# IFC-BOX-NS33

## Product User Manual

**The 12th generation Intel Alder Lake N100**
**quad-core processor**


Low power consumption fanless embedded machine

Ver: 1.0

In order to protect your personal safety and avoid property damage, you must pay attention to the tips in this manual. Tips related to property damage do not carry warning triangles. Warning tips are shown below according to the risk level from high to low.

**⚠warn**

Indicates that failure to take appropriate action may result in irreparable damage to the machine.

**⚠pay attention to**

Indicates that failure to pay attention to the corresponding prompt may result in undesirable results or states.

The products/systems covered by this document are only allowed to be operated by qualified personnel who meet the requirements of the work.

Its operation must be in accordance with the accompanying documentation, especially the safety and warning instructions. Qualified personnel can detect the risks of this product/system and avoid possible hazards due to relevant training and experience.

**⚠warn**

IFC products are only permitted for use as specified in the catalog and related technical documents. If other company products and components are to be used, approval and permission from IFC are required. Proper transportation, storage, assembly, fitting, installation, commissioning, operation, and maintenance are prerequisites for the safe and normal operation of the product. The required environmental conditions must be ensured. Attention should be paid to the instructions in the relevant documents.

**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.



**Warranty Terms:**

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

# Catalogue

## 1. PRODUCT INTRODUCTION

IFC-BOX-NS33 is a miniature low-power embedded computer. The whole machine uses the 12th generation Intel Alder Lake N100 quad-core processor, onboard TPM2.0 security encryption, supports Windows 10, Windows 11, Linux and other operating systems, hard disk support M.2 and 2.5 inch hard disk position, very convenient to use.

The whole machine is formed by full aluminum alloy mold, with simple structure, good dustproof, heat dissipation, anti-vibration and EMC performance, high system reliability, strong environmental adaptability.

# 2. EQUIPMENT CONNECTION

## 2.1 Precautions before connection

**⚠warn**

Peripheral devices that are connected or built in shall not be connected to devices with opposite polarity.

**⚠warn**

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

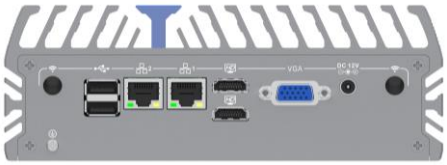
**⚠warn**

The rated voltage of the equipment used must conform to the power characteristics of this product.

**⚠pay attention to**

Only approved peripheral devices suitable for industrial applications can be connected. When the machine is running, hot-plug I/O modules (USB) can be connected. I/O devices without hot-plug function can only be connected after the device is disconnected from power.

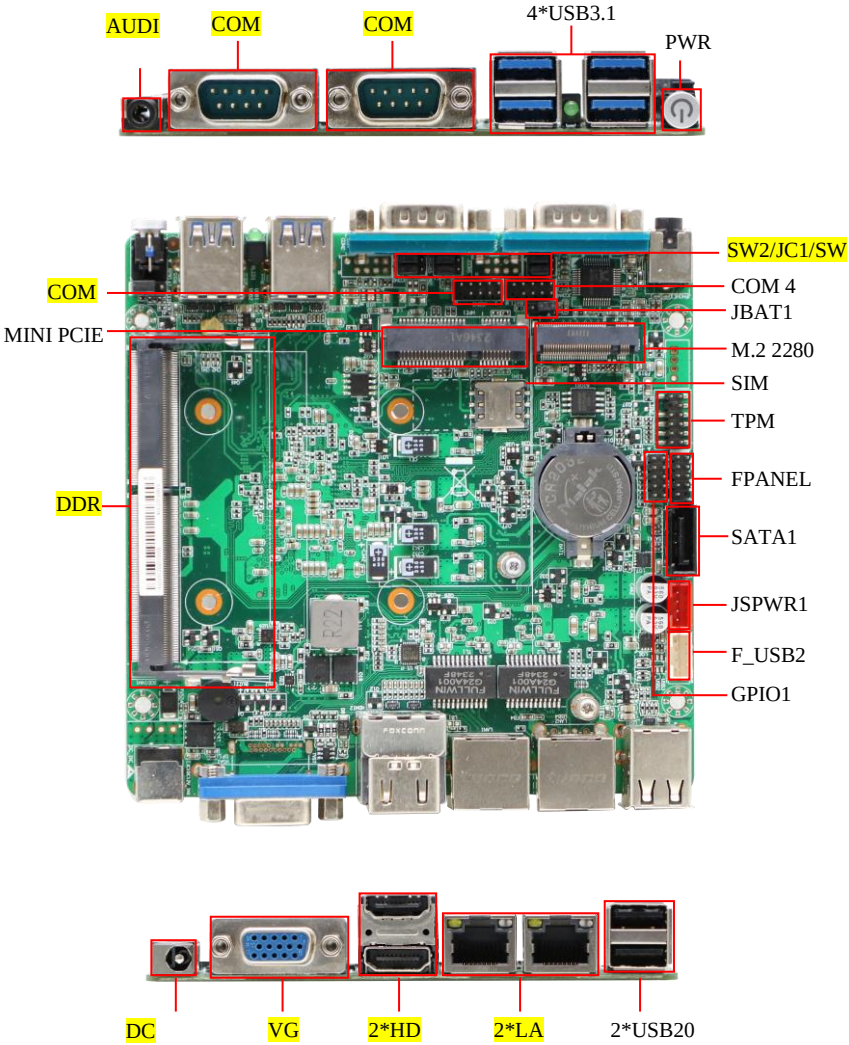
## 2.2 Connect the device to the power supply

| The steps to connect the device to the power supply | diagrammatic sketch |
| --- | --- |
| Connect the DC 12V power adapter to the power input interface ①, and then press the power switch button on the front panel of the device. The device starts up, and the blue power light is on. |  1 |

**⚠warn**

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

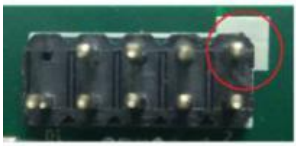
# 3. DEFINITION OF MOTHERBOARD INTERFACE

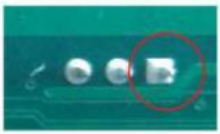



Note: The above location map may differ from your motherboard layout for reference only

Note: The identification method of the first pin 1PIN on the motherboard is as follows:

1 There is a white bold silk printing mark or arrow mark; 2 The pins seen on the back of the motherboard are square holes.





FPANEL

| 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 | |

F_USB2

| Signal name | pin |
|---|---|
| VCC | 1 |
| USB Data - | 2 |
| USB Data + | 3 |
| GND | 4 |

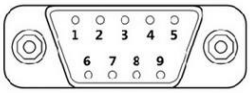
JBAT1

| pin | Signal name |
|---|---|
| 1-2 | NC |
| 2-3 | Clear CMOS |

COM3 /COM4

| Signal name | pin | pin | Signal name |
|---|---|---|---|
| DCD | 1 | 2 | RXD |
| TXD | 3 | 4 | DTR |
| GND | 5 | 6 | DSR |
| RTS | 7 | 8 | CTS |
| RI | 9 | 10 | NC |

COM DB9

| pin | RS232 | RS485 | |
|---|---|---|---|
| 1 | DCD | TX- |  |
| 2 | RXD | TX+ | |
| 3 | TXD | | |
| 4 | DTR | | |
| 5 | GND | GND | |
| 6 | DSR | | |
| 7 | RTS | | |
| 8 | CTS | | |
| 9 | RI | | |



SW2/JC1/SW1 COM1/COM2 RS232/RS485

| **joggle** | **pattern** | **JRS485 Set SW1** | **JC1 Settings** | **definition** |
|---|---|---|---|---|
| COM1 | RS232 | 1-3Pin ,2-4Pin (give tacit consent to) | 1-3Pin (give tacit consent to) | COM1 pin 2 is (RXD)<br>COM1 pin 3 is (TXD) |
| | RS485 | 3-5Pin ,4-6Pin | 3-5Pin | COM1 pin 1 is (A)<br>COM1 pin 2 is (B) |

| jogg le | pattern | JRS485 Set SW2 | JC1 Settings | definition |
|---|---|---|---|---|
| CO M2 | RS232 | 1-3Pin ,2-4Pin (give tacit consent to) | 2-4Pin (give tacit consent to) | COM2 pin 2 is (RXD)<br>COM2 pin 3 is (TXD) |
| | RS485 | 3-5Pin ,4-6Pin | 4-6Pin | COM2 pin 1 is (A)<br>The second pin of COM2 is (B) |

SATA1

| pin | Signal name |
|---|---|
| 1 | GND |
| 2 | SATA TXP |
| 3 | SATA TXN |
| 4 | GND |
| 5 | SATA RXP |
| 6 | SATA RXN |
| 7 | GND |

SATAPWR

| pin | Signal name |
|---|---|
| 1 | +12V |
| 2 | GND |
| 3 | GND |
| 4 | +5V |

CPU FAN1

| pin | Signal name |
|---|---|
| 1 | GND |
| 2 | VCC +12V |
| 3 | FG (speed measurement signal) |
| 4 | PWM |

GPIO1

| Signal name | pin | pin | Signal name |
|---|---|---|---|
| GND | 1 | 2 | +5V |
| GPO1 | 3 | 4 | GPI1 |
| GPO2 | 5 | 6 | GPI2 |
| GPO3 | 7 | 8 | GPI3 |
| GPO4 | 9 | 10 | GPI4 |

JPWR1

| pin | Signal name |
|---|---|
| 1-2 | NC |
| 2-3 | AUTO-ON |

**⚠warn**

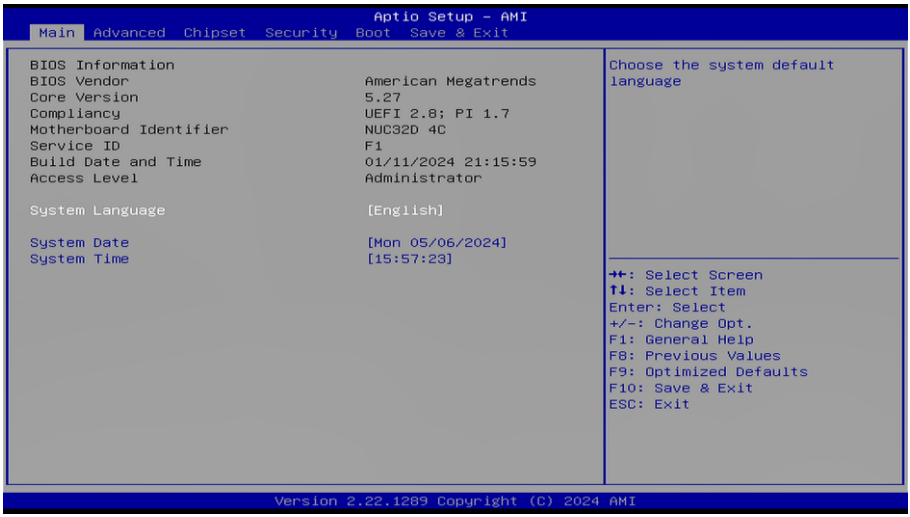
The internal wiring of the machine has been installed, and the wire plug and screw have been fixed with glue. Please do not disassemble the motherboard or jump the wires at will to avoid damage to the motherboard.

# 4. BIOS SETTINGS

BIOS brief introduction

BIOS (Basic Input and Output System) stores the most critical programs for basic input and output, self-check upon startup, and system boot-up. It can read and write specific system settings from the CMOS. Its primary function is to provide the lowest-level and most direct hardware configuration and control for the computer. Since product BIOS updates and optimizations are not scheduled, the setup interface may vary slightly; the following interface is for reference only.

The BIOS Settings menu is divided into the following options (please consult the Railing Industrial Control customer service hotline for specific BIOS Settings):




After the device is started, press "Delete" to enter the BOIS setting interface

Main: BIOS information and date and time

Advanced: BIOS advanced menu Settings

Chipset: Chipset Settings

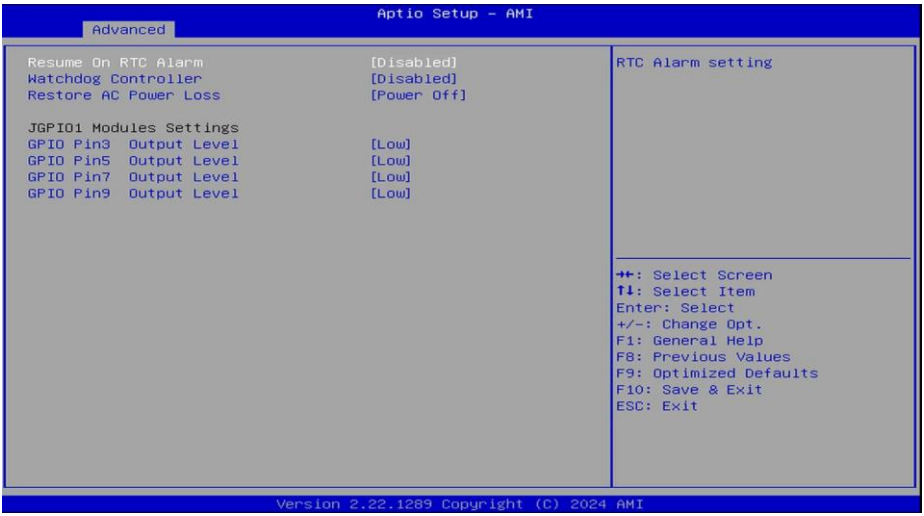
Security: Security Settings

Boot: Boot options Settings

Save & Exit: Save and exit the BIOS Settings

## 4.1 Power on and start the device Settings

"Advanced" to "OnBoard Misc.Features" to "Restore AC Power Loss", as shown in the figure below




**Restore AC Power loss Function description:**

Power Off: After the device is connected to 12V power supply, press the power button to start up.

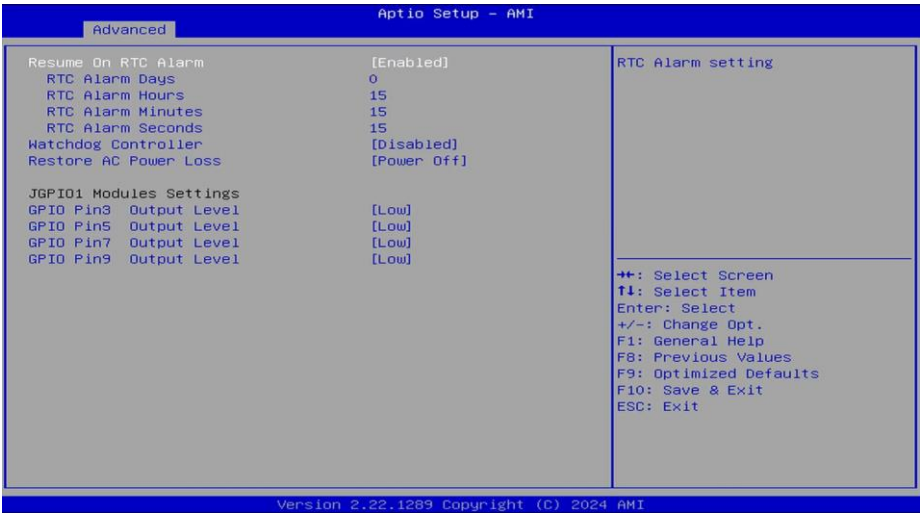
Power On: The device will automatically start up after the 12V power supply is connected.

Last State: After the equipment is connected to 12V power supply, it will be powered on or not according to the status value of the last equipment.

## 4.2 Set the timing of startup

”Advanced” → ”OnBoard Misc.Features” → ”Resume On RTC Alarm”

See figure below




**RTC Wake Up Function description:**

Enabled: Enable

Disabled: Disabled

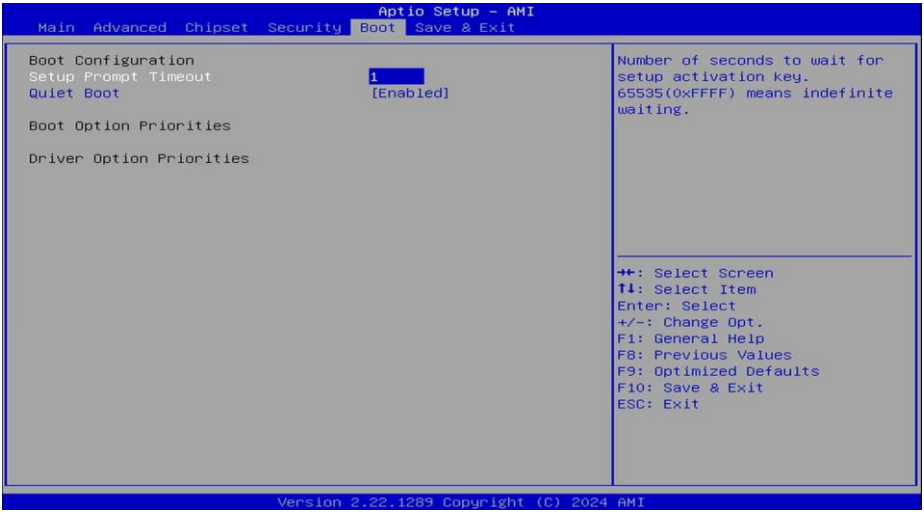
RTC Alarm Days: The wake-up time unit is per day.

RTC Alarm hours: The wake-up time is measured in hours.

RTC Alarm Minutes: The wake-up time is measured in minutes.

RTC Alarm Seconds: The wake-up time unit is in seconds.

## 4.3 BOOT startup configuration




**Boot Configuration Function description:**

Setup Prompt Timeout: The duration of the LOGO waiting when the machine is turned on. The time unit is in seconds.

Quiet Boot: "Enabled" opens the boot LOGO, "Disabled" closes the boot LOGO.

**⚠warn**

The setting of BIOS directly affects the performance of the computer. Setting the wrong parameters will cause damage to the computer, and even cannot be turned on. Please do not change the BIOS Settings at will, so as to avoid the machine can not be used normally.

## 5. DAILY USE AND MAINTENANCE

1. When the machine is in normal use, please ensure that the machine works in a non-vibration environment, To avoid damaging the hard disk and internal components.

2. When using the machine, please pay attention to the ambient temperature between-10℃ and 50℃.

3. This machine adopts shell heat dissipation. In order to ensure the heat dissipation effect of the machine, we strongly recommend it It is recommended that you clean the surface of the machine every three months when there is a lot of dust It is recommended to clean the machine surface once a month in the environment.

4. In order to ensure the efficient and reliable operation of the machine, we recommend that you regularly check it every three months Run a disk cleanup and disk defragmentation on the hard disk.

5. When using the internal slot of the machine, we strongly recommend that you do not plug and unplug it with power on to avoid Cause static damage. When the machine encounters a power failure for reasons other than human, in order to ensure If the machine works normally and reliably, we strongly recommend that you immediately power the machine Disconnect, confirm the stability of the power grid and then connect to the operation;

6. We suggest that the machine be dedicated to a specific machine and managed by a specific person.

## 6. COMMON FAULTS AND TROUBLESHOOTING METHODS OF EQUIPMENT

### Hardware faults and troubleshooting methods

1. The device cannot be started

Cause of failure: power failure, motherboard failure, loose memory stick, etc.

Elimination method:

- Check whether the power adapter is working properly and whether the plug is loose.
- Check if the power indicator light on the motherboard is on.
- Reinsert the memory module and make sure it is securely installed.

2. The display has no signal

Cause of failure: Loose or damaged display cable.

Elimination method:

- Check that the graphics card is securely plugged in.
- Check whether the monitor cable is loose or damaged.
- Replace the display cable and test.

### Software faults and troubleshooting methods

1. The system cannot be started

Cause of failure: The operating system is damaged and the boot guide file is lost.

Elimination method:

- Use system repair tools (such as Windows startup repair).
- Use the system installation disk to reinstall the operating system.

2. Blue screen

Cause of failure: driver conflict, hardware failure, software compatibility problem.

Elimination method:

- Check recently installed software and uninstall software that may cause conflicts.

3. The system runs slowly

Cause of failure: excessive system resource usage, malicious software, and too many hard disk fragments.

Elimination method:

- Use the Task Manager to view system resource usage and terminate high-usage processes.
- Run anti-virus software to check and clean up malware.
- Run the disk defragmentation tool to defragment the hard disk.

4. The application cannot be started

Cause of failure: software damage, missing system files.

Elimination method:

- Reinstall the application that cannot be started.
- Use a system file checker tool (such as Windows's SFC command) to fix the system files.