

CoreIPC

OPS31C

OPS Industrial Motherboard Datasheet

Intel® B250 LGA1151 Platform

Document	Datasheet
Model	OPS31C
Issue	1.1
Product Type	OPS Industrial Motherboard
Website	www.CoreIPC.com

This datasheet is prepared based on OPS31C User Manual Issue 1.1.

1. Product Overview

The OPS31C is a CoreIPC OPS industrial motherboard based on the Intel® B250 chipset and LGA1151 platform. It supports 6th-, 7th-, 8th-, and 9th-generation Intel® Celeron®, Pentium®, and Core™ i3/i5/i7 processors. With triple-display support, Gigabit Ethernet, M.2 storage and wireless expansion, multiple USB ports, and 12-19 V DC input, it is suitable for commercial displays, machine vision, medical instruments, industrial control, financial equipment, cloud terminals, and related embedded applications.

2. Key Features

- Supports 6th-, 7th-, 8th-, and 9th-generation Intel® LGA1151 Celeron®, Pentium®, and Core™ i3/i5/i7 processors.
- 2 x DDR4 SO-DIMM slots supporting dual-channel DDR4-2133/2666 memory, up to 64 GB.
- Triple-display capability through DP, HDMI, and VGA; DP supports 4K @ 60 Hz, HDMI 1.4 up to 4096 x 2304 @ 24 Hz, and VGA up to 1920 x 1200 @ 60 Hz.
- 1 x Realtek RTL8111H Gigabit Ethernet port with Wake-on-LAN and PXE boot support.
- Storage includes 1 x 2.5-inch SATA interface and 1 x M.2 Key M slot; M.2 SATA is standard and NVMe requires hardware modification and confirmation before ordering.
- 1 x M.2 Key E slot supports Wi-Fi/Bluetooth expansion.
- Supports 6 USB ports on the motherboard, or up to 10 USB ports when used with the OPS expansion board.
- No standard COM port is listed in Ordering Information; the Pin Definitions section documents 1 x COM1 2 x 5-pin RS232 header.
- Onboard Realtek ALC897 6-channel HD audio with MIC, Line-out, and 2 ohm / 5 W amplifier output.
- OPS form factor, 170 x 190 mm; 12-19 V DC input; operating temperature -10°C to 60°C.

3. Technical Specifications

Category	Specification
Processor	6th-, 7th-, 8th-, and 9th-generation Intel® LGA1151 Celeron®, Pentium®, and Core™ i3/i5/i7 processors.
Chipset	Intel® B250 high-speed chipset.
Memory	2 x 260-pin DDR4 SO-DIMM slots; dual-channel DDR4-2133/2666; up to 64 GB.
Graphics / Display	Integrated Intel® HD Graphics with DirectX 12 and OpenGL 4.5 support; VGA, HDMI 1.4 and DisplayPort outputs.
VGA	1 x VGA, up to 1920 x 1200 @ 60 Hz.
HDMI	1 x HDMI 1.4, up to 4096 x 2304 @ 24 Hz.
DisplayPort	1 x DP, up to 4K @ 60 Hz.
Ethernet	1 x Realtek RTL8111H Gigabit Ethernet; Wake-on-LAN and PXE boot.
Storage	1 x 2.5-inch SATA interface; 1 x M.2 Key M slot. M.2 SATA is supported by default; NVMe requires hardware modification and confirmation before ordering.
Audio	Realtek ALC897 6-channel HD audio; MIC, Line-out and 2 ohm / 5 W amplifier output.
Expansion	1 x M.2 Key E for Wi-Fi/Bluetooth; 1 x PCIe 3.0 x16 slot not populated by default.
USB	4 x USB 3.0 + 2 x USB 2.0 + 1 x USB Type-C (USB 2.0) on the board; up to 10 USB ports when used with OPS expansion board.
Serial	Ordering Information lists COM = 0; Pin Definitions document 1 x COM1 2 x 5-pin RS232 header.
BIOS	64 Mb Flash ROM.
Watchdog	Hardware reset watchdog, 256 levels, 0-255 seconds.
Operating System	Windows 7 / Windows 10 / Linux.
Power	12-19 V DC input.
Dimensions	170 mm x 190 mm.

4. I/O Interface Summary

4.1 Rear Panel I/O

Interface	Description
Display	1 x dual-stack HDMI 1.4 + DP 1.2 connector; 1 x VGA port. Optional HDMI 2.0 may replace VGA.
USB	4 x USB 3.0; 2 x USB 2.0; 1 x USB Type-C (USB 2.0).
LAN	1 x RJ45 Gigabit Ethernet port.
Audio	1 x Line-out jack (green); 1 x MIC jack (red).
Controls / Indicators	1 x one-key recovery button; 1 x push-button switch; 1 x power LED and HDD activity LED.

4.2 Internal I/O and Headers

Interface / Header	Description
Front Panel	1 x 2 x 5-pin front-panel switch and LED header.
USB 2.0	1 x 2 x 5-pin USB 2.0 header; motherboard supports 6 USB ports, or up to 10 with the OPS expansion board.
Serial	1 x COM1 2 x 5-pin RS232 header, 2.54 mm pitch.
CPU Fan	1 x 4-pin smart fan connector with GND, +12 V, DET and PWM.
Storage	1 x 2.5-inch SATA interface; 1 x M.2 Key M storage slot.
Wireless	1 x M.2 Key E slot for Wi-Fi/Bluetooth.
PCIe	1 x PCIe 3.0 x16 slot, not populated by default.

5. Display Support

OPS31C provides DP, HDMI, and VGA outputs. The detailed specification lists DP up to 4K @ 60 Hz, HDMI 1.4 up to 4096 x 2304 @ 24 Hz, and VGA up to 1920 x 1200 @ 60 Hz. The rear I/O description also notes an optional HDMI 2.0 configuration in place of VGA.

Item	Description
Integrated Graphics	Intel® HD Graphics; DirectX 12 and OpenGL 4.5.
VGA	1 x VGA, up to 1920 x 1200 @ 60 Hz.
HDMI	1 x HDMI 1.4, up to 4096 x 2304 @ 24 Hz.
DisplayPort	1 x DP, up to 4K @ 60 Hz.
Triple Display	Supports asynchronous triple-display output through DP, HDMI and VGA.

6. Serial Port Configuration

Port / Source	Default / Optional Function
Ordering Information	COM is listed as 0 for OPS31C VER1.0.
Pin Definitions	Documents 1 x COM1 2 x 5-pin RS232 header, 2.54 mm pitch.
Configuration Note	Confirm the actual serial-port configuration before ordering if a COM interface is required.
RS485	RS485 support is not specified for OPS31C in the Issue 1.1 Ordering Information or Pin Definitions.

7. Power, Cooling and Reliability Functions

Item	Description
Main Power	12-19 V DC input.
AT / ATX Mode	AT-ATX1 jumper supports auto power-on enable/disable selection.
CPU Fan	1 x 4-pin smart fan connector with PWM control.
Watchdog	Hardware reset watchdog, 256 levels, 0-255 seconds.
BIOS	64 Mb Flash ROM.
Clear CMOS	1 x 1 x 3-pin JBAT1 Clear CMOS header.

8. Mechanical and Environmental Information

Item	Description
Product Type	OPS industrial motherboard.
Dimensions	170 mm x 190 mm.
Operating Temperature	-10°C to 60°C.
Storage Temperature	-20°C to 70°C.
Operating Humidity	5%-95% RH, non-condensing.
Installation Notes	Use ESD protection and power off the system before installation, removal or hardware reconfiguration.

9. Ordering Information

Model	Description
OPS31C VER1.0	B250; DDR4; HDMI; VGA; DP; 1 LAN; 10 USB listed in Ordering Information; COM 0; 12-19 V DC.
Storage Option	M.2 SATA is standard; NVMe requires hardware modification and confirmation before ordering.
Display Option	VGA is listed as standard; optional HDMI 2.0 may be configured in the VGA position.
USB Expansion	Up to 10 USB ports are supported when used with the OPS expansion board.

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 source manual specifies Intel® B250 as the standard chipset for OPS31C VER1.0.
- The source manual specifies dual-channel DDR4-2133/2666 memory, up to 64 GB.

11. Contact Information

Company	CoreIPC
Sales Team	CoreIPC Sales Team
Email	sales@coreipc.com
Website	https://www.coreipc.com/

Disclaimer: This datasheet was compiled from OPS31C User Manual Issue 1.1. Product specifications, interface counts, supported functions and optional configurations may vary by production version. Please confirm the selected configuration before order placement. All product names, trademarks and registered trademarks are the property of their respective owners.