CoreIPC

OPS31C User Manual

Issue 1.1

www.CoreIPC.com

© 2026 CoreIPC. All Rights Reserved.

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.

Ordering Information

No.	Model	Chipset	DDR	HDMI	VGA	DP	LAN	USB	PS2	LPT	COM	POWER
1	OPS31C VER1.0	B250	DDR4	1	1	1	1	10	0	0	0	12-19V

CoreIPC

© 2026 CoreIPC. All Rights Reserved.

1. Product Description

OPS31C is a CoreIPC ITX industrial motherboard supporting Intel® LGA1151 Pentium®, Celeron®, and Core™ i3/i5/i7 6th-, 7th-, 8th-, and 9th-generation processors. It is widely applicable to commercial displays, machine vision, medical instruments, industrial control, financial equipment, cloud terminals, and other fields.

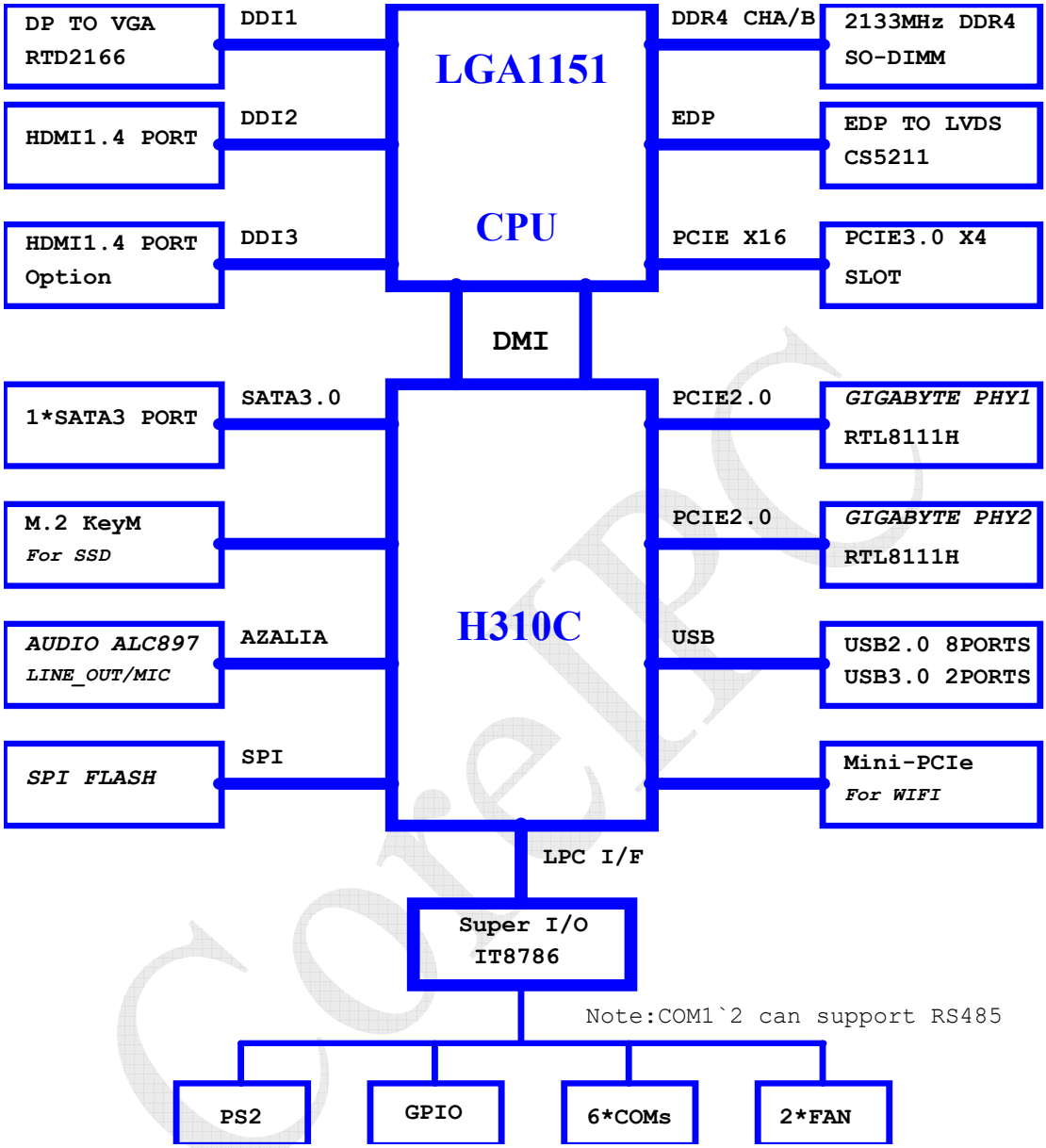
The main features of the OPS31C motherboard are as follows:

- Supports Intel® 6th-, 7th-, 8th-, and 9th-generation LGA1151 Pentium®, Celeron®, and Core™ i3/i5/i7 series processors;
- Supports dual-channel 2133/2666 MHz DDR4 SO-DIMM memory, up to 64 GB;
- Supports DP, HDMI, and VGA display interfaces for asynchronous triple-display output;
- Supports 1 × Gigabit Ethernet port;
- Supports 1 × M.2 Key E slot for Wi-Fi/Bluetooth and 1 × M.2 Key M slot for an SSD;
- Supports 6 or 8 USB ports;

CoreIPC

© 2026 CoreIPC. All Rights Reserved.

2. Motherboard Block Diagram



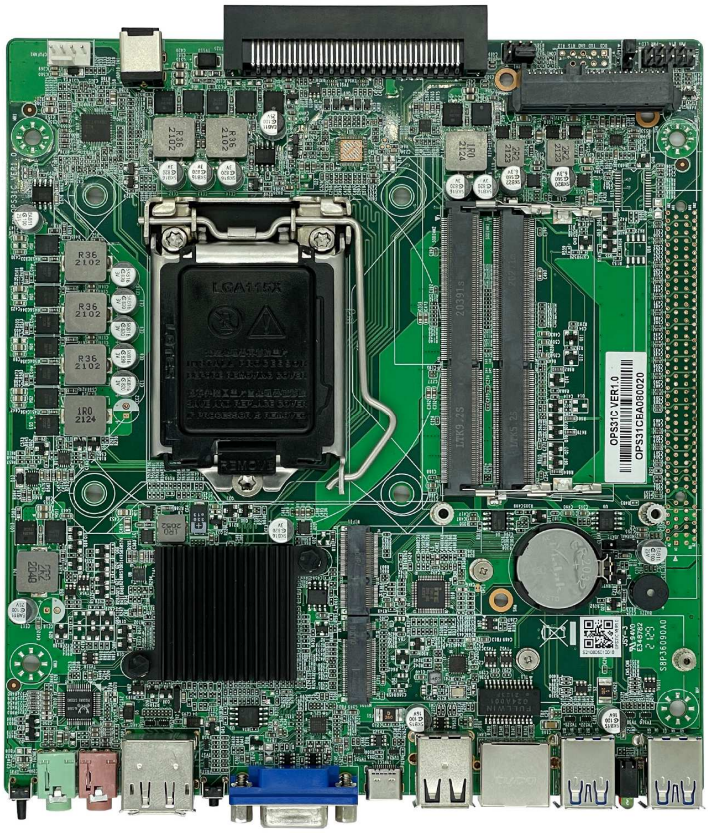
© 2026 CoreIPC. All Rights Reserved.

3. Motherboard Specifications

Item	Description
Processor	Supports 6th-, 7th-, 8th-, and 9th-generation LGA1151 Intel® Celeron®, Pentium®, and Core™ i3/i5/i7 processors
Chipset	Intel® B250 high-speed chipset
Memory	2 × SO-DIMM slots supporting dual-channel 2133/2666 MHz DDR4 memory, up to 64 GB
Display	Integrated Intel® HD Graphics supporting DirectX 12, OpenGL 4.5, and 4K display output
	1 × VGA port, supporting up to 1920 × 1200 at 60 Hz
	1 × HDMI 1.4 port, supporting up to 4096 × 2304 at 24 Hz
	1 × DP port, supporting 4K at 60 Hz
Network	1 × Realtek RTL8111H Gigabit Ethernet controller, supporting Wake-on-LAN and PXE boot
Storage	1 × 2.5-inch SATA interface
	1 × M.2 Key M slot (supports M.2 SATA by default; NVMe can be supported through a hardware modification—confirm before ordering)
Audio	Onboard ALC897 6-channel HD audio controller supporting MIC, Line-out, and amplifier output (2 Ω, 5 W)
Expansion Slots	1 × M.2 Key E slot supporting Wi-Fi/Bluetooth
	1 × PCIe 3.0 x16 slot (not populated by default)
Rear I/O	1 × dual-stack HDMI 1.4 and DP 1.2 display connector
	1 × VGA display port (optional 1 × HDMI 2.0 port)
	4 × USB 3.0 ports
	2 × USB 2.0 ports
	1 × RJ45 Gigabit Ethernet port (LAN2 and 2 × USB 2.0 ports are mutually exclusive)
	1 × Line-out jack (green) and 1 × MIC jack (red)
	1 × USB Type-C port (USB 2.0)
	1 × one-key recovery button
	1 × push-button switch
	1 × power LED and HDD activity LED
Onboard I/O	1 × 2 × 5-pin front-panel switch and LED header
Front I/O	1 × 12 V/19 V DC power input connector
Fan Connector	1 × 4-pin CPU fan connector
BIOS	64Mb Flash ROM

© 2026 CoreIPC. All Rights Reserved.

Watchdog	Supports hardware reset (256 levels, 0–255 seconds)
Operating System	Windows 7/Windows 10/Linux
Power Input	Supports 12–19 V DC power input
Operating Temperature	-10°C to 60°C
Storage Temperature	-20°C to 70°C
Operating Humidity	5%–95% relative humidity, non-condensing
Dimensions	170mm x 190mm



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

The image above shows the OPS31C VER1.0 product and is for reference only.

© 2026 CoreIPC. All Rights Reserved.

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

© 2026 CoreIPC. All Rights Reserved.

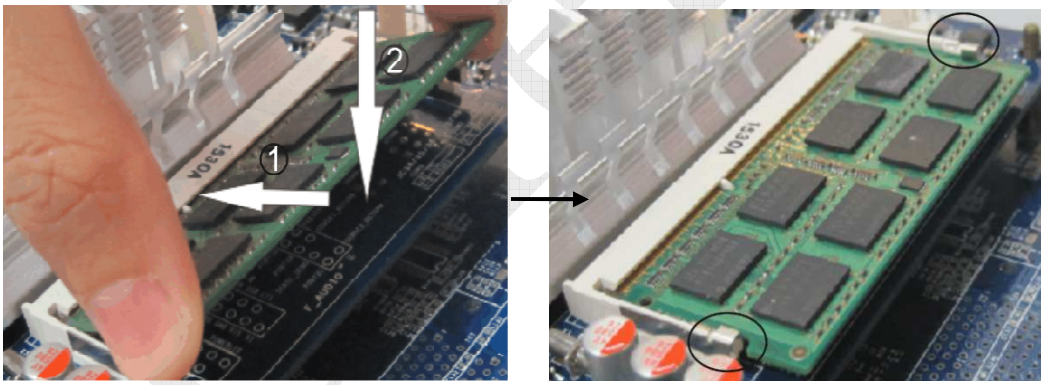
supported by this motherboard.

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.



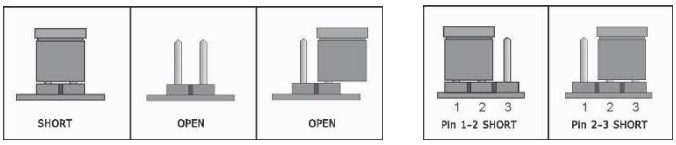
© 2026 CoreIPC. All Rights Reserved.

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: 2.54 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	1-2 Pin
Clear CMOS and restore all BIOS settings to factory defaults	2-3 Pin

© 2026 CoreIPC. All Rights Reserved.

AT/ATX Power Mode Jumper

The motherboard provides **1 × 1×3-pin AT-ATX1 jumper** for selecting the power-on mode.
Pin pitch: 2.54 mm

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

AT-ATX1 Definition:

Function	AT-ATX1 Setting
Disable Auto Power-on	1-2 Pin
Enable Auto Power-on	2-3 Pin

CoreIPC

© 2026 CoreIPC. All Rights Reserved.

6. Pin Definitions

6.1. The motherboard provides 1 serial port. COM1 is a pin-header interface with a 2.54 mm pitch.

The standard COM1 pin definition is as follows:

Pin	Signal Name	Pin	Signal Name
1	DCD	2	RXD
3	TXD	4	DTR
5	GND	6	DSR
7	RTS	8	CTS
9	RI	10	NC

6.2. The motherboard supports 6 USB ports, or up to 10 USB ports when used with the OPS expansion board.

The motherboard provides 1 × 2 × 5-pin USB 2.0 header with a 2.54 mm pitch. The F_USB1 pin definition is as follows:

Pin	Signal Name	Pin	Signal Name
1	+5V	2	+5V
3	Data0-	4	Data1-
5	Data0+	6	Data1+
7	GND	8	GND
9		10	GND

6.3. The motherboard provides 1 smart fan connector. The CPUFAN1 pin definition is as follows:

Pin	Signal Name
1	GND
2	+12V
3	DET
4	PWM

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

6.4. The motherboard provides 1 × 2 × 5-pin FPANEL1 header with a 2.54 mm pitch.

The chassis power switch, reset switch, HDD activity LED, and power LED can be connected to this header. The FPANEL1 pin definition is as follows:

Pin	Signal Name	Pin	Signal Name
1	HDDLED+	2	PWRLED+
3	HDDLED-	4	PWRLED-
5	GND	6	PWRBTN#
7	RESETBTN#	8	GND
9	NC	10	

© 2026 CoreIPC. All Rights Reserved.