

CoreIPC

ITX60D

Mini-ITX Industrial Motherboard Datasheet

Intel® Elkhart Lake Platform

Document	Datasheet
Model	ITX60D
Issue	1.2
Product Type	Mini-ITX Industrial Motherboard
Website	www.CoreIPC.com

This datasheet is prepared based on ITX60D User Manual Issue 1.2.

1. Product Overview

The ITX60D is a CoreIPC Mini-ITX industrial motherboard supporting Intel® Elkhart Lake processors. It integrates DDR4 memory, VGA/HDMI/LVDS with optional eDP configurations, up to dual Gigabit Ethernet, SATA and M.2 storage, Mini PCIe and M.2 Key E expansion, multiple USB and serial interfaces, LPT, GPIO, audio amplification, and 12 V DC input for commercial display, communication control, medical equipment, industrial control, financial equipment, cloud terminals, and other embedded applications.

2. Key Features

- Integrated Intel® Celeron® J6412 2.0 GHz quad-core processor; compatible with the Intel® Elkhart Lake processor family.
- 1 x DDR4 SO-DIMM slot supporting DDR4-3200 memory, up to 32 GB.
- Standard display configuration includes VGA, HDMI 2.0 and LVDS. Optional eDP interfaces can replace HDMI and/or LVDS; the platform supports simultaneous or independent triple-display output and optional dual-eDP configurations.
- Up to 2 x Realtek RTL8111H Gigabit Ethernet 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 slot supporting PCIe/SATA SSDs.
- 1 x Mini PCIe slot for Wi-Fi/4G and 1 x M.2 Key E slot for Wi-Fi/Bluetooth (Wi-Fi only by default).
- Supports up to 9 USB ports according to the Product Description and Ordering Information; detailed USB population varies by LAN configuration.
- Provides 6 x COM ports. COM1/COM2 support RS232/RS485; COM3 supports RS232/RS485/RS422; COM4 supports RS232/RS485; COM5/COM6 support RS232. Optional configurations support up to 4 x RS485 or 2 x RS485 plus 1 x RS422.
- Onboard Realtek ALC897 7.1-channel HD audio with Mic-in, Line-out, and dual-channel 5 W amplifier output for 2-ohm speakers.
- Mini-ITX 170 x 170 mm; 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 260-pin SO-DIMM; DDR4-3200; up to 32 GB.
Graphics / Display	Integrated 10th-generation Intel® UHD Graphics; VGA + HDMI 2.0 + LVDS standard; optional eDP can replace HDMI and/or LVDS. Triple-display support depends on configuration.
Ethernet	Up to 2 x Realtek RTL8111H Gigabit Ethernet controllers; Wake-on-LAN and PXE support.
Storage	1 x SATA 3.0 connector, up to 6 Gbps; 1 x M.2 Key M 2280 slot supporting PCIe/SATA SSDs.
Audio	Realtek ALC897 7.1-channel HD audio; Mic-in, Line-out, and dual-channel 5 W amplifier output for 2-ohm speakers.
Expansion	1 x Mini PCIe slot for Wi-Fi/4G; 1 x M.2 Key E slot for Wi-Fi/Bluetooth (Wi-Fi only by default).
USB	Up to 9 USB ports overall. Rear: 2 x USB 3.0. Onboard USB 2.0 population varies by LAN configuration.
Serial Ports	6 x COM. COM1/COM2: RS232/RS485; COM3: RS232/RS485/RS422; COM4: RS232/RS485; COM5/COM6: RS232. Optional up to 4 x RS485 or 2 x RS485 + 1 x RS422.
Legacy I/O	1 x LPT header.
GPIO	4-channel GPIO input/output.
BIOS	128 Mb Flash ROM.
Watchdog	Hardware watchdog timer, 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; 1 x VGA in the standard rear-I/O configuration.
USB	2 x USB 3.0; additional USB 2.0 availability depends on LAN configuration.
LAN	Up to 2 x RJ45 Gigabit Ethernet ports; LAN2 and a rear USB 2.0 interface are mutually exclusive according to the source manual.
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 / eDP2	1 x optional JHDMI header; HDMI1 is mutually exclusive with the optional JEDP2 eDP header.
VGA	1 x JVGA header sharing signals with the DB15 VGA port.
LVDS / eDP1	1 x dual-channel 24-bit LVDS header; LVDS1 is mutually exclusive with the optional JEDP1 eDP header; LVDS is default.
Backlight / Panel	1 x display backlight connector; selectable 3.3 V / 5 V / 12 V panel voltage and 5 V / 12 V backlight power.
USB 2.0	4 x 2 x 5-pin USB 2.0 headers. Usable port count varies by single-/dual-LAN configuration and shared resources.
Serial	2 x standard JCOM headers plus 1 x 2 x 20-pin four-port header for COM3-COM6.
RS485 / RS422	COM1/COM2 support RS485; COM3 supports optional RS485/RS422; COM4 supports optional RS485. COM3/COM4 differential modes require hardware modification.
LPT	1 x LPT parallel-port header.
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 power connector; 1 x front-panel switch/LED header.
Fan / GPIO	1 x reserved CPU fan header; 1 x reserved system fan header; 1 x GPIO header.

5. Display Support

ITX60D provides VGA, HDMI 2.0 and LVDS in the standard configuration. The source manual defines two optional eDP headers: JEDP1 is mutually exclusive with LVDS1, while JEDP2 is mutually exclusive with HDMI1. This allows optional dual-eDP configurations. The platform supports simultaneous or independent triple-display output, depending on the selected display population.

Item	Description
Integrated Graphics	Integrated 10th-generation Intel® UHD Graphics.
VGA	1 x VGA output.
HDMI	1 x HDMI 2.0 output in the standard configuration.
LVDS	1 x dual-channel 24-bit LVDS interface; default embedded display configuration.
eDP	2 x optional eDP headers. JEDP1 is mutually exclusive with LVDS1; JEDP2 is mutually exclusive with HDMI1.
Multi-display	Supports simultaneous or independent triple-display output depending on selected VGA/HDMI/LVDS/eDP configuration.

6. Serial Port Configuration

Port / Source	Default / Optional Function
COM1	RS232 default; supports RS485 by jumper; Pin 9 supports selectable RI / 5 V / 12 V.
COM2	RS232 default; supports RS485 by jumper; Pin 9 supports selectable RI / 5 V / 12 V.
COM3	RS232 default; optional RS485 or RS422 requires hardware modification.
COM4	RS232 default; optional RS485 requires hardware modification.

Port / Source	Default / Optional Function
COM5-COM6	RS232.
Differential Serial	2-COM version supports 1 x RS485 by default; 6-COM version supports 2 x RS485 by default. Optional 4 x RS485 or 2 x RS485 + 1 x RS422 requires advance confirmation.

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	Fanless thermal design; 1 x reserved 4-pin CPU fan header and 1 x reserved 4-pin system fan header.
Watchdog	Hardware watchdog timer, 256 levels (0-255 seconds).
Clear CMOS	JBAT1 1 x 3-pin Clear CMOS jumper.
USB Wake-up	Optional JUSB_PWR1 jumper supports USB standby power and keyboard/mouse wake-up.
LVDS Enable	LVDS_EN1 jumper enables or disables LVDS.

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
ITX60D-L12 VER1.2	J6412; 4 cores; 2.0 GHz; DDR4; HDMI + VGA + LVDS; 1 LAN; 9 USB; LPT; 2 COM / 1 RS485; 12 V DC.
ITX60D-L16 VER1.2	J6412; 4 cores; 2.0 GHz; DDR4; HDMI + VGA + LVDS; 1 LAN; 9 USB; LPT; 6 COM / 2 RS485; 12 V DC.
ITX60D-L26 VER1.2	J6412; 4 cores; 2.0 GHz; DDR4; HDMI + VGA + LVDS; 2 LAN; 9 USB; LPT; 6 COM / 2 RS485; 12 V DC.
Display Options	Optional eDP configurations; JEDP1 replaces LVDS1 and JEDP2 replaces HDMI1.
Expansion	Mini PCIe for Wi-Fi/4G; M.2 Key E for Wi-Fi/Bluetooth; M.2 Key M 2280 for PCIe/SATA SSD.

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 manual states up to 9 USB ports overall, while the detailed onboard-I/O section describes four USB 2.0 headers with different usable-port counts by LAN configuration. This datasheet therefore keeps the headline USB count at up to 9 and recommends confirming the required USB population before ordering.
- Display and serial options require configuration confirmation. JEDP1 replaces LVDS1 and JEDP2 replaces HDMI1. COM3/COM4 differential serial modes require hardware modification; optional 4 x RS485 or 2 x RS485 + 1 x RS422 configurations should be specified before ordering.

11. Contact Information

Company	CoreIPC
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Disclaimer: This datasheet was compiled from ITX60D User Manual Issue 1.2. 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.