

CoreIPC

NUC66R

120 x 120 mm Six-LAN Industrial NUC Motherboard Datasheet

Intel® Elkhart Lake Platform

Document	Datasheet
Model	NUC66R
Issue	1.0
Product Type	120 x 120 mm Six-LAN Industrial NUC Motherboard
Website	www.CoreIPC.com

This datasheet is prepared based on NUC66R User Manual Issue 1.0.

1. Product Overview

The NUC66R is a compact 120 x 120 mm CoreIPC NANO-series six-LAN motherboard supporting Intel® Elkhart Lake processors. It integrates dual-channel DDR4 memory, HDMI 2.0 and DisplayPort 1.4 display outputs, six Intel® 2.5GbE ports, SATA and M.2 storage, Mini PCIe expansion, USB and serial connectivity, SIM support, fanless cooling, and 12 V DC input for software routers, network security appliances, industrial control, cloud terminals, and related embedded applications.

2. Key Features

- Integrated Intel® Celeron® J6412 2.0 GHz quad-core processor; compatible with the full Intel® Elkhart Lake processor family.
- 2 x DDR4 SO-DIMM slots supporting dual-channel DDR4 memory up to 3200 MHz, maximum 32 GB.
- 1 x HDMI 2.0 and 1 x DisplayPort 1.4; synchronous/asynchronous dual-display output up to 4K at 60 Hz.
- 6 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 M.2 Key M 2280 SATA SSD slot.
- 1 x Mini PCIe slot supports USB-interface Wi-Fi or 4G modules; an onboard SIM slot is provided.
- Supports 2 x USB 3.1 and 6 x USB 2.0 ports.
- 1 x Cisco-standard RS232 serial port is standard; a second serial port and RS485 support are optional and require hardware modification.
- Supports hardware watchdog, optional CPU fan header, Clear CMOS, AT/ATX power-mode selection, and an onboard SIM slot.
- 120 x 120 mm form factor; 12 V DC input; fanless thermal design; operating temperature -10°C to 60°C.

3. Technical Specifications

Category	Specification
Processor	Integrated Intel® Celeron® J6412 quad-core processor, 2.0 GHz, 10 W TDP; compatible with Intel® Elkhart Lake processors.
Memory	2 x 260-pin SO-DIMM slots; dual-channel DDR4 up to 3200 MHz; maximum 32 GB.
Graphics / Display	Integrated 10th-generation Intel® UHD Graphics; 1 x HDMI 2.0 + 1 x DP 1.4; up to 4K @ 60 Hz; synchronous/asynchronous dual display.
Ethernet	6 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 M.2 Key M 2280 SATA SSD slot.
Expansion	1 x Mini PCIe slot supporting USB Wi-Fi or 4G modules; mSATA can be enabled by hardware modification and shares the SATA signal.
USB	2 x USB 3.1 + 6 x USB 2.0.
Serial Ports	1 x Cisco-standard RS232 standard; optional second serial port. RS485 requires hardware modification and advance confirmation.
SIM	1 x SIM card slot.
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; AT/ATX power-mode selection.
Operating Temperature	-10°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 stacked HDMI 2.0 + DisplayPort 1.4 connector; up to 4K @ 60 Hz.
USB	2 x USB 3.1; 2 x external USB 2.0.
LAN	6 x RJ45 2.5GbE ports using Intel® I225/I226 controllers.
Serial / SIM	1 x Cisco-standard RS232 serial port; 1 x SIM card slot.
Controls / Power	1 x AT/ATX switch, 1 x HDD LED, 1 x Clear CMOS switch, 1 x illuminated power button, 1 x 12 V DC input.

4.2 Internal I/O and Headers

Interface / Header	Description
USB 2.0	2 x 2 x 5-pin headers providing 4 x internal USB 2.0 ports.
Serial	1 x optional 2 x 5-pin JCOM2 header for a second serial port.
Storage Power	1 x drive power connector.
Front Panel	1 x 2 x 5-pin front-panel switch and LED header.
Fan	1 x optional/reserved 4-pin CPU fan header.

5. Display Support

NUC66R provides HDMI 2.0 and DisplayPort 1.4 outputs. The source manual specifies synchronous or asynchronous dual-display operation at up to 4K at 60 Hz through HDMI and DP.

Item	Description
Integrated Graphics	10th-generation Intel® UHD Graphics.
HDMI	1 x HDMI 2.0 output, up to 4K @ 60 Hz.
DisplayPort	1 x DisplayPort 1.4 output, up to 4K @ 60 Hz.
Multi-display	Supports synchronous or asynchronous HDMI + DP dual-display output.

6. Serial Port Configuration

Port / Option	Default / Optional Function
COM1	Cisco-standard RS232 by default; optional RS485 requires hardware modification.
COM2	Optional second serial port through JCOM2 header; requires hardware modification.
RS485	Optional; not standard. Must be confirmed with CoreIPC before ordering.

7. Power, Cooling and Reliability Functions

Item	Description
Main Power	12 V DC input.
AT / ATX Mode	Onboard AT/ATX power-on mode switch.
Cooling	Rear-mounted CPU with fanless thermal design; 1 x optional/reserved 4-pin CPU fan header.
Watchdog	Hardware reset watchdog, 256 levels (0-255 seconds).
Clear CMOS	1 x Clear CMOS switch plus onboard Clear CMOS jumper.

8. Mechanical and Environmental Information

Item	Description
Product Type	Industrial NANO-series six-LAN 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% RH, non-condensing.
Power Input	12 V DC.

9. Ordering Information

Model	Description
NUC66R VER1.0	Intel® Celeron® J6412; 4 cores; 2.0 GHz; DDR4; HDMI + DP; 6 x 2.5GbE; 8 USB; 1 COM / 0 RS485; 12 V DC.
Memory	2 x DDR4 SO-DIMM slots; dual-channel up to 3200 MHz; maximum 32 GB.
Wireless	Mini PCIe supports USB-interface Wi-Fi / 4G; onboard SIM slot provided.
Serial Option	Optional second serial port and optional RS485 require hardware modification.

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 standard motherboard supports 1 x Cisco-standard RS232 serial port. A second serial port is optional. RS485 support also requires hardware modification and must be confirmed with CoreIPC before ordering.
- Storage and wireless resources are configuration-dependent. The Mini PCIe slot is specified for USB-interface Wi-Fi or 4G modules; mSATA can be enabled by hardware modification and is mutually exclusive with the 7-pin SATA signal.

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 NUC66R User Manual Issue 1.0. Product specifications, interface counts, supported functions and optional configurations may vary by production revision. Please confirm the selected configuration before order placement. All product names, trademarks and registered trademarks are the property of their respective owners.