

CoreIPC

NUC32D

120 x 120 mm Industrial NUC Motherboard Datasheet

Intel® Alder Lake-N / Twin Lake-N Platform

Document	Datasheet
Model	NUC32D
Issue	1.1A
Product Type	120 x 120 mm Industrial NUC Motherboard
Website	www.CoreIPC.com

This datasheet is prepared based on NUC32D User Manual Issue 1.1A.

1. Product Overview

The NUC32D is a compact 120 x 120 mm CoreIPC NANO-series multi-LAN motherboard supporting Intel® Alder Lake-N and Twin Lake-N processors. It integrates DDR4 memory, dual Gigabit Ethernet, HDMI plus VGA or optional DisplayPort, SATA and M.2 storage, Mini PCIe expansion, multiple USB and serial interfaces, TPM, GPIO and 12 V DC input for soft routers, network security, industrial control, cloud terminals and other embedded applications.

2. Key Features

- Supports Intel® Alder Lake-N and Twin Lake-N processors, including N95, N100, N200, i3-N305, N150 and N250 configurations listed in the source manual.
- 1 x DDR4 SO-DIMM slot supporting single-channel DDR4-3200 memory, up to 32 GB.
- 1 x HDMI plus VGA or optional DisplayPort; optional dual-HDMI configuration and up to three displays are supported depending on production configuration.
- 2 x Realtek Gigabit Ethernet ports with Wake-on-LAN and PXE support.
- 1 x SATA 3.0 connector plus 1 x M.2 Key M 2280 slot with automatic PCIe/SATA SSD detection.
- 1 x Mini PCIe slot supporting Wi-Fi and 4G modules.
- Up to 4 x USB 3.1 and 3 x USB 2.0 interfaces, with optional USB Type-C USB 2.0 configuration.
- 2 x DB9 RS232 ports by default; COM1/COM2 can be configured for RS485 through jumper settings. Optional 4 x RS232 requires hardware modification.
- Onboard Realtek ALC897 7.1-channel HD audio with MIC/Line-out; optional onboard amplifier header.
- 120 x 120 mm form factor; 12 V DC input; TPM 2.0 header; operating temperature -10°C to 60°C.

3. Technical Specifications

Category	Specification
Processor	Intel® Alder Lake-N / Twin Lake-N processors. Source ordering table lists N95, N100, N200, i3-N305, N150 and N250.
Memory	1 x SO-DIMM; single-channel DDR4-3200; up to 32 GB.
Graphics / Display	Integrated Intel® UHD Graphics; 1 x HDMI (up to 4K @ 60 Hz) plus VGA by default. DisplayPort can replace VGA; dual-HDMI option available.
Ethernet	2 x Realtek Gigabit Ethernet controllers with Wake-on-LAN and PXE boot support.
Storage	1 x SATA 3.0 connector, up to 6 Gbps; 1 x M.2 Key M 2280 slot with PCIe/SATA auto-detection.
Audio	Realtek ALC897 7.1-channel HD audio supporting microphone input and line output.
Expansion	1 x Mini PCIe slot supporting Wi-Fi and 4G modules.
USB	Up to 4 x USB 3.1 and 3 x USB 2.0. Optional USB Type-C port supports USB 2.0 data only.
Serial Ports	2 x DB9 RS232 by default; COM1/COM2 support RS485 through jumper configuration. Optional 4 x RS232 requires hardware modification.
GPIO	1 x 2 x 5-pin GPIO header; 4-channel GPIO input/output.
TPM	1 x 2 x 6-pin TPM 2.0 header.
BIOS	128 Mb Flash ROM.
Watchdog	Hardware reset watchdog, 256 levels (0-255 seconds).
OS Support	Windows 10 / Windows 11 / Linux.
Power	12 V DC input.
Dimensions	120 mm x 120 mm.
Environment	Operating: -10°C to 60°C; Storage: -20°C to 70°C; Humidity: 5%-95% RH, non-condensing.

4. I/O Interface Summary

4.1 Rear Panel I/O

Interface	Description
Display	1 x HDMI; 1 x VGA by default or optional DisplayPort.
USB	2 x USB 2.0; optional USB Type-C USB 2.0 port; exact implementation depends on configuration.
LAN	2 x RJ45 Gigabit Ethernet ports.
Power	1 x 12 V DC input connector.

4.2 Internal I/O and Headers

Interface / Header	Description
USB 2.0	1 x 1 x 4-pin USB 2.0 header.
TPM	1 x 2 x 6-pin TPM 2.0 header.
Amplifier	1 x 1 x 4-pin amplifier header, not populated by default.
GPIO	1 x 2 x 5-pin GPIO header.
Drive Power	1 x drive power connector.
DC Power	1 x 4-pin compact white power connector.
Front Panel	1 x 2 x 5-pin front-panel switch and LED header.
Fan	1 x optional 4-pin CPU fan header.
Serial	JCOM1-JCOM4 headers are defined in the source manual; JCOM1/JCOM2 share signals with the external COM ports.

5. Display Support

NUC32D provides HDMI together with VGA by default. VGA and DisplayPort are mutually exclusive, and a dual-HDMI configuration is optional. The source manual specifies HDMI at up to 4K @ 60 Hz and supports synchronous or asynchronous display through HDMI and VGA; up to three-display support is optional.

Item	Description
Integrated Graphics	Intel® UHD Graphics.
HDMI	1 x HDMI output, up to 4K @ 60 Hz.
VGA	1 x VGA output in the standard configuration.
DisplayPort	Optional; mutually exclusive with VGA.
Dual HDMI	Optional HDMI1/HDMI2 configuration.
Multi-display	Synchronous/asynchronous display supported; up to three displays are optional according to the source manual.

6. Serial Port Configuration

Port	Default / Optional Function
COM1	RS232 by default; supports RS485 via jumper configuration.
COM2	RS232 by default; supports RS485 via jumper configuration.
JCOM1 / JCOM2	Share signals with COM1 / COM2 and are mutually exclusive; not populated by default.
JCOM3 / JCOM4	Defined for optional four-serial-port configuration.
4 x RS232 Option	Requires hardware modification and must be specified before ordering.

7. Power, Cooling and Reliability Functions

Item	Description
Main Power	12 V DC input.
AT / ATX Mode	AT-ATX1 jumper selects automatic power-on behavior.
Cooling	Fanless cooling design; 1 x optional 4-pin CPU fan header reserved.
TPM	1 x TPM 2.0 header.
Clear CMOS	1 x Clear CMOS button plus JBAT1 1 x 3-pin Clear CMOS jumper.

8. Mechanical and Environmental Information

Item	Description
Product Type	Industrial NUC motherboard.
Dimensions	120 mm x 120 mm.
Operating Temperature	-10°C to 60°C.
Storage Temperature	-20°C to 70°C.
Operating Humidity	5%-95% relative humidity, non-condensing.
Power Input	12 V DC.

9. Ordering Information

Model	Description
NUC32D-N95 VER1.1A	Intel® N95; 4 cores; up to 3.4 GHz; 15 W; DDR4; HDMI + VGA; 2 LAN; 7 USB; 2 COM / 2 RS485; 12 V.
NUC32D-N100 VER1.1A	Intel® N100; 4 cores; up to 3.4 GHz; 6 W; DDR4; HDMI + VGA; 2 LAN; 7 USB; 2 COM / 2 RS485; 12 V.
NUC32D-N200 VER1.1A	Intel® N200; 4 cores; up to 3.7 GHz; 6 W; DDR4; HDMI + VGA; 2 LAN; 7 USB; 2 COM / 2 RS485; 12 V.
NUC32D-i3-N305 VER1.1A	Intel® Core™ i3-N305; 8 cores; up to 3.8 GHz; 15 W; DDR4; HDMI + VGA; 2 LAN; 7 USB; 2 COM / 2 RS485; 12 V.
NUC32D-N150 VER1.1A	Intel® N150; 4 cores; up to 3.6 GHz; 6 W; DDR4; HDMI + VGA; 2 LAN; 7 USB; 2 COM / 2 RS485; 12 V.
NUC32D-N250 VER1.1A	Intel® N250; 4 cores; up to 3.8 GHz; 6 W; DDR4; HDMI + VGA; 2 LAN; 7 USB; 2 COM / 2 RS485; 12 V.

10. Compliance and Documentation Notes

- Certification and compliance information is not specified in the source manual. Contact CoreIPC for project-specific certification or compliance documentation.
- The source manual lists both Alder Lake-N and Twin Lake-N platform support. Ordering Information includes N95, N100, N200, i3-N305, N150 and N250 variants; confirm CPU availability and exact production configuration before ordering.
- USB, display and serial interfaces have mutually exclusive or optional configurations. In particular, the USB Type-C port is USB 2.0 only, LAN2 shares selected USB resources, and 4 x RS232 support requires hardware modification.

11. Contact Information

Company	CoreIPC
Sales Team	CoreIPC Sales Team
Email	sales@coreipc.com
Website	https://www.coreipc.com/

Disclaimer: This datasheet was compiled from NUC32D User Manual Issue 1.1A. Product specifications, interface counts and optional functions may vary by production configuration. Please confirm the selected configuration before order placement. All product names, trademarks and registered trademarks are the property of their respective owners.