HT690-4 NUC motherboard

Tips for Safe Use

1、 Before using this product, please read the product instructions carefully.
2、 Uninstalled circuit boards should be stored in anti-static protective bags.
3、 Before removing the circuit board from the anti-static protective bag, place your hands on a grounded metal object for a short while (e.g., 10 seconds) to discharge static electricity from your body and hands.
4、 When handling the board, wear electrostatic protective gloves and develop the habit of only touching its edges.
5、 To prevent electric shock or product damage, always disconnect the AC power supply before removing, inserting, or reconfiguring the circuit board.
6、 Before moving the circuit board or the entire machine, the AC power must be turned off first.
7、 When adding or removing circuit boards for complete equipment, always disconnect the AC power supply first.
8、 Always turn off the AC power before connecting or unplugging any device.
9、 To prevent unnecessary damage to the product from frequent power cycles, wait at least 30 seconds after power-off before restarting.

Order details:

order number	model	CPU	Number of nuclei	frequency	TDP	internal storage	HDMI	VGA	LAN	USB	PS2	LPT	COM/485	POWER
1	HT690-4 VER1.0	N95	4	Up to3.4G	15W	DDR4	1	1	2	7	/	/	2 / 2	12V
2	HT690-4 VER1.0	N100	4	Up to3.4G	6W	DDR4	1	1	2	7	/	/	2 / 2	12V
3	HT690-4 VER1.0	N200	4	Up to3.7G	6W	DDR4	1	1	2	7	/	/	2 / 2	12V
4	HT690-4 VER1.0	I3-N305	8	Up to3.8G	15W	DDR4	1	1	2	7	/	/	2 / 2	12V

1、Product Introduction

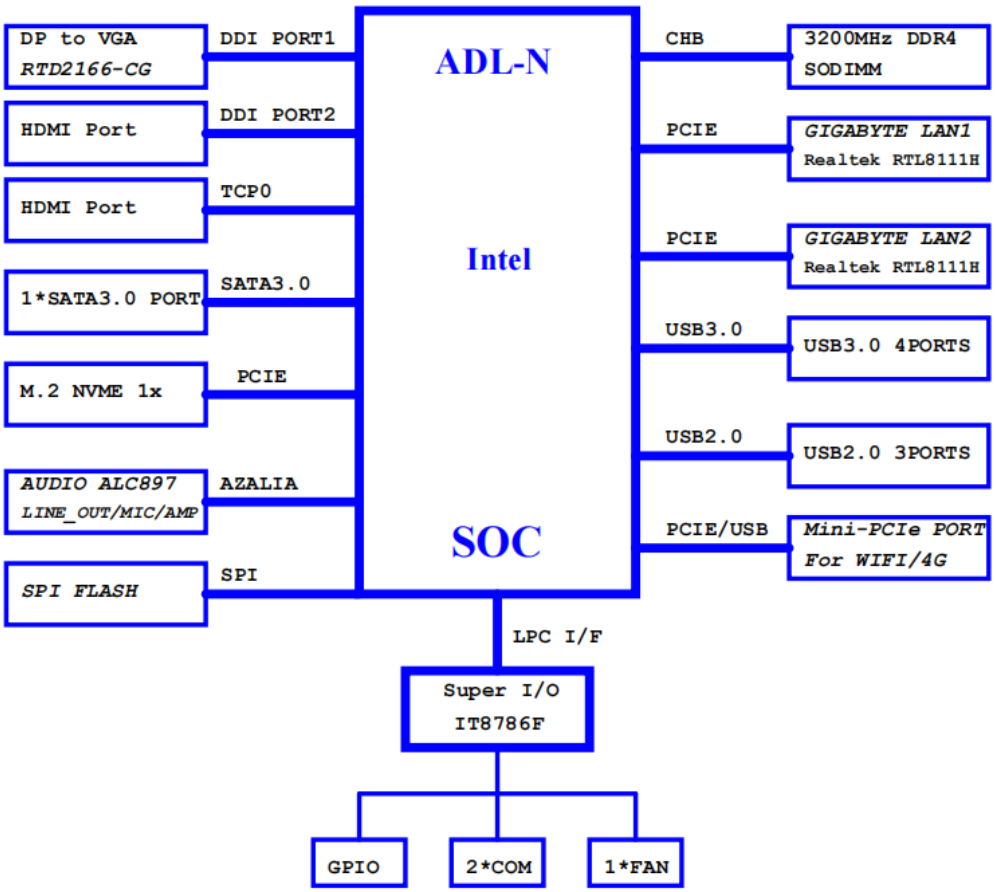
The HT690-4 is an industrial-grade NANO multi-network motherboard supporting all Intel® Alder Lake CPU series, widely applicable in soft routing, cybersecurity, industrial control, and cloud terminal applications.

The HT690-4 motherboard features include:

1. Featuring an Intel® Celeron N100 quad-core processor with 0.8GHz clock speed, it is fully compatible with the entire Intel® Alder Lake CPU series.
2. 1* SODIMM slot with single-channel 3200MHz DDR4 memory, supporting up to 16GB.
3. Supports VGA, DP (optional), HDMI1, and HDMI2 (optional), with up to three display options available.
4. Supports dual Realtek Gigabit Ethernet ports;
5. Supports 1 Mini-PCIe (WIFI/4G) and 1 M.2 Key-M 2280/2242 PCIE/SATA SSD.
6. Supports 4 USB 3.1 ports and 3 USB 2.0 ports.
7. It features 2 RS232 serial ports and 2 RS485 ports, with optional support for up to 4 RS232 ports.

8. The fanless cooling system allows for a fully enclosed design, effectively preventing dust and moisture ingress.
9. Supports wide temperature operation from-10 to 60 degrees Celsius
10. Supports AT and ATX mode switching with 12V DC power supply.

2、Mainboard diagram



3、Mainboard specifications

project	description
processor	Equipped with an Intel® Celeron N100 quad-core processor running at 0.8GHz, with a Thermal Design Power (TDP) of 6W. Compatible with the full Intel® Alder Lake CPU series
internal storage	1* SODIMM slot, single-channel 3200MHz DDR4 memory, supports up to 16GB
show	Intel® UHD Graphics Super Core graphics card
	1 HDMI port (4K 60Hz) and 1 VGA port Supports HDMI1 and VGA synchronous/asynchronous display (optional: HDMI1/HDMI2, DP/VGA)
network	2* Realtek Gigabit Ethernet Card with network wake-up/PXE support
memory	1* 7-pin SATA3.0 hard drive interface with 6Gbps transfer rate
	1* M.2 Key-M 2280/2242 Adaptive PCIE/SATA SSD Slot
audio	Board-mounted AL897 7.1-channel high-fidelity audio controller with MIC/Line-out support

HT690-4 NUC motherboard

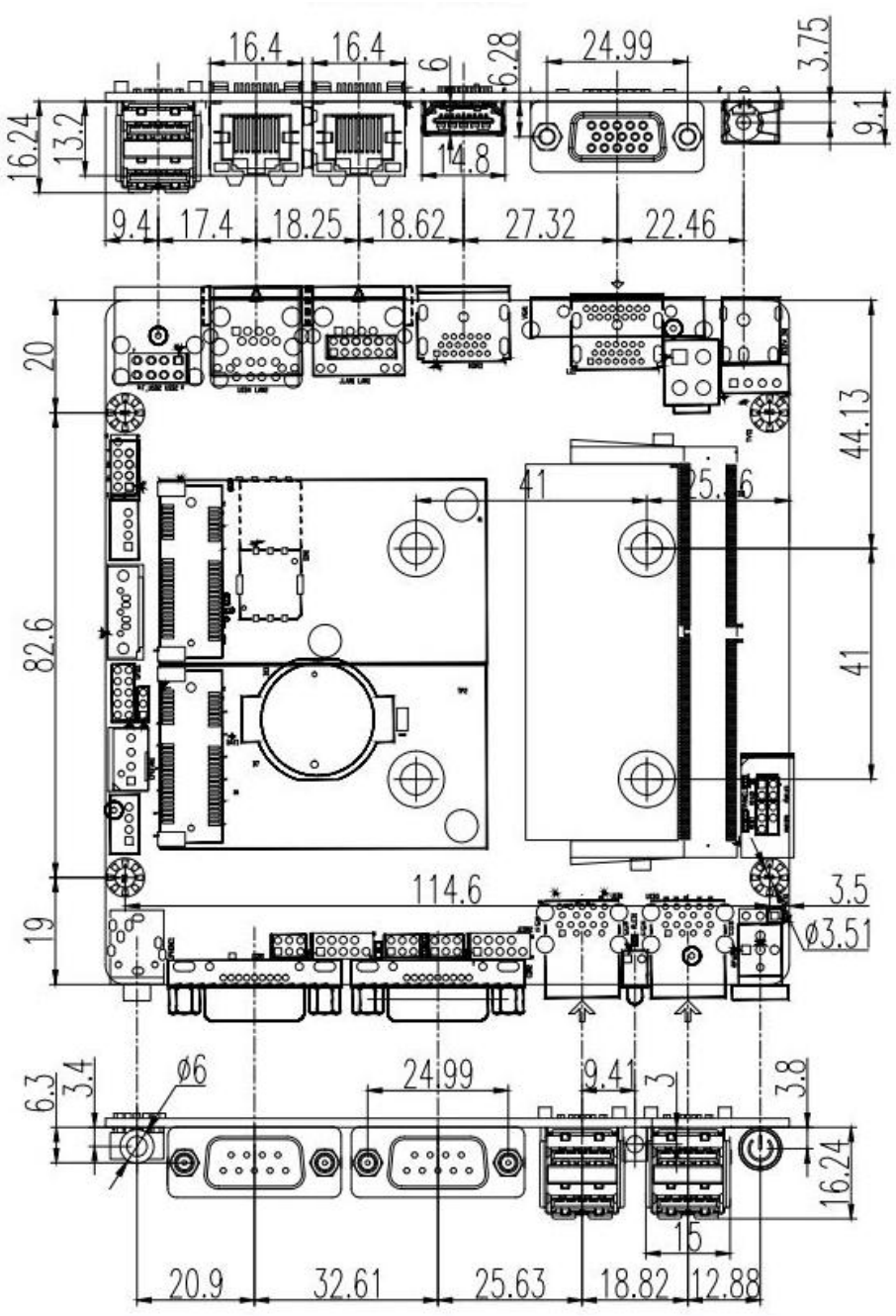
frequency	
Expansion slot	1* Mini-PCIe slot with 4G module and WIFI support
post I/O interface	2* Realtek RJ45 network interface
	2 USB 2.0 ports
	1* HDMI display port
	1* VGA display interface
	1* 12V DC power input interface
pre I/O interface	4 USB 3.1 ports
	1* 3.5mm standard audio jack with Line-out microphone support
	2× DB9 RS232 serial ports (default: two RS232 ports; COM1/2 supports RS485 via jumper)
	1* Hard drive indicator light
	1* Clear COMS button switch
	1* Power light switch button
Built-in I/O interface	1* USB 2.0 1*4-pin port
	1* TPM2.0 interface 2*6-pin
	1* 1*4-pin amplifier interface (default unmountable, supports 2W/5Ω)
	1* Hard disk power supply interface
	1* 4-pin small white power connector
	1* 2*5-pin GPIO
	1* Front panel switch button and indicator light interface 2*5-pin
Fan interface	Back-mounted CPU with fanless cooling design, featuring a 1×4-pin CPU fan interface
GPIO	Supports 4-channel GPIO input/output
BIOS	128Mb Flash ROM
watchdog	Support hardware reset (256 levels, 0–255 seconds)
operating system	Windows 10/Windows 11/Linux
Power source type	Powered by a DC 12V power supply
working temperature	-10℃～60℃
storage temperature	-20℃～70℃
working humidity	Relative humidity of 5%-95%, no condensation

HT690-4 NUC motherboard

size	120mm x 120mm

Please note: The above is the front view of the HT690-4 VER1.0. Images for other models may differ.

The image can be zoomed in for viewing. All pins are marked with red triangles.



The above is the size diagram of HT690-4 VER1.0

IV. Mainboard Installation

Security note:

- Before installation, do not arbitrarily remove the serial number or the dealer warranty label from the motherboard, as this may affect the warranty period determination.
- Before installing or removing the motherboard and other hardware devices, make sure to turn off the power and unplug the power cord from the socket.
- When installing other hardware devices into the sockets on the motherboard, ensure the connectors and sockets are securely fastened.
- When handling the motherboard, avoid touching the metal wiring to prevent short circuits.
- Wear an anti-static wristband when handling the motherboard, CPU, or memory modules. If you don't have one, ensure your hands are dry and touch a metal object to discharge static electricity.
- Before installing the motherboard, place it in an anti-static mat or bag.
- When unplugging the power connector from the motherboard, ensure the power supply is turned off.
- Before powering on, ensure the power supply voltage matches the standard value for your window.
- Before powering on, ensure all hardware devices are properly connected with their cables and power cords.
- Do not let screws touch the circuitry or components on the motherboard to prevent damage or malfunction.
- Ensure there are no screws or metal parts left on the motherboard or inside the computer case.
- Do not place the computer on an unstable surface.
- Do not place the computer in a hot environment.
- If the power is on during installation, it may cause damage to the motherboard, other devices, or even you.
- If you are unfamiliar with the installation process or encounter any technical issues with this product, please consult a professional technician.

Memory installation

The motherboard features a 260-pin DDR4 SO-DIMM memory slot.

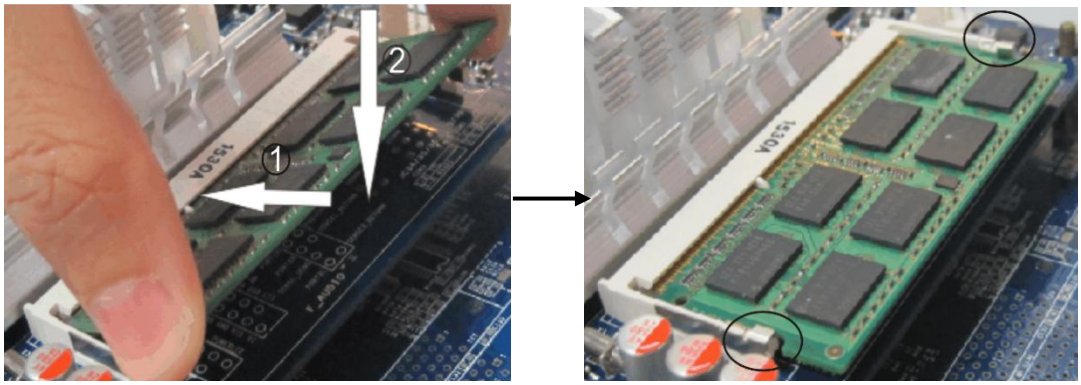
Before installing memory, note the following:

1. First, verify that the memory you purchased matches the specifications supported by this motherboard.
2. Before installing or removing memory, ensure the computer is powered off to avoid damage.
3. The memory design includes anti-misalignment markers. If inserted incorrectly, the memory will not be inserted. Change the insertion direction immediately.

Install memory:

1. Before installing or removing the memory, first turn off the power and unplug the AC power cord.
2. Hold the memory module firmly at both ends, avoiding contact with the metal contacts.
3. Align the gold fingers of the memory module with the slot, ensuring the concave part of the gold fingers matches the convex part of the slot.
4. Insert the memory module at a 30-degree angle into the slot, then press it down until a "click" sound is heard, indicating successful installation and readiness for use. (Note: Do not press the module too hard to avoid damage.)
5. To remove the memory module, simultaneously push the latches on both ends of the DIMM slot outward, then extract the module.

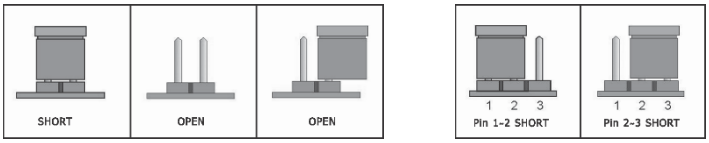
The installation diagram is for reference only:



5. jumper setting

Jumpers

Two-pin connector: Insert the jumper cap between the two pins to create a short circuit.
Three-pin connector: The jumper cap can be inserted into pins 1-2 or 2-3 to create a short circuit.



How to identify the first pin position of a jumper?

1. Carefully inspect the motherboard. Any pin labeled "1" or marked with a thick white line is designated as the pin 1 position.
2. Examine the backside pads, where square pads are typically the first pin.

Clear CMOS Pin: The motherboard features a 1×3-pin Clear CMOS connector (JBAT1). This pin controls CMOS content clearing/retention settings (pin spacing: 2.0 mm). The CMOS module is powered by the onboard button battery. Clearing CMOS permanently erases previous system configurations and resets them to factory defaults. Procedure: (1) Power off the computer; (2) Short-circuit JBAT1 pins 2-3 for approximately 5 seconds; (3) Power on the computer; (4) Press the on-screen keys during startup to enter BIOS settings and reload default values; (5) Save and exit the settings. Pin definitions are as follows:

JBAT1 definition:

Corresponding features	JBAT1 settings
normal operation condition	1-2Pin
Clear CMOS content Restore all BIOS settings to factory defaults	2-3Pin

Power-on jumper function: The motherboard features a 1×3-pin AT-ATX1 jumper (2.54 mm pin pitch) that enables power-on/off control via jumper wires.

AT-ATX1 definition:

Corresponding features	AT-ATX1 settings
Turn off auto-start for incoming calls	1-2 Pin (Default)
Enable auto-start for incoming calls	2-3Pin

6、Pin definitions

1、Supports up to 4 serial ports (default: 2 standard DB9 ports) with 4 built-in 2×5-pin COM ports (2.0mm

pin pitch). COM1 and COM2 support RS232 or RS485 (via jumper cap configuration), while JCOM1, JCOM2, JCOM3, and JCOM4 are standard pin definitions:

If you need 4 RS232 ports, please contact our business department in advance to place a custom order.

PIN	Signal name	PIN	Signal name
1	DCD（A）	2	RXD（B）
3	TXD	4	DTR
5	GND	6	DSR
7	RTS	8	CTS
9	RI	10	NC

JCOM1 and COM1 are configured to select one of two signals, while JCOM2 and COM2 are configured to select another. By default, JCOM1 and JCOM2 are not connected. To support four serial ports, hardware adjustments are required. Please contact our business department promptly.

2. COM1 and COM2 support RS232 by default, and can also support RS485 via jumper cap configuration. The jumper cap settings are as follows:

joggle	Corresponding features	JRS485_SW1 settings	JC1 Settings	definition
COM1	RS232	1-3Pin ,2-4Pin (give tacit consent to)	1-3Pin (give tacit consent to)	COM1's second pin is (DCD) The 3rd pin of COM1 is (RXD)
	RS485	3-5Pin ,4-6Pin	3-5Pin	COM1's first pin is (A) COM1's 2nd pin is (B)

joggle	Corresponding features	JRS485_SW2 settings	JC1 Settings	definition
COM2	RS232	1-3Pin ,2-4Pin (give tacit consent to)	2-4Pin (give tacit consent to)	COM2's 2nd pin is (DCD) COM2's third pin is designated as (RXD).
	RS485	3-5Pin ,4-6Pin	4-6Pin	COM2's first pin is (A) COM2's 2nd pin is (B)

3. The motherboard features a 1×4-pin USB 2.0 port (pin pitch: 2.0mm). The USB 2.0 pin configuration is specified as follows:

PIN	Signal name		
1	+5V		
2	Data0-		
3	Data0+		
4	GND		

4. Features a built-in 2×5-pin FPanel1 interface (pin pitch: 2.0mm)

Connect the power switch, reset switch, hard disk indicator light, and power indicator light of the chassis to this pin. The FPanel1 pin is defined as follows:

PIN	Signal name	PIN	Signal name
1	HDDLED+	2	PWRLED+
3	HDDLED-	4	PWRLED-
5	GND	6	PWRBTN#
7	RESETBTN#	8	GND
9	NC	10	

5. Features a built-in 1×4-pin fan interface (optional). The CPUFAN1 pin configuration is specified as follows:

PIN	Signal name	PIN	Signal name
1	GND	2	+12V
3	DET	4	PWM

Note: DET: Pulse output of fan speed; PWM: PWM control of fan speed

6. It features a built-in 2×6-pin TPM2.0 interface, with the following pin definitions for TPM1:

PIN	Signal name	PIN	Signal name
1	SPI POWER	2	SPI CS#
3	SPI MISO	4	SPI MOSI
5	NC	6	SPI CLK
7	GND	8	SPI RESET
9	NC		
11	NC	12	SPI IRQ

7. The motherboard features one 2 × 5-pin GPIO connector (pin pitch: 2.0mm). The GPIO1 pin configuration is specified as follows:

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

8. This board features a 1×4-pin red SATA hard drive power interface (pin pitch: 2.0mm). The JSPWR2 pin configuration is specified as follows:

PIN	Signal name
1	+12V
2	GND
3	GND
4	+5V

Ensure the correct pin placement for JSPWR1 to prevent hard drive damage. Always use our company's standard power cable during operation.

9. This board features a built-in 1×4-pin DC power interface, with the DC_IN1 pin configuration as follows:

PIN	Signal name
1	+12V

2	+12V
3	GND
4	GND

10. The motherboard features a built-in 1×4-pin (2.0mm pin pitch) power amplifier interface, which is not pre-installed (supports 2Ω 5W dual-channel audio). The pin configuration for JSPKR1 is as follows:

PIN	Signal name
1	SPKL-
2	SPKL+
3	SPKR-
4	SPKR+