10GbE hybrid networking, and diverse expansion capabilities, providing a high-performance, low-power network storage and computing platform for small businesses and individuals. Its compact design and wide operating temperature range make it suitable for home NAS and SMB file servers, as well as for data center edge nodes and industrial IoT environments.

Main features:

Powerful Storage Capacity: The onboard ASM1166 controller supports 6 SATA 3.0 interfaces, making it easy to create RAID arrays. Dual M.2 Key-M slots support NVMe SSD expansion for system and cache acceleration. An integrated TF card slot is ideal for lightweight system boot and data backup.

High-Speed Networking: Integrated dual 2.5GbE (Intel I226V) and one 10GbE (Marvell AQC113) ports meet the high-speed network needs of offices and enterprise data centers. It supports multi-link aggregation, load balancing, and virtualized network scenarios.

Flexible Expansion and Interfaces: Onboard GPIO, USB, COM, TPM, and other expansion headers facilitate customized development. Support for three video output ports: DisplayPort, HDMI, and USB-C, expands multimedia and surveillance scenarios.

Stable and Reliable Design: Industrial-grade design supports a wide operating temperature and humidity range. Equipped with a CPU fan and dual system fan power connectors, it ensures long-term stable operation. The ATX 24-pin + 4-pin power supply is compatible with standard PC power supplies, ensuring flexible deployment. Its Mini-ITX form factor offers both compactness and expandability, making it compatible with a variety of chassis.

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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	SATA	6*SATA 3.0 [ASM1166 (PCIe x2 to 6*SATA)]
	M.2	2*M.2 Key-M 2280 (PCIe Gen3 x1)
Network features	Ethernet	2*2.5GbE, 1*10GbE
	Controller	2*Intel I226V, 1*Marvell AQC113
Display functions	Onboard	1*DP/1*HD/1*USB-C
I/O Chip	Chip	IT8613E
Backplane I/O	USB	2*USB-A 2.0/1*USB-A 3.0/1*USB-C
	Display	1*DP/1*HD/1*USB-C
	LAN	3*RJ45
	Power supply	1*ATX 24-pin, 1*ATX 4-pin
	Storage	TF Card slot
Onboard I/O	SATA	6*7-pin SATA data connector
	Pins	1*F_PANEL, 1*JGPIO 1*F_USB1 (can expand 2x USB2.0 ports) 1*J_COM (RS232) 1*TPM
	Fan	2*SYS_FAN, 1*CPU_FAN
Power supply mode	DC	ATX 24-pin+4-pin
Motherboard size	Specification	170 mm*170 mm (Mini-ITX)
Work Environment	Temperature	Working: 0℃~60℃; Storage: -20℃~75℃;
	Humidity	0%~95% (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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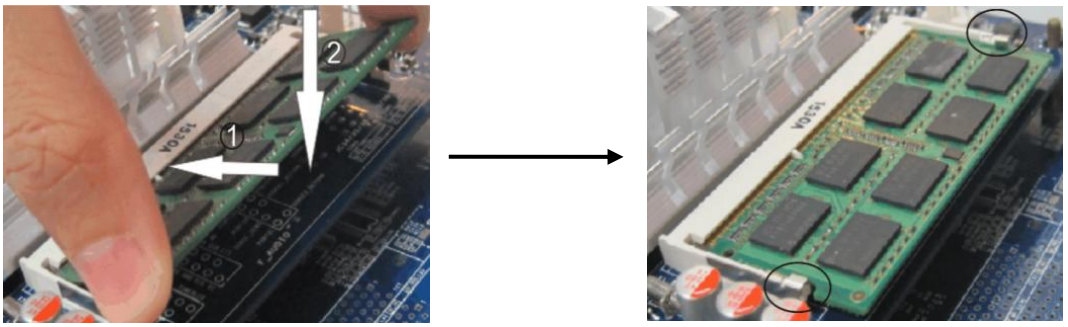
Memory Installation

The motherboard provides 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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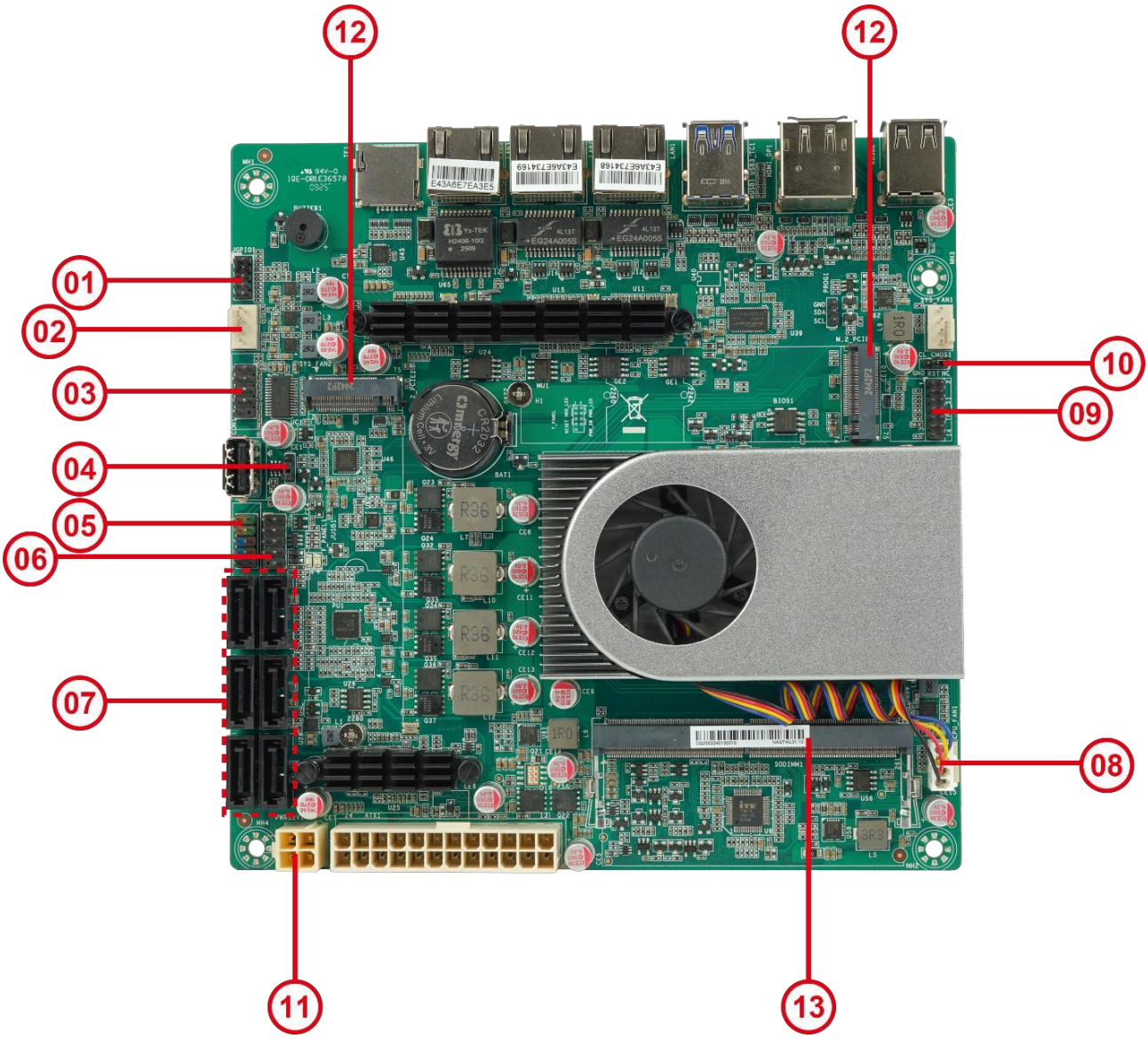
Jumper Setting

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.



The pictures are for reference only, please refer to the actual product.

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Number	Item	Describe
1	JGPIO	Onboard GPIO (General-Purpose Input/Output) pins
2	SYS_FAN1/2	System fan, used to install chassis fan
3	COM1	Onboard COM-RS232 serial port pin
4	AUTO_ON	Jumper to enable or disable Auto Power-On
5	F_PANEL	Motherboard function pin, used to connect chassis button
6	F_USB1	Onboard USB pin for expanding USB interface
7	SATA 1-6	SATA HDD/SSD Data Connectors
8	CPU_FAN	For CPU fan power supply
9	TPM	TPM pin, used for external TPM module
10	CLR_CMOS	CMOS jumper, used to clear BIOS settings
11	PWR 12V ATX	Power socket for motherboard and processor power supply
12	M2_SSD 1/2	M.2 Key-M Storage SSD interface
13	SODIMM1	DDR5 SO-DIMM memory slot (RAM)

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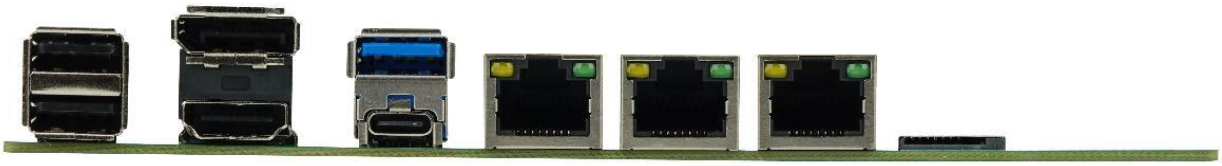

Item	Describe
USB 2.0	Double-layer USB-Type-A 2.0 port
HD/DP	HDMI and DP display ports
USB 3.0	Upper USB-Type-A 3.0 port/Lower USB-Type-C 3.0
RJ45 Connectors	RJ45 Ethernet port for LAN/WAN
	Link LED: Green and solid, indicating the network is connected Active LED: Orange flashing, indicating data transmission
TF	For installing a small-size storage card (Aliases: microSD card)

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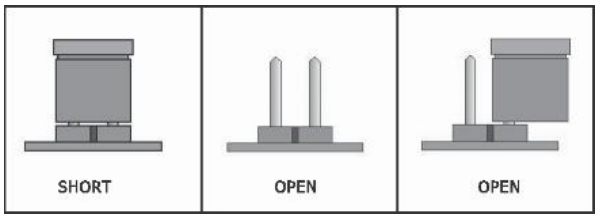
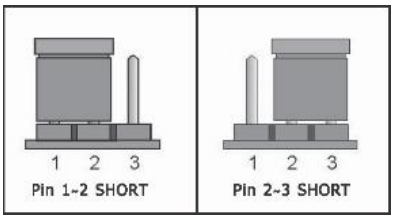
2-pin headers: Insert a jumper cap into both pins turns them off (short).

3-pin headers: Insert a jumper cap into pins 1-2 or pins 2-3 to off (short) them.





AUTO_ON Jumper Setting

AUTO_ON	PIN	Definition
3 1	1-2	Enable Automatic Power On
	2-3	Normal (Default)

CLR_CMOS

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

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Motherboard Pin Definition

SATA interface.

The motherboard provides 7-pin SATA data socket:

Image	PIN	Definition	PIN	Definition
	1	GND	2	SATA_TX+
	3	SATA_TX-	4	GND
	5	SATA_RX-	6	SATA_RX+
	7	GND	/	/

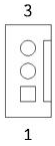
CPU cooling fan power socket: CPU_FAN

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

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

System cooling fan power socket: SYS_FAN

The motherboard provides 3-pin system cooling fan connectors (pin header spacing: 2.54mm):

Image	PIN	Definition
	1	GND
	2	+12V
	3	Sense

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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	GPIO 1	2	GPIO 5
	3	GPIO 2	4	GPIO 6
	5	GPIO 3	6	GPIO 7
	7	GPIO 4	8	GPIO 8
	9	GND	10	#

Serial Port (COM)

The motherboard provides 2*5pin COM pin (pin header spacing: 2.54mm):

Image	PIN	Definition	PIN	Definition
	1	DCD#	2	RDX
	3	TXD	4	DTR#
	5	GND	6	DSR#
	7	RTS#	8	CTS#
	9	RI#	10	/

Front panel pin: F_PANEL

The motherboard provides 2*5pin F_PANEL pin (pin header spacing: 2.54mm):

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	10	/

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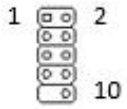
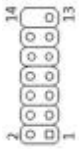
USB Expansion pin: F_USB

The motherboard provides 2*5pin F_USB pin (pin header spacing: 2.54mm):

Image	PIN	Definition	PIN	Definition
	1	VCC +5V	2	VCC +5V
	3	USB1 Date-	4	USB2 Date-
	5	USB1 Date+	6	USB2 Date+
	7	GND	8	GND
	9	/	10	OC

TPM Expansion pin: TPM

The motherboard provides 2*7pin TPM pin (pin header spacing: 2.00mm):

Image	PIN	Definition	PIN	Definition
	1	VCC	2	S_SPI_TPM_IRQ#
	3	S_PLTRST#	4	S_SPI_TPM_CS2#
	5	F2_SPI_CS1#_R	6	F_BOIS_WP#_R
	7	+3V_SPI	8	GND
	9	F_SPI_CSO#_R	10	T_SPI_CLK
	11	T_SPI_MISO	12	T_SPI_MOSI
	13	F_SPI_HOLD#_R	14	NC

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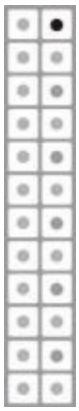
Power socket (ATX powered)

The power socket allows the power supply to provide sufficient and stable power to all components on the motherboard. Before plugging into the power outlet, please make sure the power supply is turned off and all devices are installed correctly. The power socket has a fool-proof design, just confirm the correct direction and plug it in.

ATX 1 (2*2-pin with transparent outer enclosure)

ATX1	PIN	Definition
	1	GND
	2	GND
	3	+12V
	4	+12V

ATX 2 (2*12 pin with transparent outer enclosure)

ATX2	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

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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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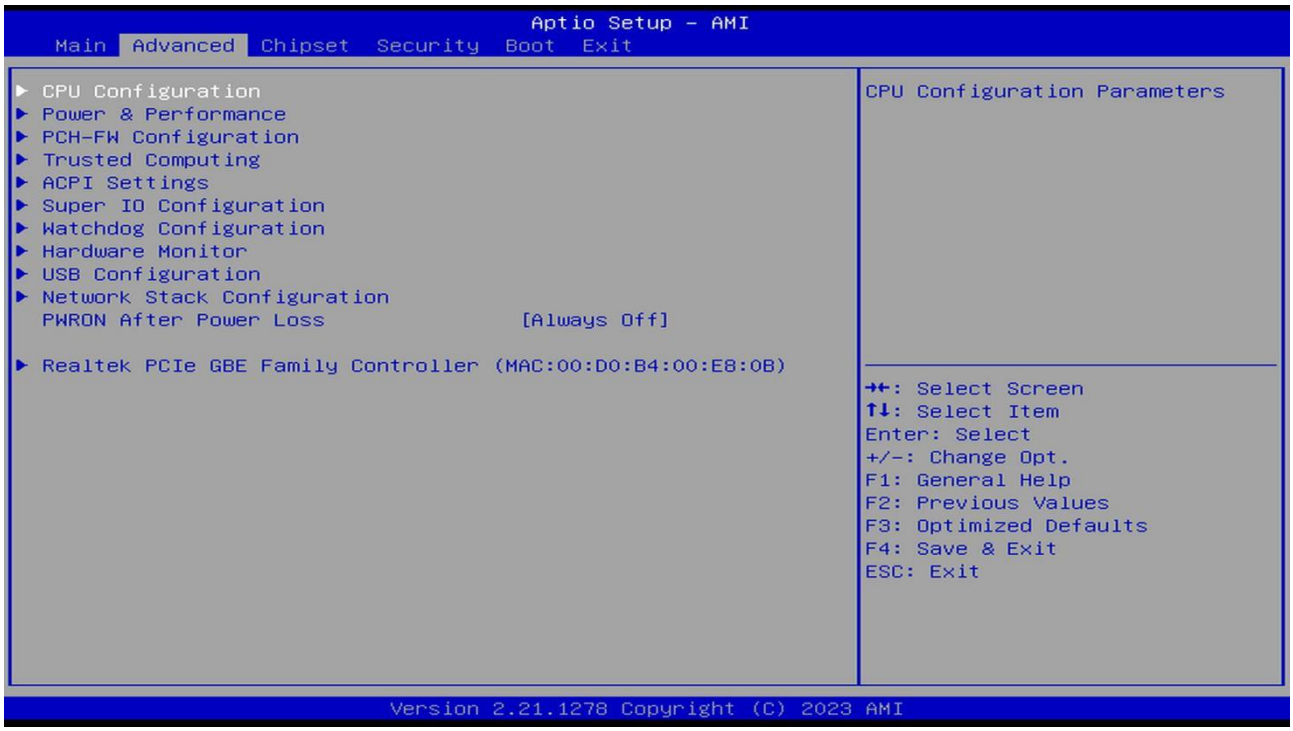
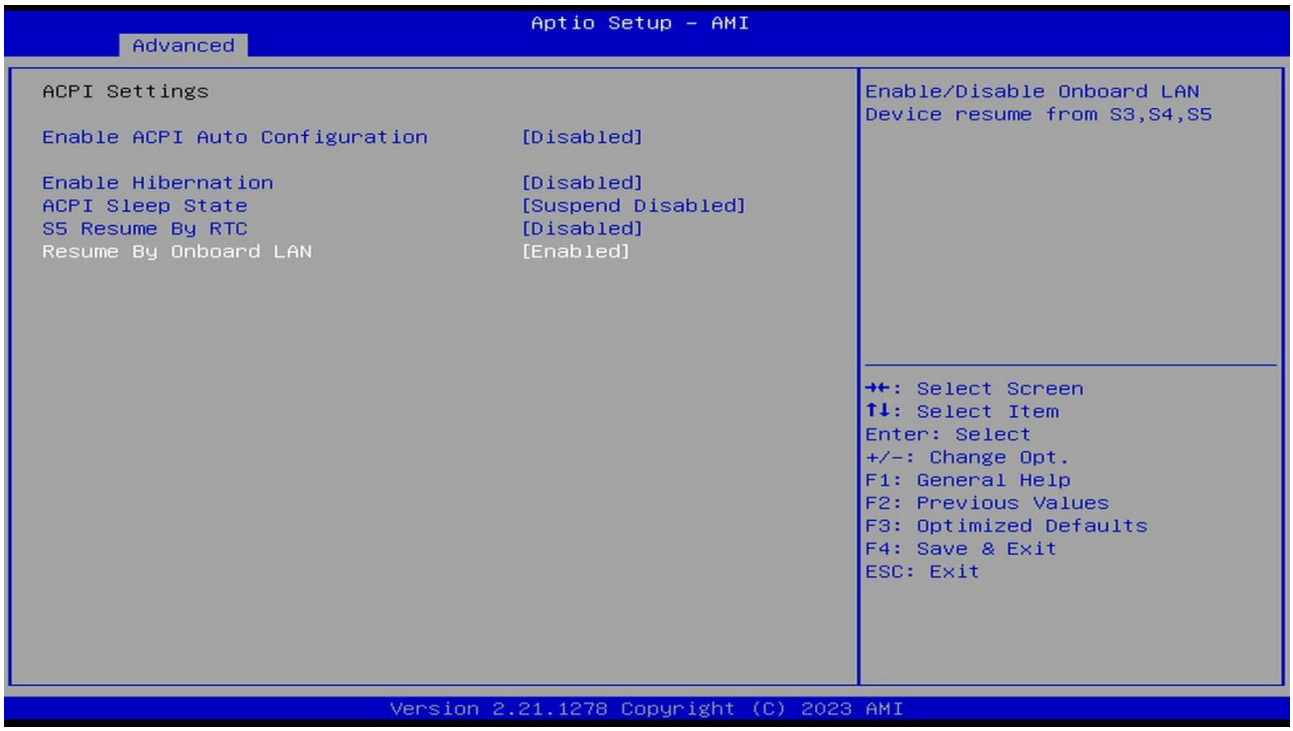
Advanced Settings



ACPI Settings



[Resume By onboard LAN] This option is used to set up Wake-up on LAN.

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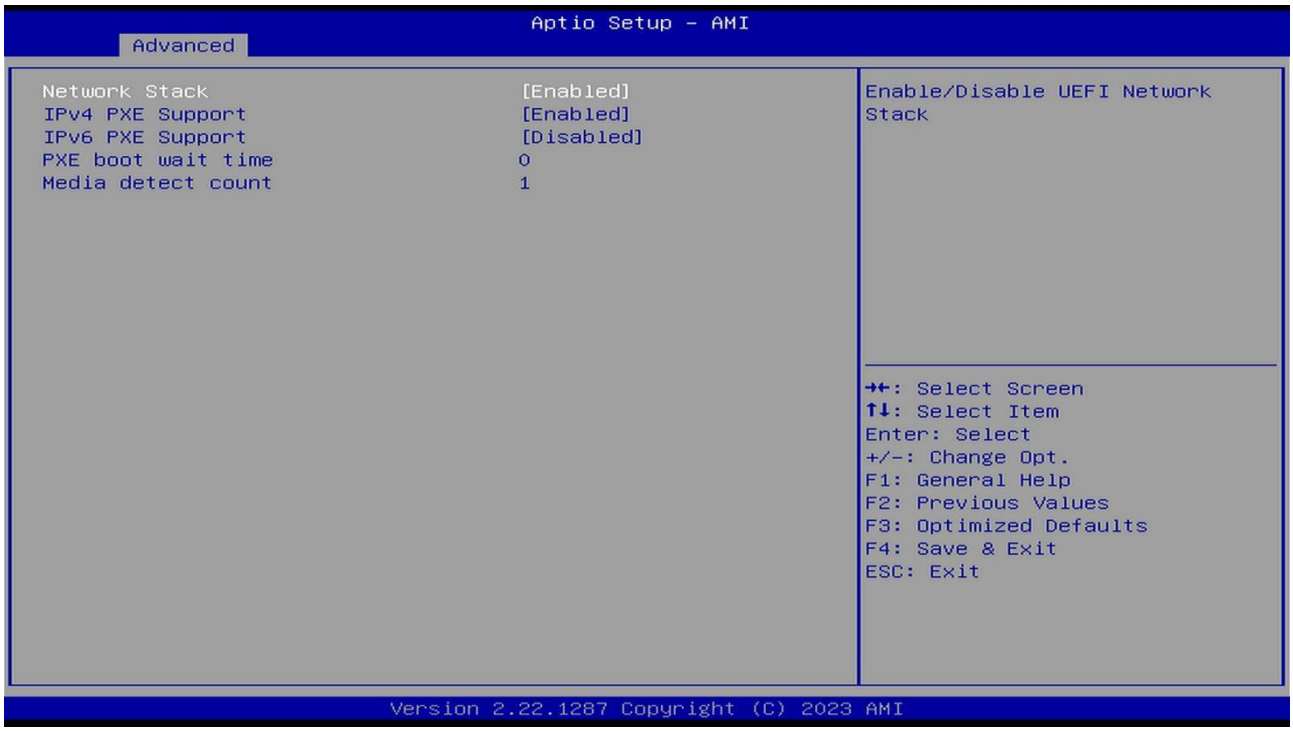
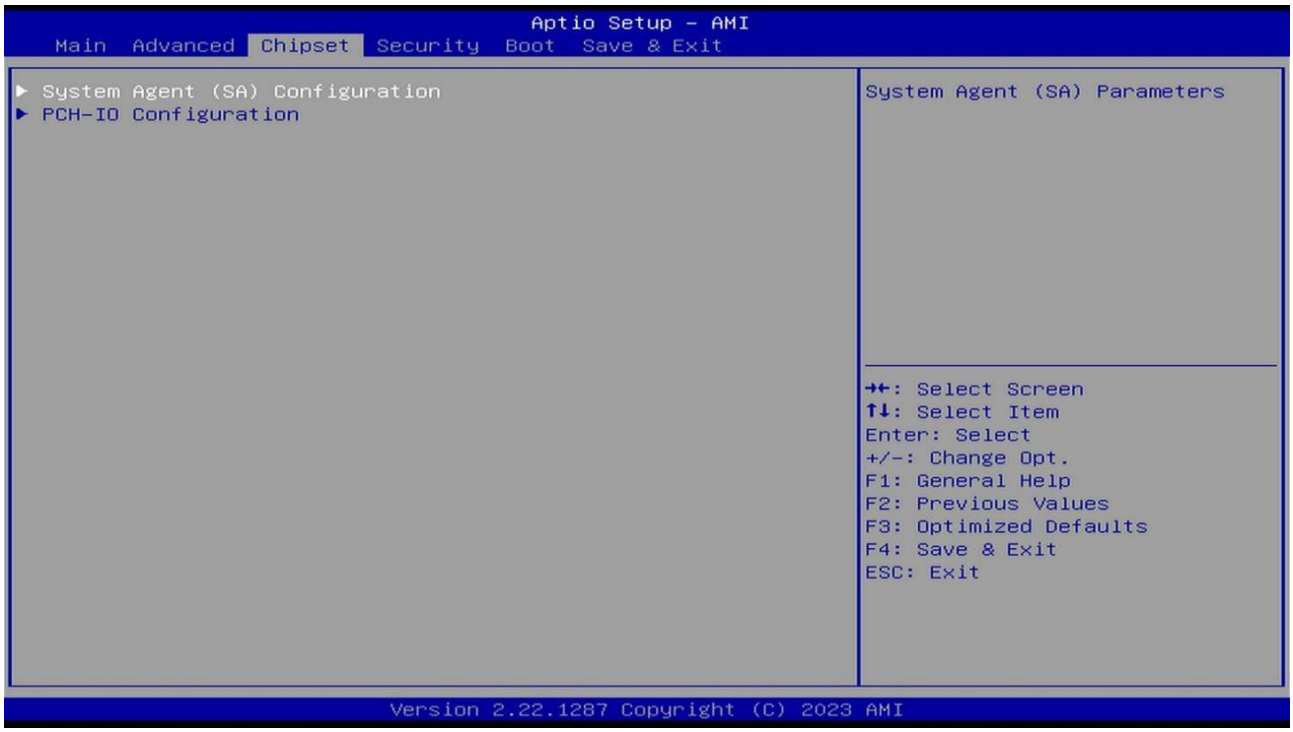
Network Stack Settings



[IPv4 PXE Support] This option is used to set up Wake on LAN.

Chipset Settings



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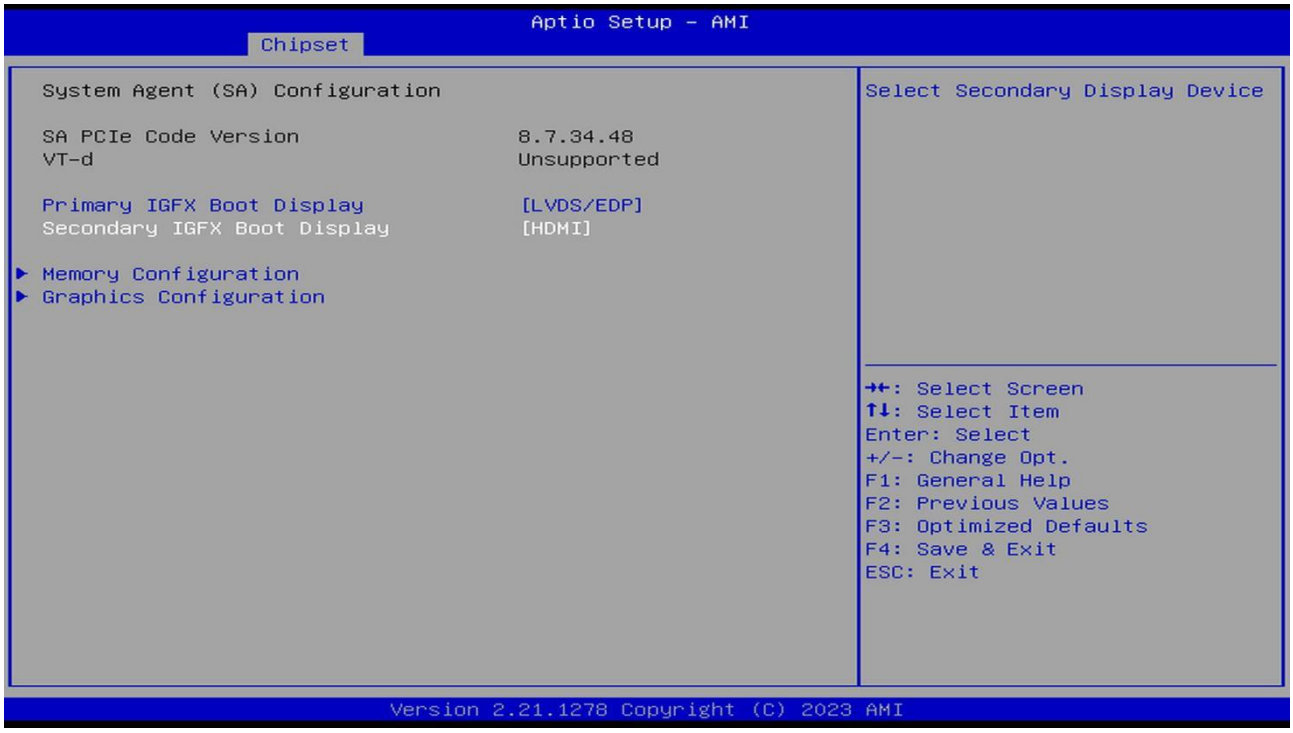
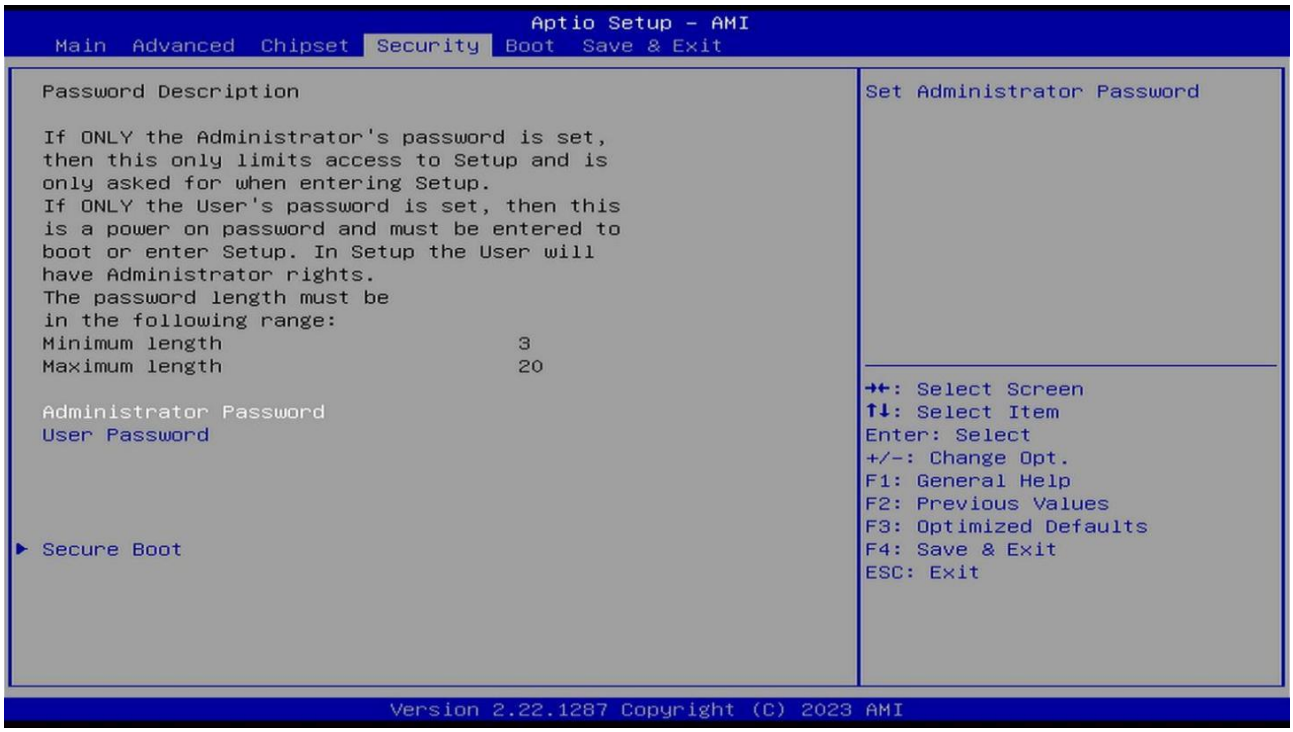


[Primary IGFX Boot Display] This option is used to set as the first display.
[Secondary IGFX Boot Display] This option is used to set as the second display.

Security Settings



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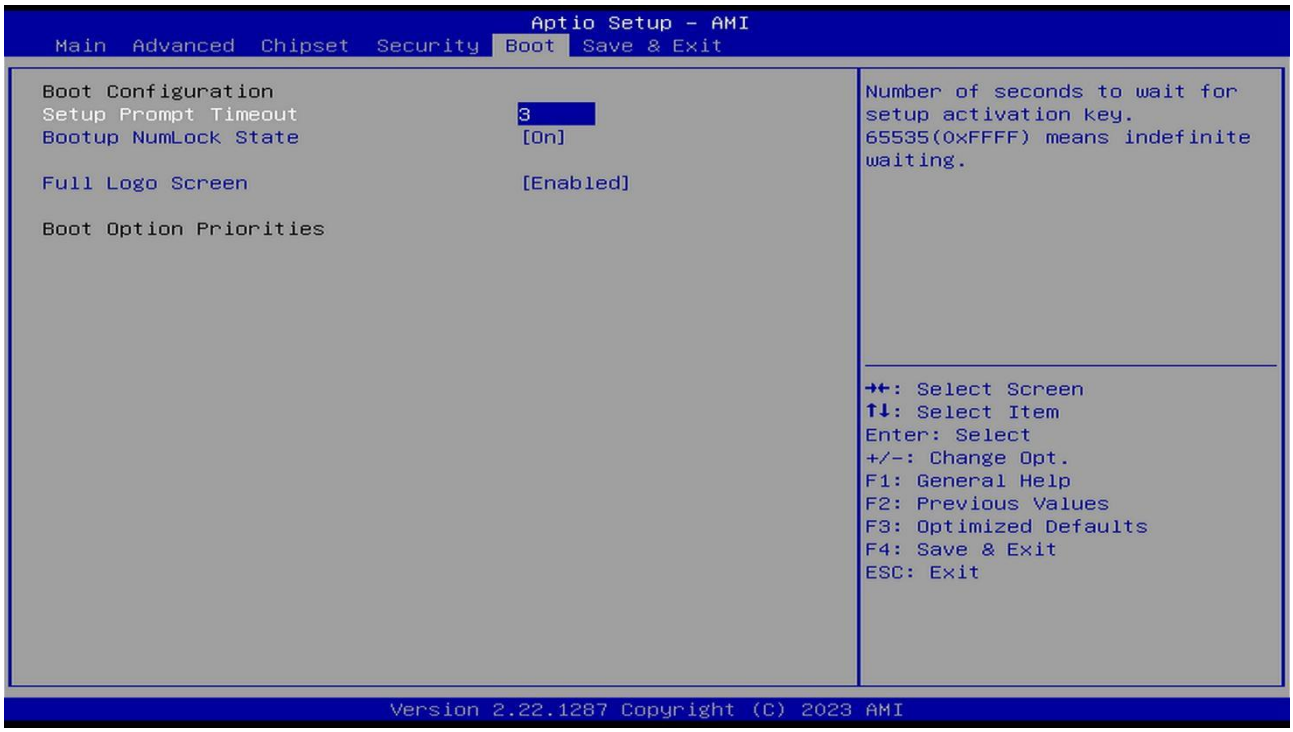
Boot Settings



[Setup Prompt Timeout] This option is used to set the length of time the POST interface stays on.

[Bootup Numlock State] This option is used to set the state of Numlock after the system starts. When set to On, NumLock will be turned on after the system starts, and the numeric keys on the keypad will be valid. When set to Off, Numlock will be turned off after the system starts, and the direction keys on the keypad will be valid.

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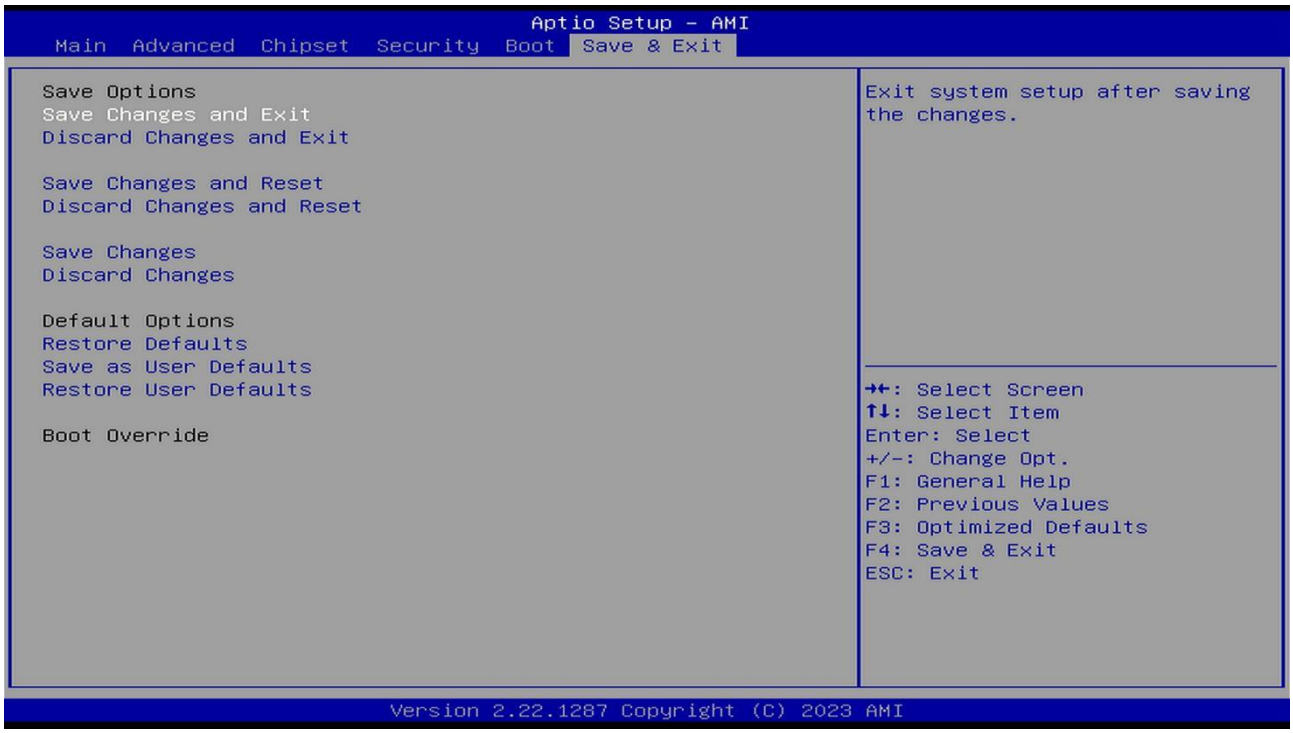
Save&Exit Settings



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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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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	
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