

CoreIPC

EHL-J6412-LK

120 x 120 mm Quad-LAN Industrial Motherboard Datasheet

Intel® Elkhart Lake Platform

Document	Datasheet
Model	EHL-J6412-LK
Issue	1.0
Product Type	120 x 120 mm Quad-LAN Industrial Motherboard
Website	www.CoreIPC.com

This datasheet is prepared based on EHL-J6412-LK User Manual Issue 1.0.

1. Product Overview

The EHL-J6412-LK is a compact 120 x 120 mm CoreIPC NANO-series multi-LAN motherboard supporting Intel® Elkhart Lake processors. It integrates an Intel® Celeron® J6412 processor, DDR4 memory, dual HDMI display outputs, four Intel® 2.5GbE ports, SATA and M.2 storage, M.2 Key E wireless expansion, USB connectivity, an RJ45-form-factor RS232 serial port, SIM support, fanless cooling, and 12 V DC input for software routers, network security, industrial control, cloud terminals, and other embedded applications.

2. Key Features

- Integrated Intel® Celeron® J6412 quad-core processor, 2.0 GHz, 10 W TDP; compatible with Intel® Elkhart Lake processors.
- 1 x DDR4 SO-DIMM slot supporting single-channel DDR4-3200 memory, up to 32 GB according to Product Description and Motherboard Specifications.
- 2 x HDMI outputs supporting up to 4K @ 60 Hz; synchronous or asynchronous dual-display output.
- 4 x Intel® I225 or I226 2.5GbE ports with Wake-on-LAN and PXE boot support.
- 1 x SATA 3.0 connector plus 1 x M.2 Key M 2242 SATA SSD slot; the source also states support for 2280-length SSDs and 3042 4G modules.
- 1 x M.2 Key E 2230 slot supports Wi-Fi/Bluetooth; onboard SIM slot provided for cellular modules.
- 2 x USB 3.1 plus 2 x USB 2.0 ports.
- 1 x RS232 serial port in RJ45 form factor; serial redirection is supported by default at 115200 baud.
- Supports hardware watchdog, Clear CMOS, AT/ATX power-mode selection, reserved CPU fan header, and optional 5G signal selection through the 5G_EN jumper.
- 120 x 120 mm form factor; 12 V DC input; fanless thermal design; operating temperature -20°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	1 x SO-DIMM; single-channel DDR4-3200; up to 32 GB according to Product Description and Motherboard Specifications.
Graphics / Display	Integrated 10th-generation Intel® UHD Graphics; 2 x HDMI, each supporting up to 4K @ 60 Hz; synchronous/asynchronous dual display.
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 M.2 Key M 2242 SATA SSD slot; source also states support for 2280-length SSDs.
Cellular / Wireless	M.2 storage/cellular slot can support a 3042 4G module; 5G signal function is enabled by jumper. 1 x M.2 Key E 2230 for Wi-Fi/Bluetooth; 1 x SIM slot.
USB	2 x USB 3.1 + 2 x USB 2.0.
Serial Port	1 x RS232 serial port in RJ45 form factor; serial redirection supported by default at 115200 baud.
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	-20°C to 60°C.
Storage Temperature	-30°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	2 x stacked HDMI ports, each supporting up to 4K @ 60 Hz.
USB	2 x USB 3.1; 2 x USB 2.0.
LAN	4 x RJ45 2.5GbE ports using Intel® I225/I226 controllers.
Serial / SIM	1 x RJ45-form-factor RS232 serial port; 1 x SIM card slot.
Controls / Power	1 x drive activity LED; 1 x power button with power LED; 1 x Clear CMOS button; 1 x 12 V DC input.

4.2 Internal I/O and Headers

Interface / Header	Description
Storage Power	1 x red SATA drive power connector.
CPU Fan	1 x 4-pin CPU fan connector; reserved for optional active cooling.
M.2 Key M / Cellular	1 x M.2 Key M 2242 SATA SSD slot; source states support for 2280 SSDs and 3042 4G modules. 5G signal support can be enabled by jumper.
M.2 Key E	1 x M.2 Key E 2230 slot supporting Wi-Fi/Bluetooth.
SIM	1 x onboard SIM card slot.
Power Mode	AT-ATX1 jumper selects AT/ATX automatic power-on behavior.
Clear CMOS	JBAT1 1 x 3-pin Clear CMOS header.

5. Display Support

EHL-J6412-LK provides two stacked HDMI display outputs. The source manual specifies both HDMI outputs support up to 4K at 60 Hz and can operate in synchronous or asynchronous dual-display mode.

Item	Description
Integrated Graphics	10th-generation Intel® UHD Graphics.
HDMI 1	1 x HDMI output, up to 4K @ 60 Hz.
HDMI 2	1 x HDMI output, up to 4K @ 60 Hz.
Multi-display	Supports synchronous or asynchronous dual-display output.

6. Serial Port Configuration

Port / Function	Description
COM1	1 x RS232 serial port in RJ45 form factor.
Serial Redirection	Supported by default at 115200 baud.
RS485	Not specified in the source manual.
Additional COM	Not specified in the source manual.

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	Rear-mounted CPU with fanless thermal design; 1 x reserved 4-pin CPU fan connector.
Watchdog	Hardware reset watchdog, 256 levels (0-255 seconds).
Clear CMOS	JBAT1 Clear CMOS jumper plus external Clear CMOS button.
5G Signal Selection	5G_EN jumper enables USB 3.0 signal routing to the M.2 Key M socket for a 5G module.

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	-30°C to 70°C.
Operating Humidity	5%-95% RH, non-condensing.
Power Input	12 V DC.

9. Configuration Information

Item	Description
Model	EHL-J6412-LK
Board Revision	VER1.0 is shown in the motherboard image note in the source manual.
Processor	Intel® Celeron® J6412, 4 cores, 2.0 GHz.
Memory	DDR4-3200; up to 32 GB. Main specification states 1 x SO-DIMM; Memory Installation section states 2 x 260-pin slots.
Network	4 x Intel® I225/I226 2.5GbE.
Display	2 x HDMI, up to 4K @ 60 Hz.

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.
- Memory-slot information is inconsistent in the source manual. Product Description and Motherboard Specifications state 1 x SO-DIMM slot with single-channel DDR4-3200 and up to 32 GB, while the Memory Installation section states 2 x 260-pin DDR4 SO-DIMM slots. This datasheet follows the main product/specification sections and recommends confirming the production BOM before ordering.
- The M.2 storage/cellular description is configuration-dependent. Product Description refers to an M.2 Key M/B slot for an M.2 SATA SSD or 4G module, while the detailed specification identifies an M.2 Key M 2242 SATA SSD slot, support for 2280-length SSDs and 3042 4G modules, and a 5G_EN jumper that routes USB 3.0 for 5G use. Confirm the required SSD/cellular configuration before ordering.

11. Contact Information

Company	CoreIPC
Sales Team	CoreIPC Sales Team
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Disclaimer: This datasheet was compiled from EHL-J6412-LK 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.