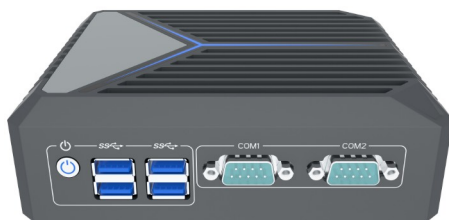




Fanless Computer

Nano-N1321 Product Manual



Low-power, fanless
embedded complete system

To ensure your personal safety and prevent property damage, please pay attention to the instructions contained in this manual. Instructions relating to property damage do not bear a warning triangle. Warning instructions are listed below, arranged in descending order of hazard level.

 warn

This indicates that failure to take appropriate measures may result in irreparable damage to the machine.

 pay attention to

This indicates that ignoring the relevant warnings may lead to undesirable outcomes or situations.

The products or systems covered by this document may only be operated by qualified personnel who meet all relevant operational requirements.

Operation must comply with the instructions provided in the accompanying documentation, particularly the safety and warning sections. Qualified personnel, possessing the requisite training and experience, can identify the risks associated with this product/system and mitigate any potential hazards.

 warn

Yanling Industrial Control products are intended for use only in the applications specified in the product catalog and related technical documentation. If products or components from other manufacturers are to be used, the recommendation and authorization from Yanling Industrial Control must be obtained. Proper transportation, storage, assembly, fitting, installation, commissioning, operation, and maintenance are essential prerequisites for the

safe and proper functioning of the products. The permitted environmental conditions must be ensured, and the instructions contained in the relevant documentation should be carefully followed.

disclaimer

The Company reserves the right to make amendments to this manual without prior notice should any subsequent changes to the product occur. The Company shall not be liable for any direct, indirect, intentional or negligent damage or hazards arising from improper installation or use of this product.

Before placing an order, please consult your distributor to confirm whether the product's specifications meet your requirements.

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Warranty Clause:

The product warranty period is three years. Should the user have any additional requirements, such requirements shall be governed by the contract signed by both parties.

For more information, please visit:

Yanling Website: www.ylgkdn.com

Free Customer Service Hotline: 400-8848-966

catalogue

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I. Product Introduction

1.1 Product Overview

The Nano-N1321 is a compact, low-power, fanless embedded computer featuring an Intel® N100 quad-core processor and built-in TPM2.0 security encryption. It supports various operating systems including Windows 10, Windows 11, and Linux, and offers both M.2 and 2.5-inch hard drive slots, making it extremely user-friendly.

The housing is manufactured using full-aluminum alloy mold forming technology, featuring a simple structure with excellent dust-proofing, heat dissipation, vibration resistance, and EMC performance; it offers high system reliability and strong environmental adaptability.

1.2 Product Specifications

II. Application Planning

Product Specifications & Parameters	
Machine Model	Nano-N1321
Chassis color	Metal Gray (color can be customized)
Chassis material	High-quality full-aluminum alloy
processor	Built-in Intel® Processor N100 (quad-core, quad-threaded, maximum turbo frequency: 3.4 GHz)
architecture	Alder Lake-N
internal storage	Supports one DDR4 3200 MHz SODIMM memory slot, up to 16 GB.
BIOS	AMI UEFI BIOS
Display Chip	Intel(R) UHD Graphics
Display Interface	2 HDMI high-definition display interfaces
in frontI/O	1 power switch; 3 USB 3.1 ports; 1 USB 2.0 port; 2 COM ports
at the backI/O	1 DC power interface, 2 HDMI high-definition interfaces, 2 USB 2.0 ports, 2 RJ45 network ports
	1 dual-purpose audio interface, 1 SIM card slot
Extended slot	Supports one M.2 2280 M-key slot (supports both SATA and PCIe 3.0 x1 NVME protocols)
	Supports one M.2 2230 E-key slot (supports Wi-Fi and Bluetooth)
	Supports one Mini PCIe slot (USB 2.0 interface; optional 3G/4G connectivity)
network interface	Two Intel i225-V 2.5G Ethernet ports
memory interface	1 × M.2 2280 slot; 1 × onboard 2.5-inch hard drive bay
input voltage	Supports DC 12V input
working temperature	0°C – +40°C (commercial HDDs), -20°C – +60°C (industrial SSDs), surface air flow
Work environment humidity	0% – 95% Non-condensing state
security certificate	CE、CCC、FCC Class A、RoHS
product size	150 * 126.5 * 45 mm
Total weight	0.84 kg
application area	Industrial control systems, industrial automation, robotics, IoT gateways, edge computing, machine vision, AGV/AMR, etc.

2.1 Transportation

Packaged products may be transported by any means of transport to any destination; however, during long-haul transportation, they shall not be loaded into open ship compartments or cargo holds; during intermediate transshipment, they shall not be stored in open-air warehouses; during transportation, they shall not be transported together with flammable, explosive, or corrosive materials (whether by the same vehicle or any other means of transport); furthermore, the products shall not be exposed to rain, snow, liquid substances, or mechanical damage.

2.2 Storage

Products shall be stored in their original packaging boxes. The warehouse environment for storing products shall have an ambient temperature ranging from 0°C to 40°C and a relative humidity ranging from 20% to 85%. The warehouse shall be free from any harmful gases, flammable or explosive materials, or corrosive chemicals; furthermore, it shall be free from strong mechanical vibration, impact, or strong magnetic fields. The packaging boxes shall be placed at least 10 cm above the ground and at least 50 cm away from walls, heat sources, cold sources, windows, or air intake openings.

Be cautious of the risk of damaging the equipment! When transporting machinery in cold weather conditions, be mindful of extreme temperature fluctuations. In such cases, ensure that no water droplets (condensation) have formed on or inside the equipment. If condensation has formed on the equipment, wait at least 12 hours before powering on the device.

2.3 Unboxing and Inspection of Delivered Equipment

When unpacking the equipment, please note the following points:

- We recommend not discarding the original packaging materials; please keep them for future use when transporting the equipment again.
 - Please store the document in a secure location; it will be required during the initial device debugging process.
 - Inspect the delivered equipment to determine whether any significant damage has occurred during transportation.
 - Verify whether the goods shipped include the complete equipment and any accessories you have ordered separately. In the event of any discrepancies or issues,
-

Transportation damage – please contact our customer service team.

2.4 Installation Method

☐ 19-inch shelved ☒ Desktop ☒ Embedded ☒ Wall-mounted ☐ Portable handheld

III. Equipment Connection

3.1 Pre-connection Precautions



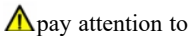
Connected or built-in peripheral devices shall not be connected to devices with opposite polarity.



This equipment shall only be operated on a properly grounded power supply network; operating it on a non-grounded or impedance-grounded power supply network is strictly prohibited.

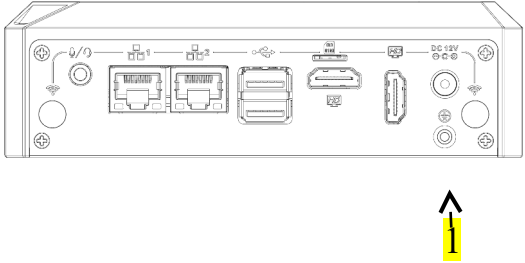


The rated voltage of the equipment in use must comply with the power supply characteristics of this product.



Only peripheral devices that are certified as suitable for industrial applications may be connected. During machine operation, hot-swappable I/O modules (USB) may be connected; I/O devices without hot-swap functionality may only be connected after the device has been disconnected from power.

3.2 Connect the device to a power source

How to connect the device to a power source	diagrammatic sketch
Connect the DC 12V power adapter to Power Input Interface "1", then press the power switch on the front panel of the device; the device will boot up and the blue power indicator light will illuminate.	

 warn

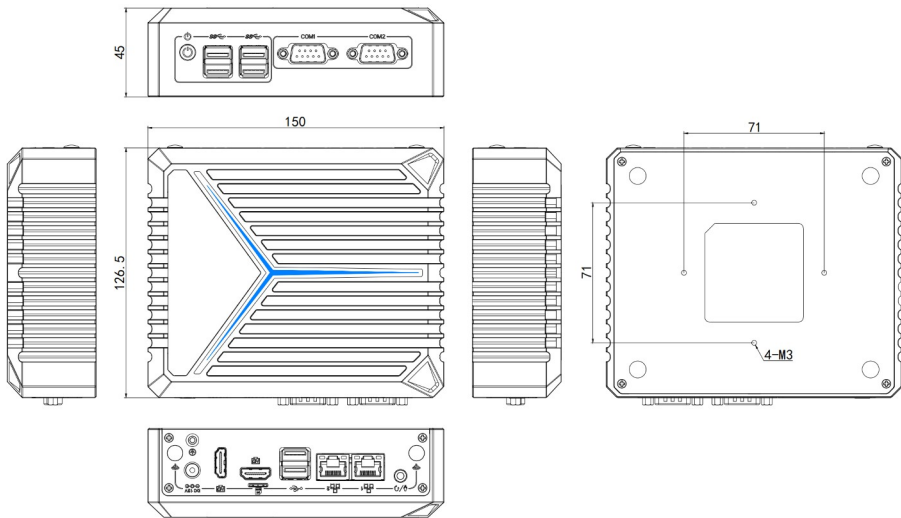
The power-on/off button signal does not cut off the PC power supply!

IV. Instructions for Use

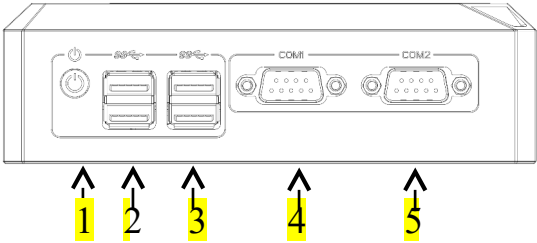
4.1 Product Appearance Diagram

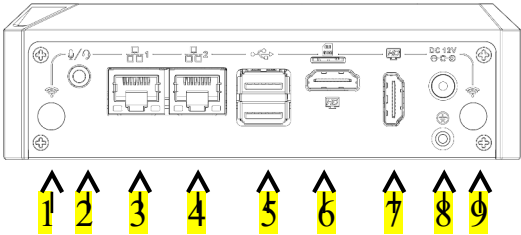


4.2 Product Dimension Drawing

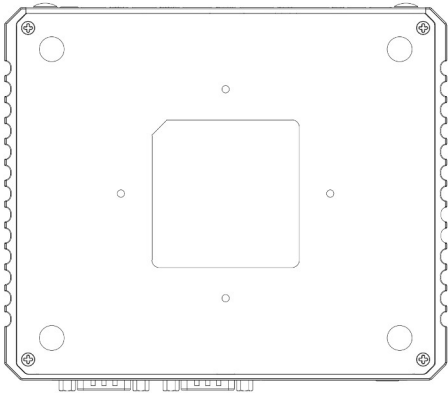


4.3 External Interfaces

Machine Front View	number	Interface Name
	1	Switch button
	2	1 USB 2.0 port 1 USB 3.0 port
	3	2 USB 3.0 ports
	4/5	2 COM ports

Machine Rear View	number	Interface Name
	1/9	WIFI port
	2	Audio Interface
	3/4	network interface
	5	2 USB 2.0 ports
	6/7	2 HDMI ports
	8	DC 12V power supply interface

4.4 Bottom Floor Plan

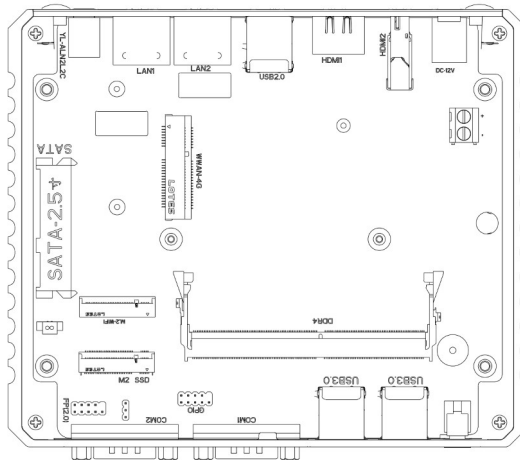
Bottom elevation drawing	Device Components	Screw model
	bottom	M2.5×6 cross-head screw

4.5 Status Indicator Light

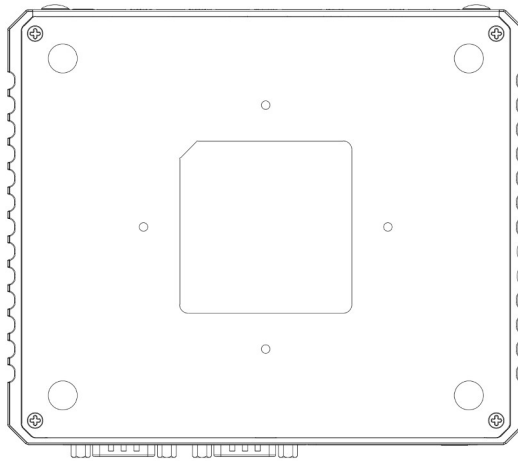
show	meaning	LED	description
POWER	Machine Status Display	Not lit	Device turned off or power supply disconnected
		Always On	Machine in operation

4.6 Install Internal Components

1. Remove the four M2.5×6 screws from the chassis bottom plate (as shown in the figure below), then take off the bottom plate to install accessories such as memory modules, Wi-Fi modules, or M.2 hard drives.



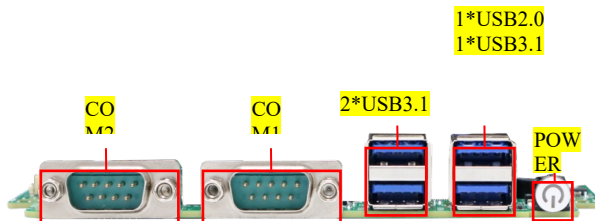
2. After installing the internal components (as shown in the figure below), cover the chassis base plate and secure it with four M2.5×6 screws.

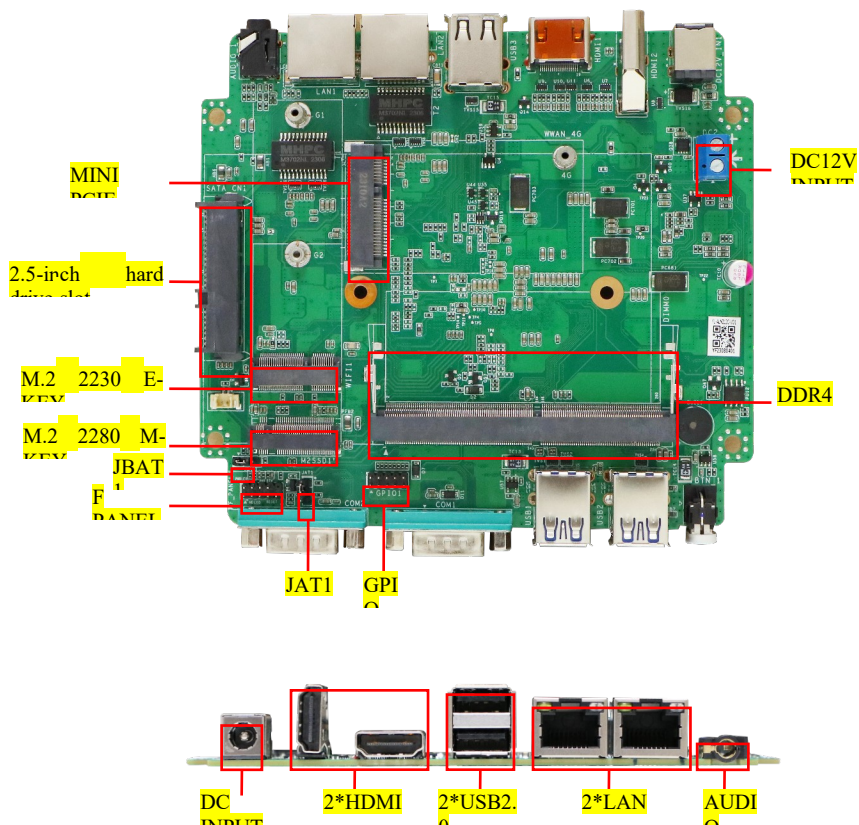


warn

This procedure is only suitable for Nano-N1321 pre-configured system customers; customers who have already installed the internal components should not disassemble or assemble the chassis without authorization.

4.7 Motherboard Interface Definition





Note: The identification method for the first pin (PIN 1) among the motherboard pins is as follows:

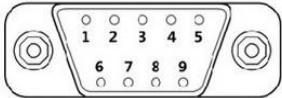
- 1. Features a white, bold screen-printed label or an arrow indicator;
- 2. The pins visible on the back of the motherboard are square holes.



FPANEL Definition (DuPont 2.0 mm pin socket)

Signal Name	Pin	Pin	Signal Name
HDD LED +	1	2	PWR LED +
HDD LED -	3	4	PWR LED -
Reset SW -	5	6	Power SW +
Reset SW +	7	8	Power SW -
	9	10	

COM DB9 Pin Definition

Pin	RS232	
1	DCD	
2	RXD	
3	TXD	
4	DTR	
5	GND	
6	DSR	
7	RTS	

8	CTS	
9	RI	

GPIO1 (DuPont 2.0 mm pin header)

Signal Name	Pin	Pin	Signal Name
+ 5V	1	2	GND
GP70	3	4	GP71
GP72	5	6	GP73
GP74	7	8	GP75
GP76	9	10	GP77

JBAT1

Pin	Signal Name
1-2	Normal
2-3	Clear CMOS

JAT1

Pin	Signal Name
1-2	NC
2-3	AUTO-ON



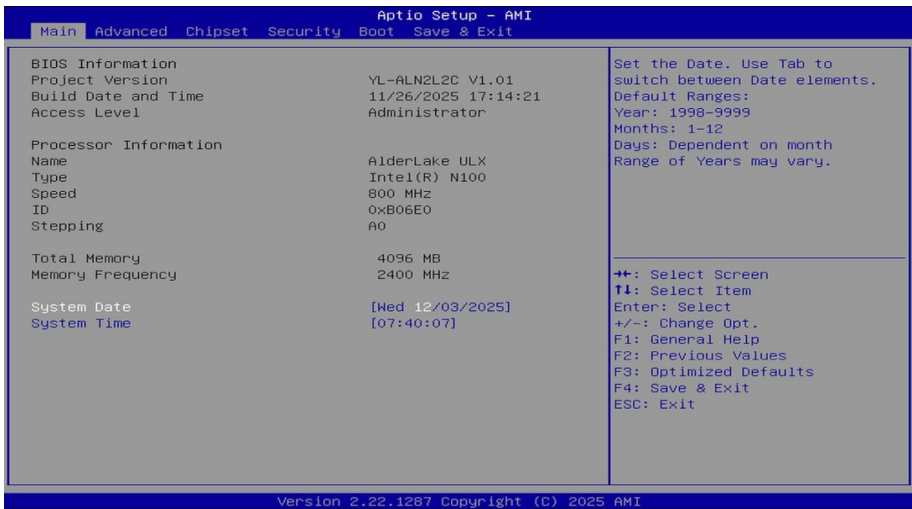
The internal machine wiring has been installed; the cable plugs and screws have been securely fastened with adhesive. Please avoid disassembling the motherboard or making arbitrary jumper settings, as this may cause damage to the motherboard.

5、 BIOSset up

5.1 BIOS Overview

BIOS (Basic Input Output System) contains the most critical basic input/output routines, the POST (Power-On Self-Test) routine, and the system boot routine for the computer. It can read from and write to the CMOS chip to store specific system configuration information; its primary function is to provide the computer with the lowest-level, most direct hardware configuration and control capabilities. As product BIOSes are updated and optimized periodically, the configuration interfaces may vary slightly; the following interface is for reference only.

The BIOS configuration menu includes the following options (for specific BIOS settings, please contact the Yanling Industrial Control Customer Service Hotline):



After powering on the device, press the "Delete" key to access the BOIS configuration interface.

Main: BIOS Information and Date/Time

Advanced: BIOS Advanced Menu Settings

Chipset: Chipset Configuration

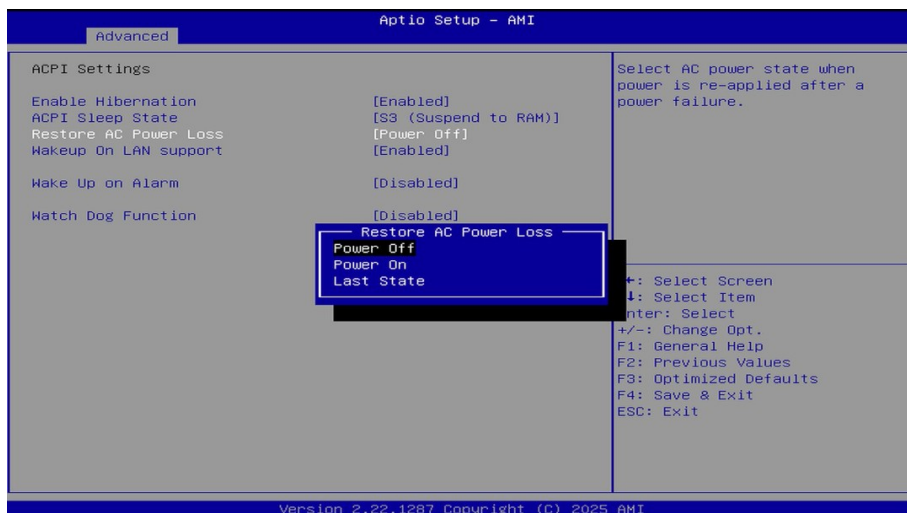
Security: Security Settings

Boot: Boot Options Configuration

Save & Exit: Save & Exit BIOS Settings

5.2 Equipment Power-On Startup Settings

"Advanced" → "ACPI Settings" → "Restore AC Power Loss", as shown in the figure below.



Restore on AC Power Loss – Function Description:

Power Off: After connecting the device to a 12V power supply, press the power button to turn it on.

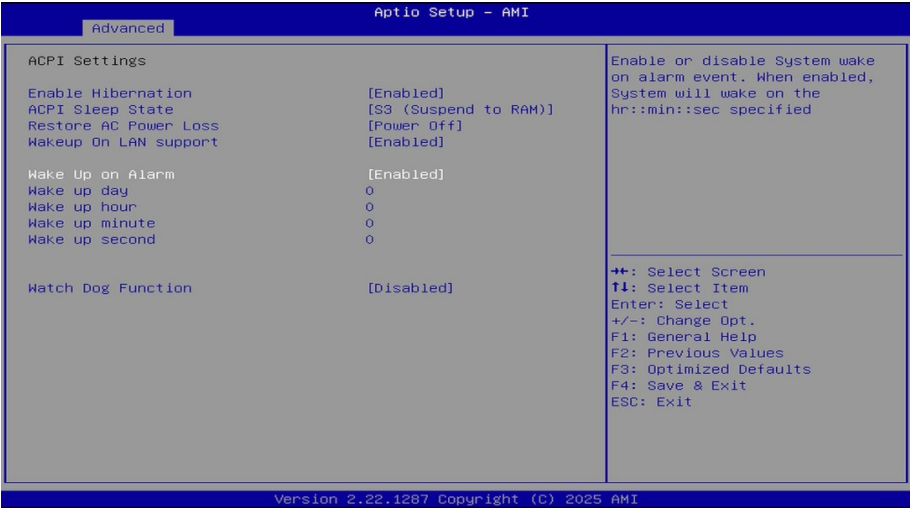
Power On: The device will automatically power on upon being connected to a 12V power supply.

Last State: After the device is powered on with a 12V supply, determine whether to power on the device based on its previous status value.

5.3 Scheduled Power-On Setting

“Advanced” → “ACPI Settings” → “Wake Up on Alarm”

As shown in the figure below



Wake System (From S5) – Function Description:

Wake-up Day: The wake-up time is measured in days.

Wake-up Hour: The wake-up time is measured in hours.

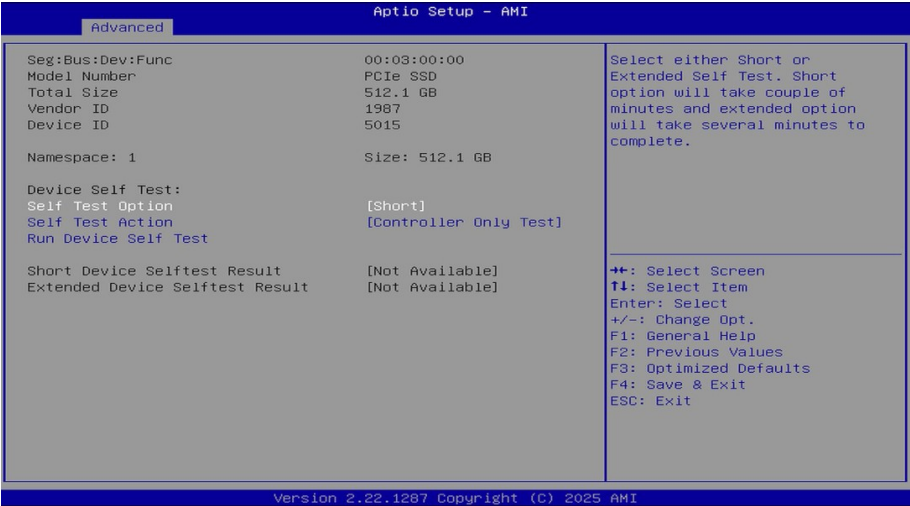
Wake-up minute: The wake-up time is measured in minutes.

Wake Up Second: Wake-up time unit – seconds

5.4 NVME Configuration

“Advanced” → “NVME Configuration”

As shown in the figure below

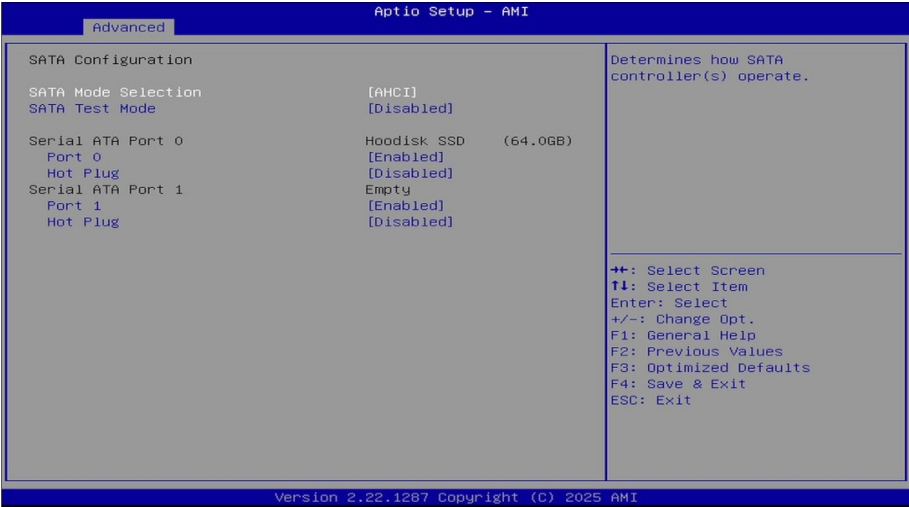


Note: Storage information is displayed only when an NVMe storage device is installed.

5.5 SATA Configuration

"Advanced" → "SATA Configuration"

As shown in the figure below

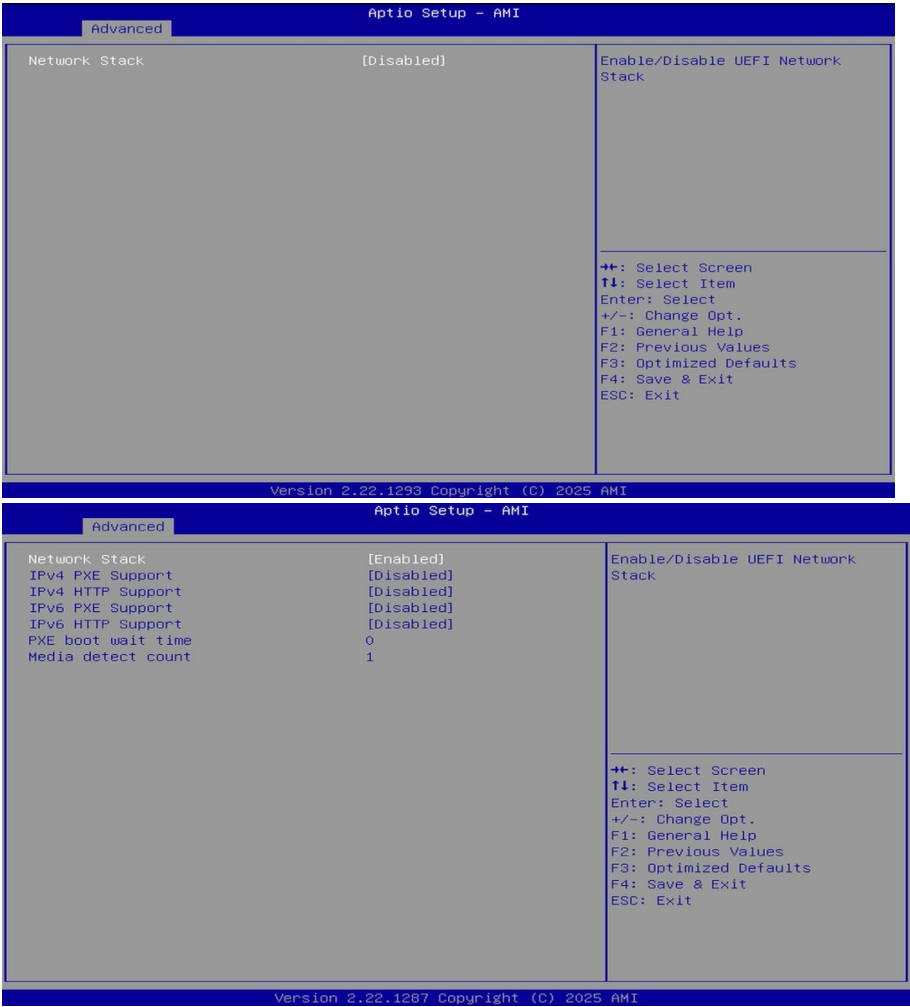


Note: Storage information will only be displayed for storage devices that support the SATA protocol.

5.6 PXE

“Advanced” → “Network Stack Configuration” → “Network Stack”

As shown in the figure below

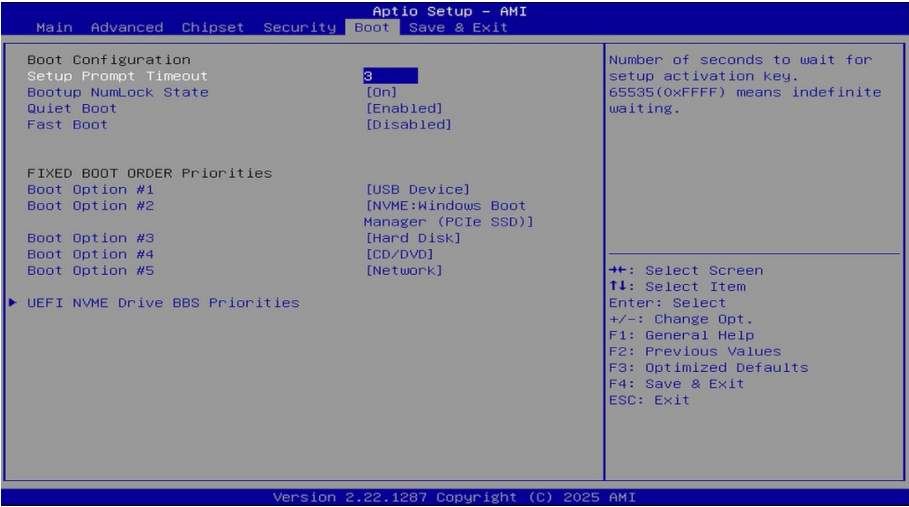


Network Stack:

Disabled: Disable PXE

Enabled: Enable PXE

5.7 BOOT Boot Configuration



Boot Configuration Function Description:

Setup Prompt Timeout: The duration of the startup logo wait period; time unit: seconds

Bootup NumLock State: The state of the NumLock key on the keyboard at startup.

Quiet Boot: "Enabled" activates the boot logo; "Disabled" disables the boot logo.

Fast Boot: "Enabled" enables fast boot; "Disabled" disables fast boot.

warn

BIOS settings directly impact your computer's performance; incorrect configuration can cause damage to the computer or even prevent it from booting

up. Please do not modify BIOS settings arbitrarily, as this may render your computer unusable.

6、 Daily usage and maintenance

1. When using the machine under normal operating conditions, please ensure it is operated in a vibration-free environment to prevent damage to the hard drive and internal components. 1. When using the machine under normal operating conditions, please ensure it is operated in a vibration-free environment to prevent damage to the hard drive and internal components.

2. When using the machine, please ensure that the ambient temperature is between-10°C and 50°C.

3. This machine utilizes a housing-based cooling system; to ensure optimal cooling performance, we strongly recommend cleaning the machine's surface every three months. In environments with high dust accumulation, we recommend cleaning the machine's surface once per month. 3. This machine utilizes a housing-based cooling system; to ensure optimal cooling performance, we strongly recommend cleaning the machine's surface every three months. In environments

with high dust accumulation, we recommend cleaning the machine's surface once per month. 3. This machine utilizes a housing-based cooling system; to ensure optimal cooling performance, we strongly recommend cleaning the machine's surface every three months. In environments with high dust accumulation, we recommend cleaning the machine's surface once per month.

4. To ensure the efficient and reliable operation of your machine, we recommend performing a disk cleanup and defragmentation on your hard drive every three months. 4. To ensure the efficient and reliable operation of your machine, we recommend performing a disk cleanup and defragmentation on your hard drive every three months.

5. When using the machine's internal slots, we strongly recommend avoiding plugging or unplugging the device while it is powered on to prevent static electricity damage. In the event of a power outage due to non-human factors, to ensure the machine continues to operate reliably, we strongly advise you to immediately disconnect the power

supply and verify that the power grid is stable before restoring power and restarting the machine. 5. When using the machine's internal slots, we strongly recommend avoiding plugging or unplugging the device while it is powered on to prevent static electricity damage. In the event of a power outage due to non-human factors, to ensure the machine continues to operate reliably, we strongly advise you to immediately disconnect the power supply and verify that the power grid is stable before restoring power and restarting the machine. 5.

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the event of a power outage due to non-human factors, to ensure the machine continues to operate reliably, we strongly advise you to immediately disconnect the power supply and verify that the power grid is stable before restoring power and restarting the machine.

6. We recommend that each machine be used exclusively for its designated purpose and be operated by a dedicated personnel member.

VII. Common Hardware Faults and Troubleshooting

Methods

order number	fault phenomenon	analysis of causes	Maintenance Method
1	The device does not turn on when the power button is pressed.	The power adapter is not supplying power.	Please securely plug in the three-core power cord or replace the socket position; Replace the power adapter;
		Mainboard damaged	Return to the factory for repair;
2	The monitor shows no image.	The signal input may not be properly connected.	Check whether the computer has booted normally; verify whether the power indicator light on the monitor is lit; check whether the display cable connections are correct;
		The monitor is in power-saving mode.	Press any key on the keyboard
3	Unable to boot into the system upon startup	Hard drive power cable or data cable damaged	Check whether the power cable and data cable for the hard drive (the hard drive must be pre-installed with a bootable operating system) are loose or disconnected.
		Hard drive system files are corrupted.	Use a bootable CD (typically the WINPE system) to boot the computer and check whether the hard drive's operating system is damaged; if necessary, it is advisable to reinstall the operating system.
4	A continuous "beep" sound occurs upon powering on.	No memory detected.	Open the chassis and re-seat the memory modules;

warn⚠

When you need to open the chassis or access the BIOS settings, non-professional users should follow the steps under the guidance of a qualified technician.

