

CoreIPC

NUC42R

120 x 120 mm Quad-LAN Industrial NUC Motherboard Datasheet

Intel® Gemini Lake Refresh Platform

Document	Datasheet
Model	NUC42R
Issue	1.2
Product Type	120 x 120 mm Quad-LAN Industrial NUC Motherboard
Website	www.CoreIPC.com

This datasheet is prepared based on NUC42R User Manual Issue 1.2.

1. Product Overview

The NUC42R is a compact 120 x 120 mm CoreIPC NANO-series multi-LAN motherboard supporting Intel® Gemini Lake Refresh processors. It integrates DDR4 memory, HDMI with optional DisplayPort, four Intel® 2.5GbE ports, SATA and mSATA storage, Mini PCIe expansion, USB and serial connectivity, GPIO, fanless cooling, and 12-19 V DC input for software routers, network security systems, industrial control, cloud terminals, and other embedded applications.

2. Key Features

- Integrated Intel® Celeron® J4125 2.0 GHz quad-core processor, compatible with Intel® Gemini Lake Refresh processors.
- 1 x DDR4 SO-DIMM slot supporting single-channel DDR4-2400 memory, up to 16 GB.
- 1 x HDMI 1.4 display interface by default; optional DisplayPort 1.2 stacked connector. Supports simultaneous or independent HDMI/DP display output.
- 4 x Intel® I225 or I226 2.5GbE ports with Wake-on-LAN and PXE boot support.
- Storage includes 1 x SATA 3.0 connector and 1 x mSATA 3.0 slot.
- 1 x Mini PCIe slot supports Wi-Fi or 4G modules.
- Supports up to 2 x USB 3.0 and 5 x USB 2.0 ports; one internal USB resource depends on 4G configuration.
- 2 x DB9 RS232 ports are standard; COM1 and COM2 can optionally support RS485. RS485 requires hardware/software modification and advance production arrangement.
- Supports 4-channel GPIO input/output, hardware watchdog, optional CPU fan header, and AT/ATX power-mode selection.
- 120 x 120 mm form factor; 12-19 V DC input; fanless thermal design; operating temperature -20°C to 60°C.

3. Technical Specifications

Category	Specification
Processor	Integrated Intel® Celeron® J4125 quad-core processor, 2.0 GHz, 10 W TDP; compatible with Intel® Gemini Lake Refresh processors.
Memory	1 x 260-pin SO-DIMM; single-channel DDR4-2400; up to 16 GB.
Graphics / Display	Intel® UHD Graphics 600; 1 x HDMI 1.4 by default and 1 x optional DisplayPort 1.2 stacked connector; simultaneous or independent HDMI/DP display supported.
Ethernet	4 x Intel® I225 or I226 2.5GbE controllers; Wake-on-LAN and PXE boot support.
Storage	1 x SATA 3.0 connector, up to 6 Gbps; 1 x mSATA 3.0 slot.
Expansion	1 x Mini PCIe slot supporting Wi-Fi or 4G modules.
USB	2 x USB 3.0 + up to 5 x USB 2.0. Internal USB availability depends on whether 4G support is required.
Serial Ports	2 x DB9 RS232 standard; COM1/COM2 can optionally support RS485. RS485 requires hardware/software modification and advance production arrangement.
GPIO	4-channel GPIO input/output.
BIOS	64 Mb Flash ROM.
Watchdog	Hardware reset watchdog, 256 levels (0-255 seconds).
OS Support	Windows 10 / Linux.
Power	12-19 V DC input; AT/ATX power-mode selection.
Operating Temperature	-20°C to 60°C.
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 1.4 by default; 1 x optional DisplayPort 1.2 stacked connector.
USB	2 x USB 3.0; 4 x external USB 2.0.
LAN	4 x RJ45 2.5GbE ports using Intel® I225/I226 controllers.
Serial	2 x DB9 RS232; optional RS485 configuration available with hardware/software modification.
Controls / Power	1 x HDD activity LED; 1 x illuminated power button; 1 x 12-19 V DC input.

4.2 Internal I/O and Headers

Interface / Header	Description
USB 2.0	1 x internal USB 2.0 header. One USB 2.0 port is available by default; two can be supported when 4G is not required, with hardware modification.
Serial	2 x optional 2 x 5-pin JCOM headers sharing signals with the two DB9 serial ports; not populated by default.
Storage Power	1 x red SATA drive-power connector.
DC Power	1 x 4-pin 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.
GPIO	1 x 2 x 5-pin GPIO header.

5. Display Support

NUC42R provides HDMI 1.4 by default and an optional DisplayPort 1.2 stacked connector. The source manual specifies simultaneous or independent HDMI/DP display output. The Ordering Information table lists HDMI as populated and DP as optional.

Item	Description
Integrated Graphics	Intel® UHD Graphics 600.
HDMI	1 x HDMI 1.4 output; populated by default.
DisplayPort	1 x optional DisplayPort 1.2 4K output using a stacked connector.
Multi-display	Supports simultaneous or independent HDMI/DP display output.

6. Serial Port Configuration

Port	Default / Optional Function
COM1	DB9 RS232 by default; optional RS485 requires hardware/software modification.
COM2	DB9 RS232 by default; optional RS485 requires hardware/software modification.
JCOM1 / JCOM2	Optional onboard headers sharing the same signals as COM1 / COM2; not populated by default.
RS485 Option	Up to 2 x RS485; must be specified before ordering.

7. Power, Cooling and Reliability Functions

Item	Description
Main Power	12-19 V DC input.
AT / ATX Mode	AT-ATX1 jumper selects automatic power-on behavior.
Cooling	Rear-mounted CPU with fanless thermal design; 1 x optional 4-pin CPU fan header.
Watchdog	Hardware reset watchdog, 256 levels (0-255 seconds).
Clear CMOS	JBAT1 1 x 3-pin Clear CMOS jumper.

8. Mechanical and Environmental Information

Item	Description
Product Type	Industrial NANO-series quad-LAN motherboard.
Dimensions	120 mm x 120 mm.
Operating Temperature	-20°C to 60°C.
Storage Temperature	-20°C to 70°C.
Operating Humidity	5%-95% RH, non-condensing.
Power Input	12-19 V DC.

9. Ordering Information

Model	Description
NUC42R VER1.2	Intel® Celeron® J4125; 4 cores; 2.0 GHz; DDR4; HDMI; optional DP; 4 x 2.5GbE; 7 USB; 2 COM / 0 RS485 in ordering table; 12-19 V DC.
Display Option	DisplayPort 1.2 stacked connector optional; HDMI populated by default.
Serial Option	2 x RS485 optional; requires hardware/software modification and advance confirmation.
Wireless	Mini PCIe supports Wi-Fi or 4G modules.

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.
- USB resources are configuration-dependent. The detailed specification lists two rear USB 3.0 ports, four external USB 2.0 ports, and one internal USB 2.0 header signal by default. When 4G support is not required, two USB 2.0 ports can be supported through hardware modification.
- The standard motherboard supports only 2 x RS232 ports. COM1 and COM2 can be changed to RS485, but the source manual explicitly states that RS485 requires hardware and software modification and must be specified before ordering.

11. Contact Information

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Disclaimer: This datasheet was compiled from NUC42R User Manual Issue 1.2. 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.