

IFC-BOX-NS53

Book Type Controller

User Manual



For your personal safety and to avoid property damage, you must pay attention to the instructions in this manual. Instructions related to property damage are not accompanied by a warning triangle. Warning instructions are listed as follows according to the hazard level from high to low.



Indicates that if appropriate measures are not taken, the machine may be irreparably damaged.



Indicates that undesirable results or situations may occur if corresponding instructions are not paid attention to.

The products/systems covered by this document may only be operated by qualified personnel who meet all work requirements.

Its operation must comply with the instructions in the respective accompanying documents, especially the safety and warning instructions. Due to relevant training and experience, qualified personnel can perceive the risks of this product/system and avoid possible dangers.



Yanling Industrial Control products are only allowed to be used in the use cases specified in the catalog and related technical documents. If you want to use products and components from other companies, you must obtain the recommendation and permission of Yanling Industrial Control. Correct transportation, storage, assembly, installation, commissioning, operation and maintenance are the prerequisites for the safety and normal operation of the product. The permissible environmental conditions must be guaranteed. The tips in the relevant documents must be noted.

Disclaimer

Our company reserves the right to change this manual and will not notify you of any subsequent changes to the product. We are not responsible for any direct, indirect, intentional or unintentional damage or hidden dangers caused by improper installation or use.

Before ordering a product, please consult your dealer to learn in detail whether the product performance meets your needs.

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Warranty Terms:

The product warranty period is three years . If the user has other requirements, the contract signed by both parties shall prevail.

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1. Product Introduction

1.1 Product Overview

IFC-BOX-NS53 is a book-type controller. The whole machine adopts Intel's 12th generation Core i3/i5/i7 processor and supports Windows 10, Windows 11, Linux and other operating systems. It is very convenient to use.

The whole machine adopts an all-aluminum alloy structure and a fanless heat dissipation design . It has a simple structure and has good dustproof, heat dissipation, vibration resistance and EMC performance. It has high system reliability and strong environmental applicability.

1.2 Product Specifications

Machine Model	IFC-BOX-NS53
Chassis Color	Gray (color can be customized)
Chassis Material	All aluminum alloy
Processor	Onboard Intel i5-1245U (10 cores, 12 threads, maximum turbo frequency 4.4 GHz)
	Onboard Intel i7-1255U (10 cores, 12 threads, maximum turbo frequency 4.7 GHz)
Architecture	Alder Lake-U
Memory	Supports 2 DDR5 4800MHz SODIMM memory slots, up to 64 GB
BIOS	AMI UEFI BIOS
Display Chip	Integrated Intel(R) Iris(R) Xe Graphics core graphics card
Display Interface	2 DP display interfaces
Front Panel	1 power switch, 1 LAN1 indicator light, 1 hard disk indicator light, 1 CLEAR CMOS button, 2 DP display interfaces,
I/O Ports	3 I210-AT Gigabit Ethernet ports, 1 I219-LM Gigabit Ethernet port, 4 USB3.0 ports, 1 4Pin power supply Phoenix terminal
Extensible Interface	Support 1 Mini PCIE (support PCIE and USB2.0 signals, optional 4G/WIFI/Bluetooth), with SIM card holder
Network Interface	3 I210-AT Gigabit Ethernet ports, 1 I219-LM Gigabit Ethernet port
Storage Interface	Supports 1 M.2 slot (M-Key 2280 supports SATA SSD and NVME SSD (X 1speed)) Support 1 MSATA slot (support SATA SSD)

Power Supply	DC 12~24V wide voltage input
Product Size	205 * 146 * 50 mm
Machine Weight	1.54 kg (bare system)
Application Areas	Industrial automation, machine vision, medical, logistics and transportation, warehousing

2. Application Planning

2.1 Transportation

Packaged products can be transported to any location by any means of transportation. They must not be loaded in open cabins or carriages during long-distance transportation, nor stored in open warehouses during transit. During transportation, they must not be shipped in the same vehicle (or other means of transportation) with flammable, explosive, or corrosive items, and the products must not be exposed to rain, snow, or liquid substances, or mechanical damage.

2.2 Storage

The product should be stored in the original packaging box. The ambient temperature of the warehouse where the product is stored should be 0℃ ~ 40℃ and the relative humidity should be 20% ~ 85%. No harmful gases, flammable and explosive products and corrosive chemicals are allowed in the warehouse, and there should be no strong mechanical vibration, impact and strong magnetic field. The packaging box should be at least 10cm above the ground and at least 50cm away from the wall, heat source, cold source, window or air inlet .

The device in cold weather , be aware of extreme changes in temperature. In this case, make sure that no water droplets (condensation) have formed on or inside the device. If condensation has formed on the device, wait at least 12 hours before switching on the device.

2.3 Unpacking and Inspecting Delivered Equipment

Please pay attention to the following points when unpacking the device:

- It is recommended that you do not discard the original packaging materials . Please keep the original packaging materials for use when transporting the device again.
- Please store the document in a safe place ; it will be required for initial commissioning of the device .
- Inspect the delivered equipment for any obvious damage that may have occurred during transportation.
- Verify that the shipment contains the complete device and any accessories you ordered separately. If

there is any discrepancy or shipping damage, please contact Customer Service.

2.4 Installation

■ Wall-mounted ■ Guide rail installation □ Embedded □ VESA standard

3. Device Connection

3.1 Precautions before Connection

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Connected or built-in peripherals must not be connected to devices with opposite polarity.

 warn

This device can only be operated on a grounded power supply network . It is prohibited to operate it on an ungrounded power supply network .

 warn

The rated voltage of the device used must comply with the power supply characteristics of this product.

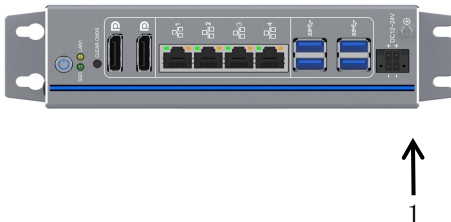
 Notice

Only connect peripheral devices approved for industrial applications. Hot-swappable I/O can be connected while the machine is running.

Modules (USB) , I/O devices without hot-swap functionality can only be connected after the device is disconnected from the power supply.

3.2 Connect the Device to the Power Supply

To connect the device to a Power	Schematic diagram
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source	
<p>Connect the DC 12 V power adapter to the power input port 1 , and then press the power switch button on the front panel of the device. The device starts and the blue power light turns on.</p>	



warn

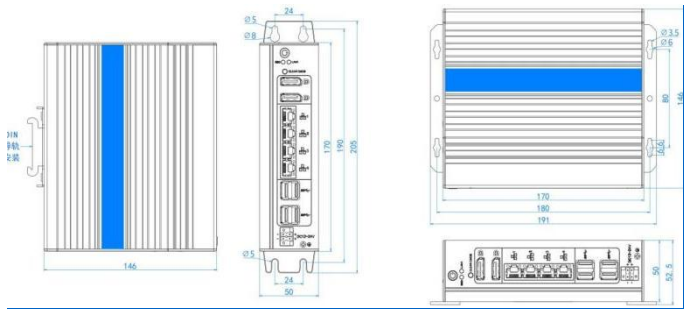
The on/off button signal does not cut off the PC power!

4. Instructions

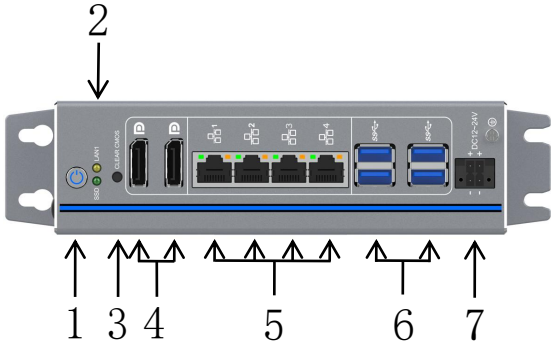

4.1 Product Appearance



4.2 Product Dimensions



4.3 External Interface

Machine Front View	Serial Number	Interface Name
 <p>Diagram showing the front view of the machine with numbered callouts 1 through 7 pointing to various components:</p> <ul style="list-style-type: none">1: Power switch2: LAN1 indicator light and hard disk indicator light3: CLEAR CMOS button4: DP display interfaces5: Gigabit Ethernet ports6: USB 3.0 ports7: Power supply Phoenix terminal	1	1 power switch
	2	1 LAN1 indicator light 1 hard disk indicator light
	3	1 CLEAR CMOS button
	4	2 DP display interfaces
	5	4 Gigabit Ethernet ports
	6	4 USB 3.0 ports
	7	1 4Pin power supply Phoenix terminal
Remark: The orange light above is the LAN1 indicator The green light below is the hard disk indicator		

4.4 Status Indicator

Show	Meaning	LED	Describe
POWER	Machine status display	Not bright	The device is turned off or the power is disconnected
		Always on	Machine running

4.5 Installing Internal Accessories

1. Remove the bottom cover , install the memory, hard disk , WIFI module, and other accessories (as shown below), cover the bottom cover , and lock the four silver M3X6 cross countersunk screws.



2. Remove the bottom cover, install the memory cooling pad (as shown below), cover the bottom cover, and lock the four silver M3X6 cross countersunk screws.



Dual memory

Single memory




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This operation is only suitable for customers who have purchased the IFC-BOX-NS53 barebone system.

Customers who have already installed the internal accessories should not disassemble the chassis at will.

4.6 Pin Definition:

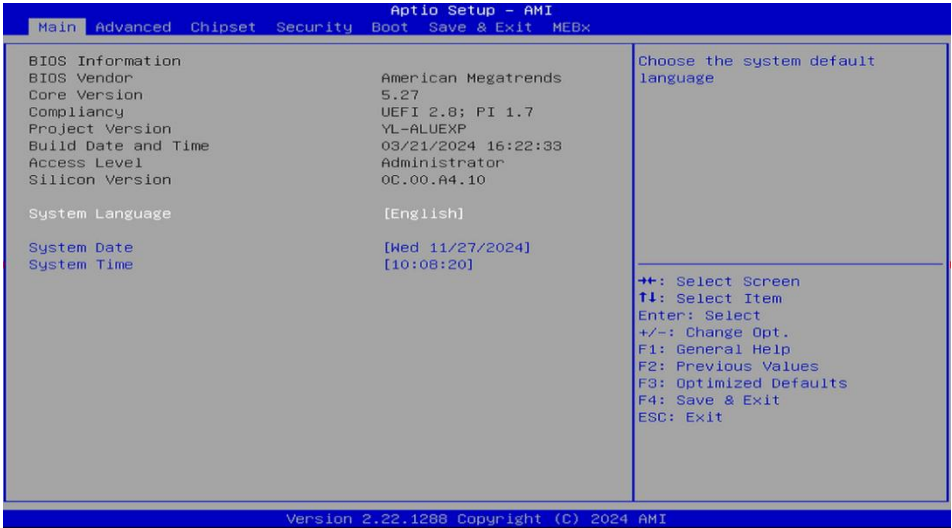
JP/CN	pin#	Signal	pin#	Signal	Remark
FP1	1	HDD LED+	2	PWR LED+	6-8: Switch 5-7: Reboot
	3	HDD LED-	4	PWR LED-	
	5		6	PWRSW	
	7	Reset	8	GND	
	9	NC	10		
JP/CN	pin#	Signal	pin#	Signal	Remark
COM1/COM2	1	DCD/485-	2	RXD/485+	BIOS select RS232/RS485
	3	TXD	4	DTR	
	5	GND	6	DSR	
	7	RTS	8	CTS	
	9	RI	10		
JP/CN	pin#	Signal	pin#	Signal	Remark
JP4	1 -2	default	twenty	Power on and	2-3 Power-on
JP/CN	pin#	Signal	pin#	Signal	Remark
GPIO1	1	GND	2	5V	
	3	GPIO1	4	GPIO2	
	5	GPIO3	6	GPIO4	
	7	GPIO5	8	GPIO6	
	9	GPIO7	10	GPIO8	
JP/CN	pin#	Signal	pin#	Signal	Remark
GPIO2	1	GND	2	5V	
	3	GPIO9	4	GPIO10	
	5	GPIO11	6	GPIO12	
	7	GPIO13	8	GPIO14	
	9	GPIO15	10	GPIO16	
JP/CN	pin#	Signal	pin#	Signal	Remark
CPU_FAN	1	GND	2	12V	
	3	FAN_TAC1	4	FAN_PWM1	
JP/CN	pin#	Signal	pin#	Signal	Remark
USB3	1	VCC	2	VCC	
	3	USBD_D-	4	USBD_D-	
	5	USBD_D+	6	USBD_D+	
	7	GND	8	GND	
	9	CUT AWAY	10	GND	

 **Notice** The identification method of the starting pin 1 among the pins on the motherboard is: 1. There is a white bold silk screen mark or arrow mark; 2. The pin seen on the back of the motherboard is a square hole.



4.7 BIOS Settings

The BIOS setup menu is divided into the following options (for specific BIOS settings, please consult the Yanling Industrial Control + customer service hotline):



Main: View BIOS information


Advanced: BIOS option settings

C hipset: display settings and audio settings

Security: Security settings

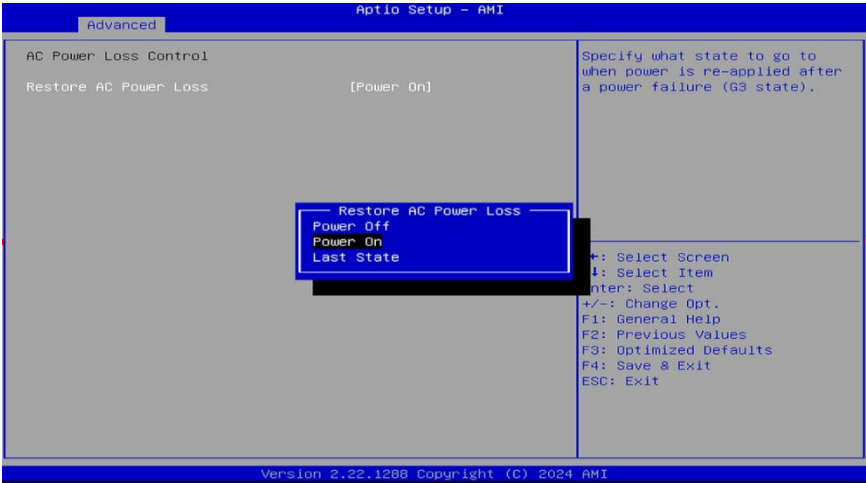
Boot: Boot option settings

Save & Exit: Save & exit BIOS settings

 **warn** Please do not change the BIOS settings at will to avoid causing the machine to malfunction.

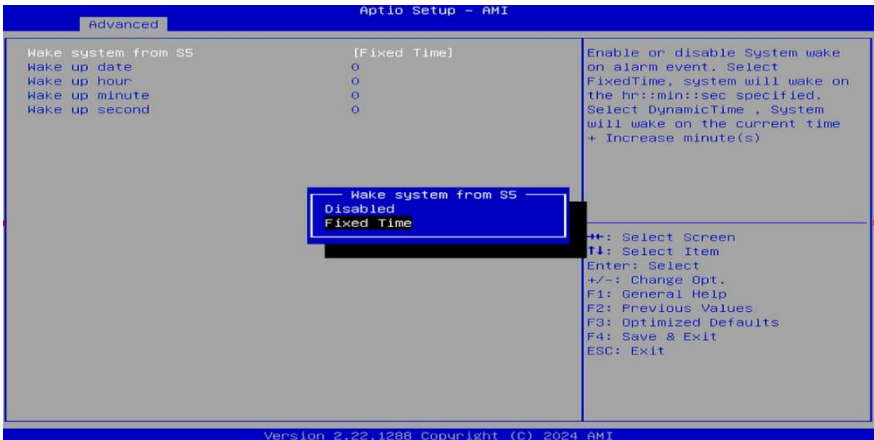
4.7.1 Power-on Auto-Start Function Setting

Enter the BIOS setup interface, select < Advanced > →< IT8786 Super IO Configuration > → <AC Power Loss Control> , set the options, select "Power ON" to enable the power-on function when the incoming call is received, and change to "Power Off" to disable the power-on function when the incoming call is received .



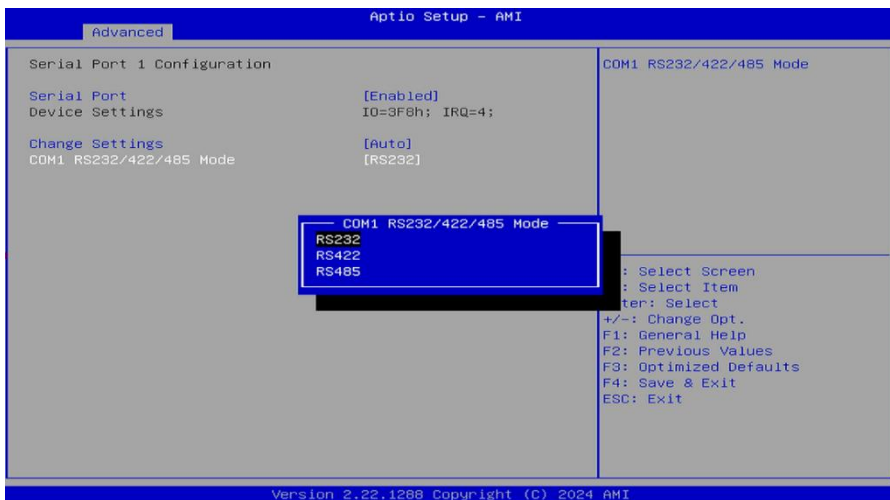
4.7.2 Timing Power-on Function Setting

Enter the BIOS setup interface, select < Advanced > → < S5 RTC Wake Settings > → <Wake system from S5 >, and select the setting item in the pop-up box, as shown below:



4.7.3 COM Port Mode Setting

Enter the BIOS setup interface, select <Advanced> → <IT8786 Super IO Configuration> → <Serial Port 1/2 Configuration> , set the <COM Port Mode> item as follows:



5. Daily Use and Maintenance

1. When the machine is in normal use, please ensure that the machine works in a non-vibrating environment to avoid damage to the hard disk and internal accessories.
2. When using the machine, please note that the ambient temperature should be between -20 °C and 50 °C.
3. This machine uses casing heat dissipation. In order to ensure the heat dissipation effect of the machine, we strongly recommend that you clean the surface of the machine regularly every three months. In a dusty environment, it is recommended to clean the surface of the machine once a month.
4. To ensure efficient and reliable operation of the machine, we recommend that you clean and defragment the hard disk regularly every three months.
5. When using the internal slots of the machine, we strongly recommend that you do not plug or unplug while the power is on to avoid static electricity damage. When the machine encounters a power outage due to non-human factors, in order to ensure that the machine can work normally and reliably, we strongly recommend that you immediately disconnect the power supply of the machine and make sure that the power grid is stable before powering it on;
6. We recommend that the machine be used exclusively by a dedicated person.

6. Common Hardware Failures and Troubleshooting Methods

Serial Number	Fault Phenomenon	Cause Analysis	Repair Method
1	The device does not turn on after the power button is triggered	The power adapter is not supplying power	It is recommended to plug in the three-core power cord tightly or change the socket hole position; Replace the power adapter;
		Motherboard damage	Return to factory for repair;
2	No image on the monitor	Maybe the signal input is not connected properly.	Check whether the computer starts normally; check whether the running light in front of the monitor is on; check whether the display part connection cable is correct;
		The display is in "power saving" mode	Press any key on the keyboard
4		The hard disk power cable or data cable is damaged.	Check whether the power cable and data cable of the hard disk (the hard disk must have been installed with the system and can be booted) are loose or not .
		Hard disk system files are damaged	Use a bootable CD to enter the system (usually WINPE system) and check whether the hard disk system is damaged. If necessary, it is best to reinstall the system.
5	There is a continuous "beeping" sound after turning on the machine	No memory detected	Open the computer case and re-insert the memory.



warn

When it is necessary to open the computer case or enter the BIOS settings, non-professionals should follow the steps under the guidance of a technician.