

CoreIPC

ITX-J6412-10C

Mini-ITX Multi-Serial Industrial Motherboard Datasheet

Intel® Elkhart Lake Platform

Document	Datasheet
Model	ITX-J6412-10C
Issue	1.1
Product Type	Mini-ITX Multi-Serial Industrial Motherboard
Website	www.CoreIPC.com

This datasheet is prepared based on ITX-J6412-10C User Manual Issue 1.1.

1. Product Overview

The ITX-J6412-10C is a CoreIPC Mini-ITX multi-serial industrial motherboard based on Intel® Elkhart Lake. It integrates DDR4 memory, VGA/optional DP, HDMI, LVDS/optional eDP display interfaces, up to dual Gigabit Ethernet, SATA and mSATA storage, Mini PCIe expansion, multiple USB interfaces, up to 10 serial ports, LPT, audio amplification, and 12 V DC input for communication control, medical instruments, industrial automation, financial equipment, cloud terminals, and other embedded applications.

2. Key Features

- Integrated Intel® Celeron® J6412 2.0 GHz quad-core processor, TDP 10 W; compatible with the Intel® Elkhart Lake processor family.
- 2 x DDR4 SO-DIMM slots supporting DDR4-3200 memory, dual-channel, up to 32 GB according to the main product and specification sections.
- VGA or optional DisplayPort, HDMI 2.0, and LVDS or optional eDP display interfaces; optional dual-eDP configuration; supports synchronous/asynchronous triple-display output.
- Up to 2 x Realtek RTL8111H Gigabit Ethernet ports with Wake-on-LAN and PXE; single-LAN configuration available.
- Storage includes 1 x SATA 3.0 interface and 1 x mSATA interface, each up to 6 Gbps.
- 1 x Mini PCIe slot supporting Wi-Fi or 4G modules.
- Supports up to 8 USB interfaces; rear USB 3.0 availability and onboard USB 2.0 resources vary with LAN configuration.
- Provides 10 x COM ports. COM1-COM8 support RS232/RS485; COM1/COM2 additionally support RS422; source documentation lists up to 8 x RS485 and 2 x RS422.
- Onboard Realtek ALC897 7.1-channel HD audio with Mic-in, Line-out, and 2-ohm 5 W stereo amplifier output.
- Mini-ITX 170 x 170 mm; 12 V DC input; fanless-capable design with CPU/system fan headers; 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	2 x SO-DIMM slots; dual-channel DDR4-3200; up to 32 GB according to Product Description and Motherboard Specifications.
Graphics / Display	Intel® UHD Graphics Gen10; 1 x VGA or DP, 1 x HDMI 2.0, 1 x LVDS or eDP; optional dual eDP. DP/HDMI up to 4K @ 60 Hz.
Ethernet	Up to 2 x Realtek RTL8111H Gigabit Ethernet controllers; Wake-on-LAN and PXE support.
Storage	1 x SATA 3.0 interface up to 6 Gbps; 1 x mSATA interface up to 6 Gbps.
Audio	Realtek ALC897 7.1-channel HD audio; Mic-in, Line-out, and 2-ohm 5 W stereo amplifier output.
Expansion	1 x Mini PCIe slot supporting Wi-Fi/4G modules.
USB	Up to 8 USB interfaces. Single-LAN version supports 4 x USB 3.0; dual-LAN version supports 2 x USB 3.0. Onboard USB 2.0 resources vary by configuration.
Serial Ports	10 x COM. COM1-COM8 support RS232/RS485; COM1/COM2 also support RS422. Source lists up to 8 x RS485 and 2 x RS422.
Legacy I/O	1 x LPT interface; LPT header can be configured as GPIO by special arrangement.
GPIO	LPT header can be configured as GPIO; contact CoreIPC for details.
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.
Dimensions	170 mm x 170 mm.
Environment	Operating: -20°C to 60°C; Storage: -20°C to 70°C; Humidity: 5%-95% RH, non-condensing.

4. I/O Interface Summary

4.1 Rear Panel I/O

Interface	Description
Display	1 x HDMI 2.0; 1 x VGA by default, optional DP instead of VGA.
USB	Up to 4 x rear USB 3.0. Single-LAN version supports 4; dual-LAN version supports 2.
LAN	Up to 2 x RJ45 Gigabit Ethernet ports; LAN2 and two USB 3.0 ports are mutually exclusive.
Audio	1 x Line-out (green); 1 x Mic-in (red).
Power	1 x 12 V DC input.

4.2 Internal I/O and Headers

Interface / Header	Description
HDMI	1 x optional 2 x 8-pin JHDMI header.
VGA	1 x 1 x 12-pin JVGA header sharing the same signals as the DB15 VGA interface.
LVDS / eDP	1 x dual-channel 24-bit LVDS header (default), plus optional eDP1/eDP2 headers. eDP1 is mutually exclusive with LVDS; eDP2 is mutually exclusive with VGA.
Backlight / Panel Power	LVDS panel voltage selectable at 3.3 V / 5 V / 12 V; backlight power 12 V by default, 5 V by hardware modification.
USB 2.0	3 x 2 x 5-pin USB 2.0 headers; single-LAN version can expand 4 x USB 2.0, dual-LAN version 6 x USB 2.0.
Serial	10 x COM interfaces via JCOM1/JCOM2 and two 2 x 20-pin multi-COM headers.
RS485 / RS422	COM1-COM8 support RS485. COM1/COM2 also support RS422. COM1/COM2 Pin 9 can supply RI/5 V/12 V.
LPT	1 x 2 x 13-pin LPT header with selectable 3.3 V / 5 V level.
Audio	1 x front-audio header; 1 x 4-pin amplified speaker output header.
Power / Panel	1 x 4-pin ATX power connector; 1 x storage-device power connector; 1 x front-panel switch/LED header.
Fan	1 x CPU fan header and 1 x reserved system fan header.

5. Display Support

ITX-J6412-10C provides VGA (or optional DP), HDMI 2.0, and LVDS or eDP display interfaces. DP and HDMI support up to 4K at 60 Hz according to the source manual. LVDS is the default embedded display interface; eDP1 is mutually exclusive with LVDS, while eDP2 is mutually exclusive with VGA. The board can therefore support an optional dual-eDP configuration.

Item	Description
Integrated Graphics	Intel® UHD Graphics Gen10.
VGA / DP	VGA by default; optional DisplayPort instead. DP supports up to 4K @ 60 Hz.
HDMI	1 x HDMI 2.0 output, up to 4K @ 60 Hz.
LVDS	1 x dual-channel 24-bit LVDS interface; default embedded display configuration.
eDP1 / eDP2	Two optional eDP interfaces. eDP1 is mutually exclusive with LVDS; eDP2 is mutually exclusive with VGA.
Multi-display	Supports synchronous/asynchronous triple-display output depending on selected display configuration.

6. Serial Port Configuration

Port / Group	Default / Optional Function
COM1-COM2	RS232 / RS485 / RS422. Pin 9 supports selectable RI / 5 V / 12 V.
COM3-COM8	RS232 / RS485.
COM9-COM10	RS232.
Differential Serial	Source Product Description / Ordering Information lists up to 8 x RS485 and 2 x RS422.
Configuration	Serial modes are selected through onboard jumpers; exact production configuration should be confirmed before ordering.

7. Power, Cooling and Reliability Functions

Item	Description
Main Power	12 V DC input.
AT / ATX Mode	AT-ATX jumper selects automatic power-on behavior.
Cooling	Fanless-capable design; 1 x 4-pin CPU fan header and 1 x reserved 4-pin system fan header.
Watchdog	Hardware reset watchdog, 256 levels (0-255 seconds).
Clear CMOS	1 x Clear CMOS jumper.
USB Standby Power	USB_POWER header can enable 5 V USB power after shutdown for selected USB ports.

8. Mechanical and Environmental Information

Item	Description
Form Factor	Mini-ITX industrial motherboard.
Dimensions	170 mm x 170 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 V DC.

9. Ordering Information

Model	Description
ITX-J6412-10C VER1.1 - Dual LAN	J6412; 4 cores; 2.0 GHz; DDR4; HDMI + VGA + LVDS; 2 LAN; 8 USB; LPT; 10 COM / 8 RS485; 12 V DC.
ITX-J6412-10C VER1.1 - Single LAN	J6412; 4 cores; 2.0 GHz; DDR4; HDMI + VGA + LVDS; 1 LAN; 8 USB; LPT; 10 COM / 8 RS485; 12 V DC.
Display Options	Optional DP in place of VGA; optional eDP1/eDP2; dual-eDP configuration supported by source description.
Serial Options	COM1/COM2 support RS422 in addition to RS232/RS485; source lists up to 2 x RS422.

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 information is inconsistent in the source manual: Product Description and Motherboard Specifications state 2 x SO-DIMM slots, dual-channel DDR4-3200, up to 32 GB, while the Memory Installation section states 1 x 260-pin DDR4 SO-DIMM slot. This datasheet follows the main product/specification sections and recommends confirming the production BOM before ordering.
- Version information also differs by section. The manual is Issue 1.1 and Ordering Information lists VER1.1, while the motherboard photo and mechanical I/O drawing are labeled VER1.0 / V1.0. Confirm the production revision before order placement.

11. Contact Information

Company	CoreIPC
Sales Team	CoreIPC Sales Team
Email	sales@coreipc.com
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Disclaimer: This datasheet was compiled from ITX-J6412-10C User Manual Issue 1.1. 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.