

CoreIPC

NUC50D

120 x 120 mm Industrial NUC Motherboard Datasheet

Intel® Jasper Lake Platform

Document	Datasheet
Model	NUC50D
Issue	1.0
Product Type	120 x 120 mm Industrial NUC Motherboard
Website	www.CoreIPC.com

This datasheet is prepared based on NUC50D User Manual Issue 1.0.

1. Product Overview

The NUC50D is a compact 120 x 120 mm CoreIPC NANO-series multi-LAN motherboard supporting Intel® Jasper Lake processors. It integrates DDR4 memory, dual Gigabit Ethernet, HDMI plus VGA or DisplayPort, SATA and M.2 storage, Mini PCIe expansion, multiple USB and serial interfaces, TPM support, and 12 V DC input for software routers, network security, industrial control, cloud terminals, and other embedded applications.

2. Key Features

- Integrated Intel® Celeron® N5095 2.0 GHz quad-core processor, compatible with the Intel® Jasper Lake processor family.
- 1 x DDR4 SO-DIMM slot supporting single-channel DDR4-2933 memory, up to 32 GB.
- HDMI 2.0 plus VGA or optional DisplayPort; HDMI and DisplayPort support up to 4K @ 60 Hz.
- 2 x Realtek RTL8111H Gigabit Ethernet ports with Wake-on-LAN and PXE support; single-LAN configuration optional.
- 1 x SATA 3.0 connector plus 1 x M.2 Key M 2280 slot with automatic PCIe/SATA SSD adaptation.
- 1 x Mini PCIe slot supporting Wi-Fi or 4G modules.
- Up to 8 USB ports, including 4 x USB 3.0 and USB 2.0 interfaces; optional USB Type-C configuration available.
- 2 x DB9 RS232 ports by default; COM1/COM2 can be configured for RS485 by jumper. Optional 4 x RS232 or RS422 on COM2 requires customization.
- Realtek ALC897 7.1-channel HD audio with MIC/Line-out and 2 x 5 W amplified speaker output.
- 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	Integrated Intel® Celeron® N5095 quad-core processor, 2.0 GHz, TDP 15 W; compatible with the Intel® Jasper Lake processor family.
Memory	1 x SO-DIMM slot; single-channel DDR4-2933; up to 32 GB.
Graphics / Display	Integrated Intel® UHD Graphics 600. 1 x VGA or DisplayPort; 1 x HDMI 2.0. DisplayPort and HDMI support up to 4K @ 60 Hz.
Ethernet	2 x Realtek RTL8111H Gigabit Ethernet controllers; single-LAN option; Wake-on-LAN and PXE support.
Storage	1 x SATA 3.0 connector, up to 6 Gbps; 1 x M.2 Key M 2280 slot with automatic PCIe/SATA SSD adaptation.
Audio	Realtek ALC897 7.1-channel HD audio; MIC/Line-out; dual-channel 5 W amplifier for 2-ohm speakers.
Expansion	1 x Mini PCIe slot supporting Wi-Fi and 4G modules.
USB	4 x USB 3.0 external ports plus USB 2.0 interfaces; up to 8 USB ports total depending on configuration. Optional USB Type-C available.
Serial Ports	2 x DB9 RS232 by default. COM1/COM2 support RS485 by jumper setting. Optional 4 x RS232 configuration and optional RS422 on COM2 require customization.
GPIO	1 x 2 x 5-pin GPIO header.
TPM	1 x 2 x 6-pin TPM 2.0 header; footprint reserved for onboard TPM.
Power	12 V DC input; 1 x 4-pin ATX power connector.
Operating Temperature	-10°C to 60°C.
Storage Temperature	-20°C to 70°C.
Operating Humidity	5%-95% relative humidity, non-condensing.
Dimensions	120 mm x 120 mm.

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 configuration.
LAN	Up to 2 x RJ45 Gigabit Ethernet ports; LAN2 and selected USB 2.0 signals are mutually exclusive.
Power	1 x 12 V DC input connector.

4.2 Internal I/O and Headers

Interface / Header	Description
Serial	2 x COM headers not populated by default; optional support for 4 x RS232 ports.
Amplifier	1 x 1 x 4-pin amplifier header.
USB 2.0	1 x USB 2.0 header supporting 2 additional ports; signals are shared with LAN2.
GPIO	1 x 2 x 5-pin GPIO header.
SATA Power	1 x 1 x 4-pin drive power connector.
ATX Power	1 x 4-pin ATX power connector.
Front Panel	1 x 2 x 5-pin front-panel switch and LED header.
TPM	1 x 2 x 6-pin TPM 2.0 header.
Fan	1 x optional 4-pin CPU fan header.

5. Display Support

NUC50D provides HDMI 2.0 together with VGA by default. The VGA position can be configured as DisplayPort; the source manual specifies DisplayPort and HDMI support up to 4K @ 60 Hz. Synchronous or asynchronous display operation is supported through VGA or DisplayPort and HDMI.

Item	Description
Integrated Graphics	Intel® UHD Graphics 600.
VGA / DisplayPort	VGA populated by default; optional DisplayPort supports up to 4K @ 60 Hz.
HDMI	1 x HDMI 2.0 output supporting up to 4K @ 60 Hz.
Multi-display	Supports synchronous or asynchronous display through VGA or DisplayPort and HDMI.
Customization	VGA extension header is reserved for customization according to the source manual.

6. Serial Port Configuration

Port	Default / Optional Function
COM1	RS232 by default; supports RS485 through jumper configuration.
COM2	RS232 by default; supports RS485 through jumper configuration; RS422 is optional.
JCOM1 / JCOM2	Share signals with COM1 / COM2 respectively and are mutually exclusive; not populated by default.
Additional COM	Up to 4 serial ports can be supported through hardware modification; contact sales before ordering.
Ordering Reference	Ordering information lists 2 COM / 2 RS485; confirm required serial mode for production configuration.

7. Power, Cooling and Reliability Functions

Item	Description
Main Power	12 V DC input.
AT / ATX Mode	AT/ATX power-mode switching supported through jumper configuration.
CPU Fan	1 x optional 4-pin CPU fan header with GND, +12 V, DET and PWM.
TPM	1 x TPM 2.0 header; onboard TPM footprint reserved.
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
NUC50D-N22-N5095 VER1.0	Intel® Celeron® N5095; 4 cores; 2.0 GHz; 1 x DDR4; HDMI; VGA; 2 LAN; 8 USB; 2 COM / 2 RS485; 12 V DC.
Display Option	DisplayPort can be configured instead of VGA.
LAN Option	Single-LAN configuration optional.
Serial Option	Optional 4 x RS232 or RS422 on COM2 requires customization.
USB Option	Optional USB Type-C configuration available.

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 2 x RS232 and 2 x RS485 in the product description / ordering information, while the detailed pin section states that COM1 and COM2 are RS232 by default and can be switched to RS485 through jumper settings. Confirm the required serial-port mode before order placement.
- LAN2 shares signals with selected USB 2.0 interfaces. The exact LAN / USB combination and optional USB Type-C implementation depend on the selected production configuration.

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 NUC50D User Manual Issue 1.0. 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.