

CoreIPC

NUC18D

120 x 120 mm Industrial NUC Motherboard Datasheet

Intel® Bay Trail Platform

Document	Datasheet
Model	NUC18D
Issue	1.0
Product Type	120 x 120 mm Industrial NUC Motherboard
Website	www.CoreIPC.com

This datasheet is prepared based on NUC18D User Manual Issue 1.0.

1. Product Overview

The NUC18D is a compact 120 x 120 mm CoreIPC NANO-series industrial motherboard supporting Intel® Bay Trail-I/M/D processors. It integrates DDR3L memory, VGA/HDMI/LVDS display, up to dual Gigabit Ethernet, SATA and mSATA storage, Mini PCIe expansion, USB and serial connectivity, GPIO, audio, SIM support, and 12 V DC input for commercial display, medical, industrial control, financial, cloud-terminal, and embedded applications.

2. Key Features

- Integrated Intel® Celeron® J1900 2.0 GHz quad-core processor; compatible with Intel® Bay Trail-I/M/D processors.
- 1 x DDR3L SO-DIMM slot supporting single-channel DDR3L-1333/1600, 1.35 V memory, up to 8 GB.
- VGA, HDMI and LVDS display interfaces with integrated Intel® HD Graphics.
- Up to 2 x Realtek RTL8111H Gigabit Ethernet ports with Wake-on-LAN and PXE; single-LAN version available.
- Storage includes 1 x SATA interface and 1 x mSATA slot.
- 1 x Mini PCIe slot supports half-size/full-size Wi-Fi or 4G modules; onboard SIM slot is provided.
- Supports up to 6 USB ports, including 1 x USB 3.0 and USB 2.0 interfaces.
- 2 x RS232 serial ports are provided; COM2 can optionally support RS485. COM1 is a Cisco-type RJ45 serial interface.
- Onboard ALC662 6-channel HD audio with MIC, Line-out, and 3 W amplifier output.
- 120 x 120 mm form factor; 12 V DC input; fanless thermal design; operating temperature -10°C to 60°C in the detailed specification.

3. Technical Specifications

Category	Specification
Processor	Integrated Intel® Celeron® J1900 quad-core processor, 2.0 GHz; compatible with Intel® Bay Trail-I/M/D processors.
Memory	1 x 204-pin SO-DIMM; single-channel DDR3L-1333/1600, 1.35 V; up to 8 GB.
Graphics / Display	Integrated Intel® HD Graphics; 1 x VGA, 1 x HDMI, 1 x LVDS; synchronous/asynchronous display supported.
Ethernet	Up to 2 x Realtek RTL8111H Gigabit Ethernet controllers; Wake-on-LAN and PXE support.
Storage	1 x SATA interface; 1 x mSATA slot.
Audio	Onboard ALC662 6-channel HD audio; MIC, Line-out, and 3 W amplifier output.
Expansion	1 x Mini PCIe slot for half/full-size Wi-Fi or 4G modules; 1 x SIM slot.
USB	Up to 6 USB ports, including 1 x USB 3.0 and USB 2.0 interfaces. Availability depends on LAN configuration.
Serial Ports	2 x RS232. COM1 is a Cisco-type RJ45 serial port. COM2 supports optional RS485 through jumper configuration.
GPIO	4-channel GPIO input/output.
BIOS	64 Mb Flash ROM.
Watchdog	Hardware reset watchdog, 256 levels (0-255 seconds).
OS Support	Windows 7 / Windows 10 / Linux.
Power	12 V DC $\pm 5\%$ input; 1 x 4-pin ATX connector can be used as 12 V input/output.
Operating Temperature	-10°C to 60°C in detailed specifications.
Storage Temperature	-20°C to 70°C.
Operating Humidity	5%-95% RH, 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.
USB	Front I/O: 1 x USB 3.0 + 3 x USB 2.0.
LAN	Up to 2 x RJ45 Gigabit Ethernet ports; LAN2 and USB 2.0 resources are mutually exclusive.
Serial / Audio	1 x Cisco-type RJ45 COM1; 1 x MIC; 1 x Line-out.
Controls / Power	1 x illuminated power button; 1 x HDD LED; 1 x 12 V DC input.

4.2 Internal I/O and Headers

Interface / Header	Description
LVDS	1 x 2 x 15-pin dual-channel 24-bit LVDS header.
Backlight	1 x 6-pin LCD backlight power connector.
USB 2.0	1 x 2 x 5-pin header supporting 2 USB 2.0 ports; resource sharing depends on LAN/front-USB configuration.
Serial	1 x 2 x 5-pin COM header for COM2; COM2 can be configured for RS485.
VGA	1 x 1 x 12-pin JVGA header sharing signals with the DB15 VGA port.
Audio	1 x front-audio header; 1 x 4-pin 3 W amplifier connector.
Power	1 x 4-pin ATX 12 V input/output connector; 1 x drive-power connector.
Front Panel	1 x 2 x 5-pin front-panel switch and LED header.
Fan / GPIO	1 x reserved 4-pin CPU fan header; 1 x GPIO header.

5. Display Support

NUC18D provides VGA, HDMI and LVDS display outputs. The source manual specifies integrated Intel® HD Graphics and synchronous/asynchronous display operation using VGA, HDMI and LVDS. LVDS supports dual-channel 24-bit output with selectable 3.3 V / 5 V / 12 V panel voltage and 5 V / 12 V backlight power.

Item	Description
Integrated Graphics	Intel® HD Graphics.
VGA	1 x VGA output.
HDMI	1 x HDMI output.
LVDS	1 x dual-channel 24-bit LVDS interface.
Multi-display	Supports synchronous/asynchronous display using VGA, HDMI and LVDS.
Panel Power	Selectable 3.3 V / 5 V / 12 V panel voltage; selectable 5 V / 12 V backlight power.

6. Serial Port Configuration

Port	Default / Optional Function
COM1	Cisco-type RJ45 RS232 serial port; provided by default.
JCOM1	Onboard header sharing signals with COM1; not populated by default.
COM2	RS232 by default; optional RS485 selectable by jumper.
JRS485	1 x 4-pin RS485 header carrying COM2 differential signals.

7. Power, Cooling and Reliability Functions

Item	Description
Main Power	12 V DC $\pm 5\%$ input.
AT / ATX Mode	AT-ATX1 jumper selects automatic power-on behavior.
Cooling	Fanless thermal design; 1 x reserved 4-pin CPU fan header.
Watchdog	Hardware reset watchdog, 256 levels (0-255 seconds).
Clear CMOS	JBAT1 1 x 3-pin Clear CMOS jumper.
ATX Connector	1 x 4-pin ATX connector usable as 12 V input/output.

8. Mechanical and Environmental Information

Item	Description
Product Type	120 x 120 mm industrial NANO-series motherboard.
Dimensions	120 mm x 120 mm.
Operating Temperature	-10°C to 60°C in detailed specifications; Product Description states -20°C to 60°C.
Storage Temperature	-20°C to 70°C.
Operating Humidity	5%-95% RH, non-condensing.
Power Input	12 V DC $\pm 5\%$.

9. Ordering Information

Model	Description
NUC18D-L12 VER1.0	Intel® Celeron® J1900; 4 cores; 2.0 GHz; DDR3L; HDMI + VGA + LVDS; 1 LAN; 6 USB; 2 COM / 1 RS485; 12 V DC.
NUC18D-L22 VER1.0	Intel® Celeron® J1900; 4 cores; 2.0 GHz; DDR3L; HDMI + VGA + LVDS; 2 LAN; 6 USB; 2 COM / 1 RS485; 12 V DC.
Serial Option	COM2 supports optional RS485.
Wireless	Mini PCIe supports Wi-Fi/4G; onboard SIM slot provided.

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.
- Operating-temperature information differs by section: Product Description states -20°C to 60°C, while the detailed motherboard specification states -10°C to 60°C. This datasheet follows the detailed specification.
- LAN and USB resources are configuration-dependent. The source manual states that LAN2 and USB 2.0 are mutually exclusive, and also notes that the onboard F_USB1 header and front USB1 are mutually exclusive on the dual-LAN version.

11. Contact Information

Company	CoreIPC
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Disclaimer: This datasheet was compiled from NUC18D 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.