

CoreIPC

ITX32D

Mini-ITX Industrial Motherboard Datasheet

Intel® Alder Lake-N / Twin Lake Platform

Document	Datasheet
Model	ITX32D
Issue	2.0
Product Type	Mini-ITX Industrial Motherboard
Website	www.CoreIPC.com

This datasheet is prepared based on ITX32D User Manual Issue 2.0.

1. Product Overview

The ITX32D is a CoreIPC Mini-ITX industrial motherboard supporting Intel® Alder Lake-N and Twin Lake processors. It combines DDR4 memory, multiple display interfaces, up to dual Realtek Gigabit Ethernet, SATA and M.2 storage, M.2 Key E and Mini PCIe expansion, USB, serial, LPT, TPM, GPIO, and 12 V DC input for commercial display, communication control, medical equipment, industrial control, financial equipment, cloud terminals, and other applications.

2. Key Features

- Supports Intel® Alder Lake-N and Twin Lake processors. The detailed specification lists N95/N97/N200/N300/Core™ i3-N305 compatibility, while Ordering Information also includes N100, N150 and N250 variants.
- 1 x DDR4 SO-DIMM slot supporting single-channel DDR4 memory up to 3200 MHz, maximum 32 GB.
- Supports VGA or DP, HDMI, LVDS or eDP1, and eDP2 display interfaces. Dual eDP is supported; the source manual describes up to triple-display output.
- Up to 2 x Realtek Gigabit Ethernet ports with Wake-on-LAN and PXE; single-LAN configuration optional.
- Storage includes 1 x SATA 3.0 connector and 1 x M.2 Key M 2280 PCIe/SATA SSD slot.
- 1 x M.2 Key E slot for Wi-Fi/Bluetooth and 1 x Mini PCIe slot for 4G by default. The Mini PCIe slot can be hardware-modified for mSATA or Wi-Fi support with shared SATA/USB resources as described in the source manual.
- Supports up to 9 USB ports, including up to 4 x USB 3.0; exact count depends on LAN configuration.
- Provides up to 6 x COM ports. COM1/COM2 support RS485 by default; optional configurations support up to 4 x RS485 or 2 x RS422 ports.
- Onboard ALC897 7.1-channel HD audio with Mic-in, Line-out, and dual-channel 5 W amplifier output at 2 ohms.
- 170 x 170 mm Mini-ITX form factor; 12 V DC input; TPM 2.0 header; operating temperature -20°C to 60°C according to the detailed specification.

3. Technical Specifications

Category	Specification
Processor	Integrated Intel® Celeron® N100 0.8 GHz quad-core processor, TDP 6 W; compatible with Intel® Alder Lake N95/N97/N200/N300/Core™ i3-N305 processors. Product description also states Twin Lake series support.
Memory	1 x SO-DIMM slot; single-channel DDR4-3200; up to 32 GB.
Graphics / Display	Integrated Intel® UHD Graphics; VGA or DP, HDMI, LVDS or eDP1, and eDP2. DP and HDMI support up to 4K @ 60 Hz.
Ethernet	Up to 2 x Realtek Gigabit Ethernet controllers; single-LAN option; 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 PCIe/SATA SSD slot.
Audio	Realtek ALC897 7.1-channel HD audio; microphone input, line output, and dual-channel 5 W amplifier output at 2 ohms.
Expansion	1 x M.2 Key E for Wi-Fi/Bluetooth; 1 x Mini PCIe for 4G by default. Mini PCIe can be hardware-modified for mSATA or Wi-Fi with shared resources.
USB	Up to 9 USB ports, including up to 4 x USB 3.0. Port count depends on single-LAN / dual-LAN configuration.
Serial Ports	Up to 6 x COM ports. COM1/COM2 support RS485 by default; optional support for 4 x RS485 or 2 x RS422 ports. Some optional modes require hardware modification.
Legacy I/O	1 x LPT header.
GPIO	4-channel GPIO input/output.
TPM	1 x external TPM 2.0 header.
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, optionally configurable as DisplayPort.
USB	2 x USB 3.0 standard; single-LAN configuration supports up to 4 x USB 3.0.
LAN	Up to 2 x RJ45 Gigabit Ethernet ports; LAN2 and additional USB 3.0 resources are mutually exclusive.
Audio	1 x Line-out (green); 1 x Microphone input (red).
Power / Controls	1 x 12 V DC input; optional auto power-on DIP switch and Clear CMOS button are not populated by default.

4.2 Internal I/O and Headers

Interface / Header	Description
LVDS	1 x 2 x 15-pin LVDS header supporting dual-channel 24-bit output; mutually exclusive with eDP1; LVDS default.
eDP	1 x eDP1 header, mutually exclusive with LVDS; 1 x separate eDP2 header.
Backlight / Brightness	1 x 6-pin panel backlight connector and 1 x 4-pin manual panel brightness control connector.
TPM	1 x 2 x 6-pin TPM 2.0 header.
USB 2.0	3 x 2 x 5-pin USB 2.0 headers; single-LAN supports up to 5 USB 2.0 ports and dual-LAN up to 6 according to the source.
Serial	2 x standard COM headers plus 1 x 2 x 20-pin four-port header for COM3-COM6.
RS485 / RS422	COM1/COM2 support RS485. COM2/COM3 RS422 and COM3/COM4 RS485 require hardware modification as described in the pin-definition section.
LPT	1 x 2 x 13-pin LPT header.
Audio	1 x front-audio header; 1 x 4-pin amplified speaker output connector.
Power / Panel	1 x 4-pin ATX power connector; 1 x drive-power connector; 1 x front-panel switch/LED header.
Fan / GPIO	1 x CPU fan header; 1 x system fan header; 1 x GPIO header.

5. Display Support

ITX32D provides VGA or optional DisplayPort, HDMI, LVDS or eDP1, and a separate eDP2 interface. The detailed specification states VGA/DP and HDMI support up to 4K at 60 Hz, with synchronous or asynchronous triple-display output through VGA/DP, HDMI, LVDS/eDP1, and eDP2.

Item	Description
Integrated Graphics	Intel® UHD Graphics.
VGA / DP	1 x VGA standard; configurable as DisplayPort. DP supports up to 4K @ 60 Hz.
HDMI	1 x HDMI output supporting up to 4K @ 60 Hz.
LVDS / eDP1	LVDS is default; eDP1 is optional and mutually exclusive with LVDS.
eDP2	1 x dedicated eDP2 interface.
Multi-display	Source manual specifies synchronous or asynchronous triple-display output.

6. Serial Port Configuration

Port / Source	Default / Optional Function
COM1	RS232 default; supports RS485 through jumper configuration.
COM2	RS232 default; supports RS485; RS422 requires hardware modification.
COM3	RS232 default; optional RS485 or RS422 requires hardware modification.
COM4	RS232 default; optional RS485 requires hardware modification.
COM5-COM6	RS232.
Configuration Note	Standard 2-COM model supports 1 RS485; 6-COM model supports 2 RS485. Product description states optional 4 RS485 or 2 RS422 configurations.

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	1 x 4-pin CPU fan header and 1 x 4-pin system fan header; aluminum heatsink can be used for a sealed system design.
Watchdog	Hardware watchdog timer, 256 levels (0-255 seconds).
Clear CMOS	JBAT1 Clear CMOS jumper; RPW1 Clear CMOS button is listed as not populated by default.
TPM	1 x external TPM 2.0 header.
Panel Power	Selectable display operating voltages of 3.3 V / 5 V / 12 V and backlight power of 5 V / 12 V.

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.
Cooling	CPU and system fan headers; aluminum heatsink may be used for sealed-system design according to the source.

9. Ordering Information

Model	Description
ITX32D-L12 VER2.0	N100; 4C; up to 3.4 GHz; 6 W; DDR4; 1 LAN; 9 USB; LPT; 2 COM / 1 RS485; 12 V.
ITX32D-L16 VER2.0	N100; 4C; up to 3.4 GHz; 6 W; DDR4; 1 LAN; 9 USB; LPT; 6 COM / 2 RS485; 12 V.
ITX32D-L26 VER2.0 - N100	N100; 4C; up to 3.4 GHz; 6 W; DDR4; 2 LAN; 8 USB; LPT; 6 COM / 2 RS485; 12 V.
ITX32D-L26 VER2.0 - i3-N305	Core™ i3-N305; 8C; up to 3.8 GHz; 15 W; DDR4; 2 LAN; 8 USB; LPT; 6 COM / 2 RS485; 12 V.
ITX32D-L26 VER2.0 - N95	N95; source table lists 8C; up to 3.4 GHz; 15 W; DDR4; 2 LAN; 8 USB; LPT; 6 COM / 2 RS485; 12 V.
ITX32D-L26 VER2.0 - N150	N150; 4C; up to 3.6 GHz; 6 W; DDR4; 2 LAN; 8 USB; LPT; 6 COM / 2 RS485; 12 V.
ITX32D-L26 VER2.0 - N250	N250; 4C; up to 3.8 GHz; 6 W; DDR4; 2 LAN; 8 USB; LPT; 6 COM / 2 RS485; 12 V.

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 Ordering Information lists an N95 variant with 8 cores. This datasheet preserves that source entry rather than silently correcting it; confirm the exact CPU specification before order placement.
- The source document is Issue 2.0 and the motherboard photo is labeled ITX32D-L26 VER2.0, while the I/O layout caption still states ITX32D V1.0. USB count, LAN count, display population, Mini PCIe function and serial modes vary by configuration.

11. Contact Information

Company	CoreIPC
Sales Team	CoreIPC Sales Team
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Disclaimer: This datasheet was compiled from ITX32D User Manual Issue 2.0. 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.