



# EHL-J6412-LK User Manual

Issue 1.0

[www.CoreIPC.com](http://www.CoreIPC.com)

## Security Guidance

### Copyright Statement

© 2026 CoreIPC. All rights reserved.

All trademarks and names mentioned in this user manual are the property of their respective registered companies.

### Disclaimer

- This user manual is protected by copyright, and all content herein is the property of CoreIPC.
  - CoreIPC reserves the right to modify the product specifications or related information mentioned in this user manual.
  - Any modifications or changes to the product specifications or related information mentioned in this user manual will be made without prior notice.
  - The contents of this user manual may not be reproduced, modified, reprinted, distributed, or published in any form without prior written permission from CoreIPC.
- 
- To help you use the CoreIPC motherboard, please read the [User Manual] carefully.
  - For product-related information, please be sure to read these safety instructions carefully.
  - Identifying the Product Version  
You can find the version of this motherboard labeled [Issue:X.X] on the motherboard itself. X.X represents a number; for example, a label reading [Issue1.0] indicates that the version of this motherboard is 1.0. Please note the product version when updating the motherboard's BIOS or drivers, or when referring to other technical documentation.

### Basic Safety Tips

1. Before using this product, please be sure to read the product manual carefully.
2. Any cards not yet ready for installation should be stored in anti-static bags.
3. Before removing the board from the antistatic bag, place your hand on a grounded metal object for a moment (such as 10 seconds) to discharge any static electricity from your body and hands.
4. When handling circuit boards, you must wear anti-static gloves and make it a habit to touch only the edges.
5. To prevent electric shock or damage to the product, be sure to turn off the AC power before inserting, removing, or reconfiguring the board.
6. Before moving a board or the entire unit, you must first turn off the AC power.
7. For complete systems, be sure to turn off the AC power before adding or removing any boards.
8. Before connecting or disconnecting any device, you must first turn off the AC power.

9. To avoid unnecessary damage to the product caused by frequent power cycles, wait at least 30 seconds after turning it off before turning it back on.

CoreIPC

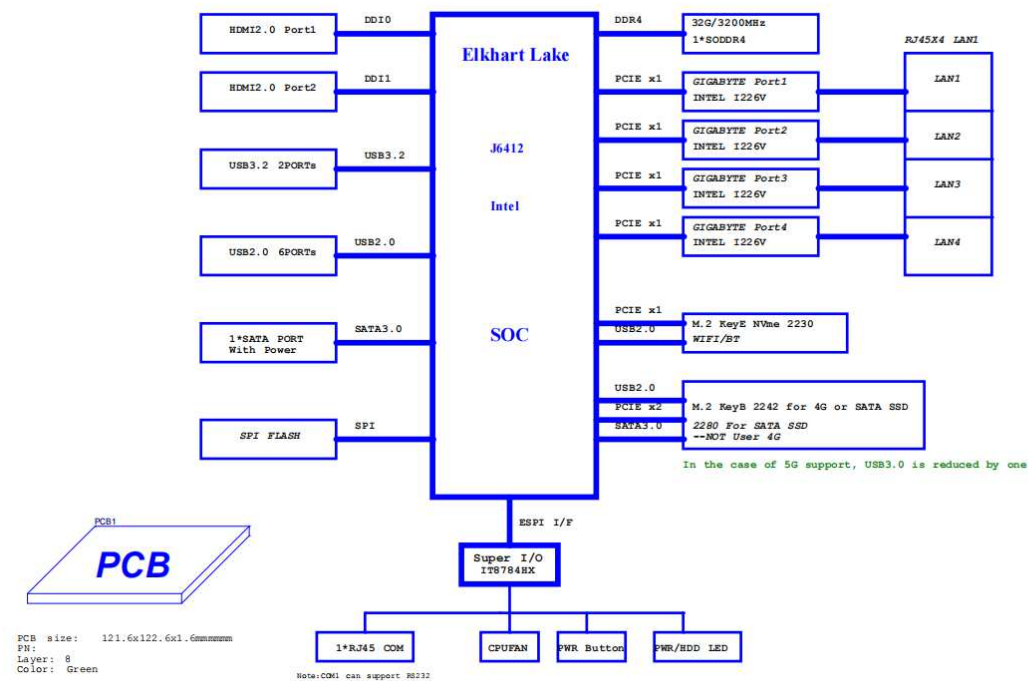
## 1. Product Description

EHL-J6412-LK is a CoreIPC NANO-series multi-LAN motherboard supporting the full range of Intel® Elkhart Lake processors. It is widely applicable to software routers, network security, industrial control, cloud terminals, and other applications.

**The main features of the EHL-J6412-LK motherboard are as follows:**

- Integrated Intel® Celeron® J6412 2.0 GHz quad-core processor; compatible with the full range of Intel® Elkhart Lake processors;
- 1 × SO-DIMM slot supporting single-channel DDR4-3200 memory, up to 32 GB;
- Supports dual displays through HDMI1 and HDMI2;
- Supports 4 × Intel® I225-V or I226 2.5GbE ports;
- Supports 1 × M.2 Key M/B slot for an M.2 SATA SSD or 4G module;
- Supports 1 × M.2 Key E slot for Wi-Fi/Bluetooth;
- Supports 2 × USB 3.1 ports and 2 × USB 2.0 ports;
- Fanless cooling supports enclosed system designs for improved dust and moisture resistance;
- Supports a wide operating temperature range of -20°C to 60°C;
- Supports AT/ATX power mode switching and 12V DC power input.

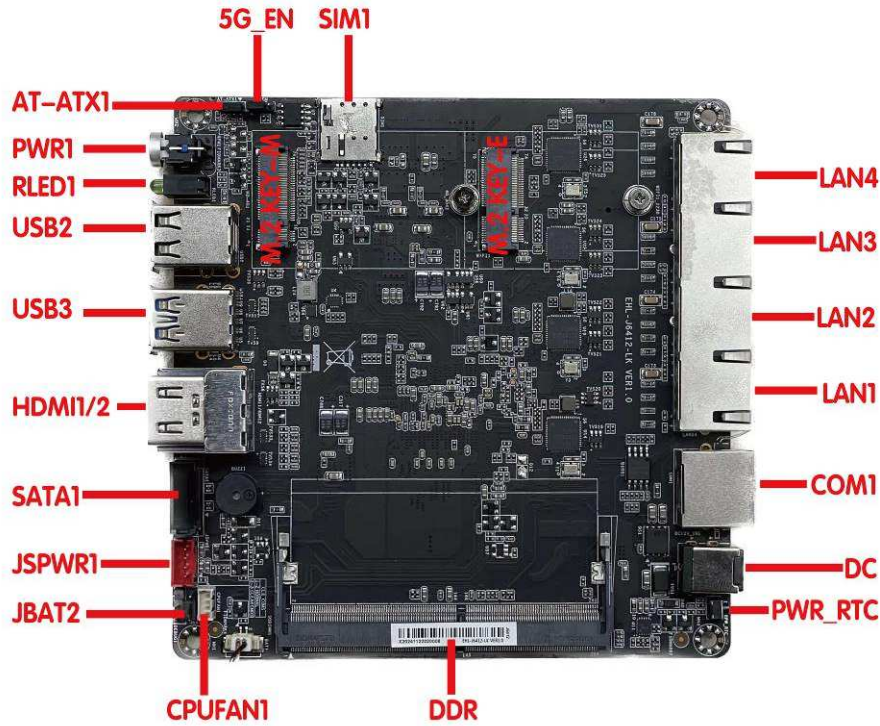
2. Motherboard Block Diagram



### 3. Motherboard Specifications

| Item                         | Description                                                                                                                                |
|------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Processor</b>             | Integrated Intel® Celeron® J6412 2.0 GHz quad-core processor, TDP 10 W<br>Compatible with the full range of Intel® Elkhart Lake processors |
| <b>Memory</b>                | 1 × SO-DIMM slot supporting single-channel DDR4-3200 memory, up to 32 GB                                                                   |
| <b>Display</b>               | Integrated 10th-generation Intel® UHD Graphics                                                                                             |
|                              | 2 × HDMI ports (4K at 60 Hz), supporting synchronous or asynchronous display output                                                        |
| <b>LAN</b>                   | 4 × Intel® I225 or I226 2.5GbE controllers, supporting Wake-on-LAN and PXE boot                                                            |
| <b>Storage</b>               | 1 × 7-pin SATA 3.0 drive connector, up to 6 Gbps                                                                                           |
|                              | 1 × M.2 Key M 2242 SATA SSD slot; supports 2280-length SSDs and 3042 4G modules ( 5G enabled by jumper; no mounting hole )                 |
| <b>Expansion Slot</b>        | 1 × M.2 Key E 2230 slot supporting Wi-Fi/Bluetooth                                                                                         |
| <b>Front I/O</b>             | 4 × Intel® I225-V or I226 2.5GbE ports                                                                                                     |
|                              | 1 × RS232 serial port in RJ45 form factor; serial redirection is supported by default (115200 baud)                                        |
|                              | 1 × 12V DC power input connector                                                                                                           |
|                              | 1 × Clear CMOS button                                                                                                                      |
| <b>Rear I/O</b>              | 2 × USB 3.1 ports                                                                                                                          |
|                              | 2 × USB 2.0 ports                                                                                                                          |
|                              | 2 × stacked HDMI display ports (supporting 4K at 60 Hz)                                                                                    |
|                              | 1 × drive activity LED                                                                                                                     |
|                              | 1 × power button with power LED                                                                                                            |
|                              | 1 × HDD_LED indicator and 1 × POWER_LED indicator.                                                                                         |
| <b>Onboard I/O</b>           | 1 × drive power connector                                                                                                                  |
|                              | 1 × CPU fan connector                                                                                                                      |
| <b>Side I/O</b>              | 1 × SIM card slot                                                                                                                          |
| <b>Fan Connector</b>         | Rear-mounted CPU with fanless cooling design; 1 × 4-pin CPU fan connector reserved                                                         |
| <b>BIOS</b>                  | 128Mb Flash ROM                                                                                                                            |
| <b>Watchdog</b>              | Supports hardware reset (256 levels, 0-255 seconds)                                                                                        |
| <b>Operating System</b>      | Windows 10/Windows 11/Linux                                                                                                                |
| <b>Power Input</b>           | 12V DC power input                                                                                                                         |
| <b>Operating Temperature</b> | -20°C~60°C                                                                                                                                 |
| <b>Storage Temperature</b>   | -30°C~70°C                                                                                                                                 |

|                    |                                          |
|--------------------|------------------------------------------|
| Operating Humidity | 5%-95% relative humidity, non-condensing |
| Dimensions         | 120mm x 120mm                            |



**Note:** The image above shows the front view of EHL-J6412-LK VER1.0. Images of other models may differ.

The image can be enlarged for viewing. Pin 1 of each header is marked with a red triangle.

## 4. Board Installation

### Safety Precautions

Before installing the motherboard, please read and follow the safety precautions below:

- Do not remove or damage the serial number label, distributor warranty label, or any other warranty-related labels on the motherboard before installation. Otherwise, it may affect the warranty validation.
- Before installing or removing the motherboard or any other hardware devices, make sure the power is turned off and the power cord is unplugged from the power outlet.
- When installing hardware devices into the motherboard connectors or slots, make sure the connectors are firmly and properly seated.
- When handling the motherboard, avoid touching the metal contacts or circuit areas to prevent short circuits.
- When handling the motherboard, CPU, or memory module, it is recommended to wear an anti-static wrist strap. If an anti-static wrist strap is not available, make sure your hands are dry and touch a grounded metal object first to discharge static electricity.
- Before installation, place the motherboard on an anti-static mat or inside an anti-static bag.
- Before unplugging the power connector from the motherboard, make sure the power supply is turned off.
- Before turning on the power, make sure the power supply voltage is set according to the local voltage standard.
- Before turning on the power, make sure all hardware cables and power cables are correctly connected.
- Do not allow screws to contact the circuits or components on the motherboard, as this may cause damage or malfunction.
- Make sure no screws or metal objects are left on the motherboard or inside the computer chassis.
- Do not place the computer system on an unstable surface.
- Do not place the computer system in a high-temperature environment.
- Turning on the power during installation may cause damage to the motherboard, other devices, or personal injury.
- If you are not familiar with the installation process, or if you encounter any technical problems while using this product, please consult qualified technical personnel.

### Memory Installation

This motherboard provides **2 × 260-pin DDR4 SO-DIMM memory slot**.

Before installing the memory module, please note the following:

- 1) Make sure the memory module you purchased is compatible with the specifications supported by this motherboard.
- 2) Before installing or removing the memory module, make sure the computer power is turned off to prevent damage.
- 3) The memory module is designed with a foolproof notch. If the insertion direction is

incorrect, the module cannot be inserted. In this case, please change the insertion direction immediately.

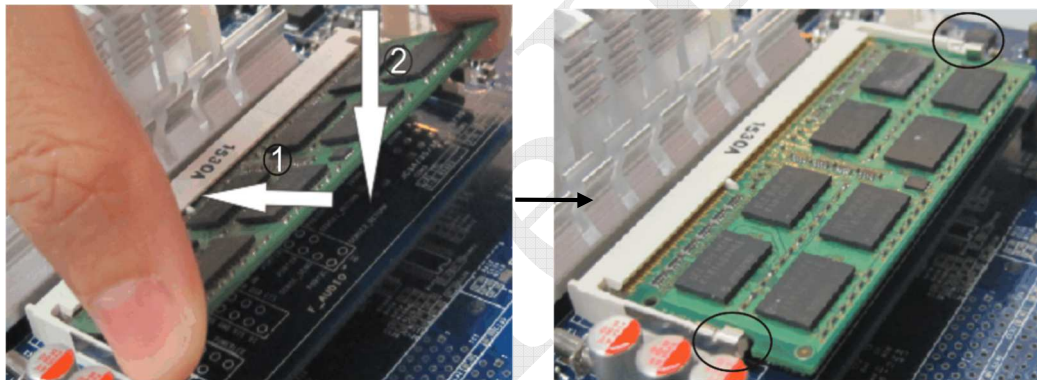
**Memory Installation Steps:**

- 1) Before installing or removing the memory module, turn off the power and unplug the AC power cord.
- 2) Carefully hold the memory module by both edges. Do not touch the metal contacts.
- 3) Align the gold fingers of the memory module with the memory slot. Make sure the notch on the memory module matches the key in the slot.
- 4) Insert the memory module into the slot at an angle of approximately 30 degrees, then gently press it down until you hear a “click” sound. This indicates that the memory module has been properly installed and is ready for use.

**Note:** Do not apply excessive force when pressing down the memory module to avoid damage.

- 5) To remove the memory module, push the retaining clips on both sides of the DIMM slot outward at the same time, then remove the memory module carefully.

**Note:** The installation diagram is for reference only.

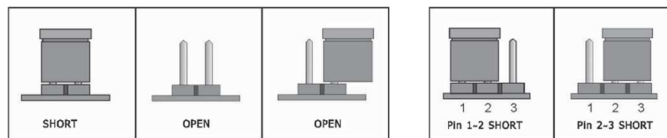


## 5. Jumper Settings

### Jumper Description

For a **2-pin header**, installing a jumper cap on the two pins will close the circuit, creating a short connection.

For a **3-pin header**, the jumper cap can be installed on **Pin 1–2** or **Pin 2–3** to close the corresponding circuit and create a short connection.



How to Identify Pin 1 of a Jumper?

- 1) Carefully check the motherboard. The pin marked with “1” or indicated by a thick white line is usually Pin 1.
- 2) Check the solder pads on the back side of the motherboard. In most cases, the square solder pad indicates Pin 1.

### Clear CMOS Jumper:

The motherboard provides 1 × 1×3-pin Clear CMOS header JBAT1 for clearing or retaining CMOS settings.

**Pin pitch: 2.0 mm**

The CMOS is powered by the onboard button battery. Clearing the CMOS will permanently erase the previous system configuration and restore the system settings to the default factory values.

**To clear the CMOS, follow the steps below:**

- 1) Turn off the computer and disconnect the power supply.
- 2) Short Pin 2–3 of JBAT1 for approximately 5 seconds.
- 3) Power on the computer.
- 4) During startup, follow the on-screen prompt to enter BIOS Setup, then load the optimized default settings.
- 5) Save the settings and exit BIOS Setup.

**Pin definition is shown below:**

### JBAT1 Definition:

| Function                                                     | JBAT1 Setting    |
|--------------------------------------------------------------|------------------|
| Normal operation                                             | 1-2Pin (default) |
| Clear CMOS and restore all BIOS settings to factory defaults | 2-3Pin           |

**AT/ATX Power Mode Jumper**

The motherboard provides **1 × 1×3-pin AT-ATX1 jumper** for selecting the power-on mode.

**Pin pitch: 2.0 mm**

The power-on behavior can be configured by the jumper setting.

**AT-ATX1 Definition:**

| Function              | AT-ATX1 Setting  |
|-----------------------|------------------|
| Disable Auto Power-on | 1-2Pin (default) |
| Enable Auto Power-on  | 2-3Pin           |

**5G Module Signal Selection Jumper:** The motherboard provides 1 × 1×3-pin 5G\_EN jumper (2.0 mm pitch). This jumper enables the M.2 Key M socket to use a USB 3.0 signal for a 5G module.

**5G\_EN Definition:**

| Function                   | AT-ATX1 Setting   |
|----------------------------|-------------------|
| Disable 5G signal function | Pin 1-2 (default) |
| Enable 5G signal function  | 2-3Pin            |

## 6. Pin Definitions

6.1. The motherboard provides 1 × 1×4-pin CPU fan connector. The CPUFAN1 pin definition is as follows:

| PIN | Signal Name | PIN | Signal Name |
|-----|-------------|-----|-------------|
| 1   | GND         | 2   | +12V        |
| 3   | DET         | 4   | PWM         |

**Note:** DET: fan speed pulse output; PWM: PWM fan speed control.

6.2. The motherboard provides 1 × 1×4-pin red SATA drive power connector (2.0 mm pitch). The JSPWR1 pin definition is as follows:

| PIN | Signal Name |
|-----|-------------|
| 1   | +12V        |
| 2   | GND         |
| 3   | GND         |
| 4   | +5V         |

Be sure to confirm the position of Pin 1 on JSPWR1; otherwise, the drive may be damaged.  
Use only the standard power cable supplied by CoreIPC.