



ITX310P User Manual

Issue 1.1

www.CoreIPC.com

Security Guidance

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- 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	Memory	Expansion	HDMI	VGA	SATA	LAN	USB	PS2	COM/ 485	POWER
1	ITX310P VER1.1	B250/B365	2*DDR4	PCIe X16	1	1	4	2	10	1	6/2	ATX

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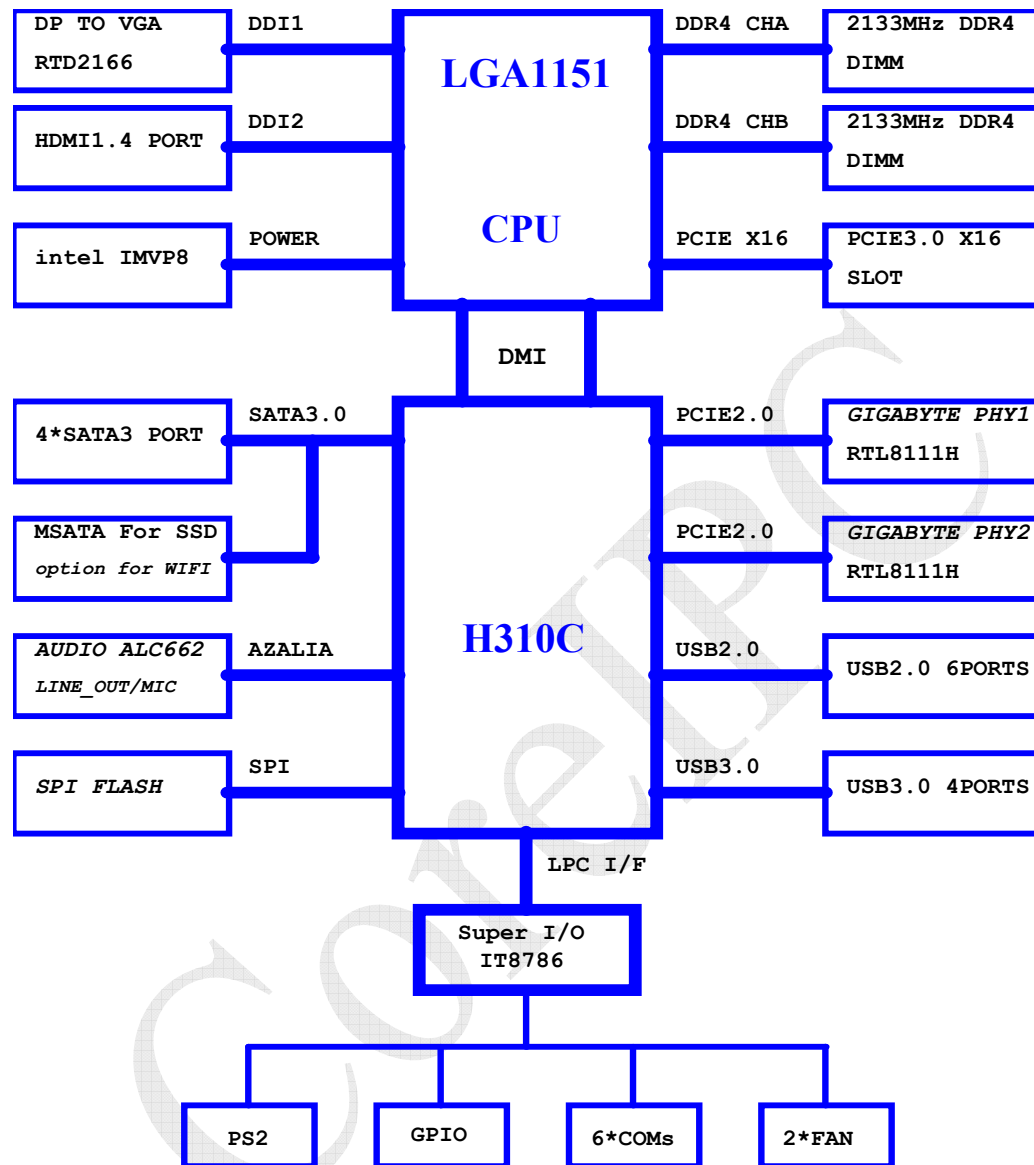
1. Product Description

ITX310P is a CoreIPC ITX-series industrial motherboard supporting 6th-, 7th-, 8th-, and 9th-generation LGA1151 Intel® Celeron®, Pentium®, and Core™ i3/i5/i7 processors.

The main features of the ITX310P motherboard are as follows:

- Supports 6th-, 7th-, 8th-, and 9th-generation LGA1151 Intel® Celeron®, Pentium®, and Core™ i3/i5/i7 processors;
- Provides 2 × DIMM slots supporting 1866/2133/2400 MHz DDR4 1.2 V memory, up to 64 GB;
- Supports VGA and HDMI display interfaces;
- Supports 2 × Realtek RTL8111H Gigabit Ethernet controllers;
- Supports 1 × Mini PCIe slot (mSATA by default; Wi-Fi optional);
- Supports 4 × USB 3.0 and 6 × USB 2.0 ports;
- Supports 6 × RS-232 serial ports, with up to 2 × RS-485 ports optional;
- Provides 1 × PCIe 3.0 x16 slot;
- Supports switching between AT and ATX power modes.

2. Motherboard Block Diagram

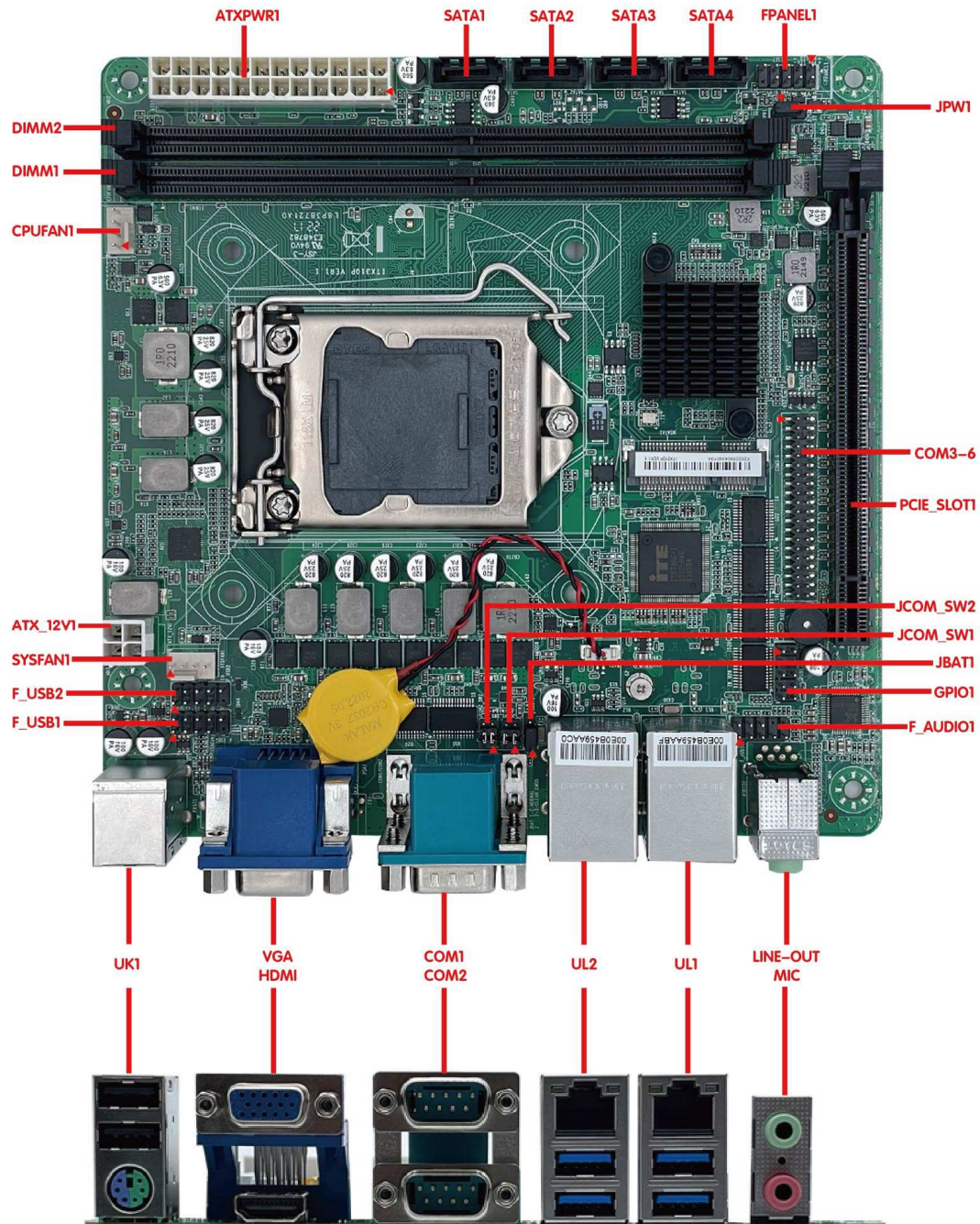


Note: COM1`2 can support RS485

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® H310C, B250, or B365 chipset
Memory	2 × DIMM slots supporting single-channel 1866/2133/2400 MHz DDR4 1.2 V memory, up to 64 GB
Display	Integrated Intel® HD Graphics supporting DirectX 12, OpenGL 4.5, and 4K display output
	1 × VGA port, maximum resolution 1920 × 1200 @ 60 Hz
	1 × HDMI 1.4 port, maximum resolution 4096 × 2304 @ 24 Hz
Network	2 × Realtek RTL8111H Gigabit Ethernet controllers, supporting Wake-on-LAN and PXE boot
Storage	4 × SATA 3.0 ports (H310C supports only 3 × SATA 3.0 ports)
Audio	Onboard ALC897 7.1-channel HD audio controller, supporting microphone input and line output
Expansion Slots	1 × mSATA 3.0 slot, supporting SSD by default or Wi-Fi as an option
	1 × PCIe 3.0 x16 slot
Rear I/O Interfaces	1 × HDMI 1.4 display port
	1 × VGA display port
	2 × USB 2.0 ports
	4 × USB 3.0 ports
	2 × RJ-45 Gigabit Ethernet ports
	2 × RS-232 DB9 serial ports (COM1 and COM2 optionally support RS-485 through hardware jumper settings)
	1 × dual audio jack assembly (line output and microphone input)
	1 × PS/2 port for keyboard and mouse
Onboard I/O Interfaces	4 × USB 2.0 ports via 2 × 5-pin headers
	4 × RS-232 serial ports via 2 × 20-pin header
	1 × front-panel audio header, 2 × 5-pin
	1 × 24-pin ATX power connector
	1 × 4-pin ATX power connector

	1 × front-panel switch and LED header, 2 × 5-pin
Fan Headers	1 × 4-pin CPU fan header and 1 × 4-pin system fan header
GPIO	Supports 4-channel GPIO input/output
BIOS	64Mb Flash ROM
Watchdog	Supports hardware reset (256 levels, 0–255 seconds)
Operating Systems	Windows 7/Windows 10/Linux
Power Supply	Powered by a 24-pin ATX power supply
Operating Temperature	60°C ~ -10°C
Storage Temperature	-20°C ~ 70°C
Operating Humidity	5%–95% relative humidity, non-condensing
Dimensions	170mm x 170mm



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

Note: The image above shows the front view of ITX310P VER1.1. The actual product may differ.

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 × 288-pin DDR4 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 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.

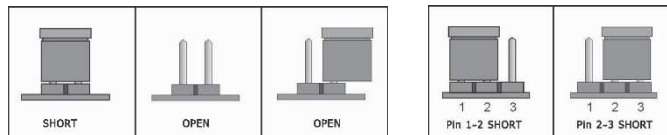
- 5) To remove the memory module, push the retaining clips on both sides of the DIMM slot outward at the same time, then remove the memory module carefully.

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	Pin 1–2 shorted
Clear CMOS and restore all BIOS settings to factory defaults	Pin 2–3 shorted

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	1-2Pin
Enable Auto Power-on	2-3Pin

6. Pin Definitions

6.1. The motherboard supports a total of 6 × RS-232 serial ports. COM1 and COM2 optionally support RS-485.

COM1 and COM2 use standard DB9 connectors. COM3–COM6 are provided through 1 × 2 × 20-pin standard four-port serial header (2.0 mm pitch). The COM3–COM6 pin definition is as follows:

Pin	Signal Name	Pin	Signal Name
1	COM3_DCD	2	COM3_RXD
3	COM3_TXD	4	COM3_DTR
5	GND	6	COM3_DSR
7	COM3_RTS	8	COM3_CTS
9	COM3-RI	10	NC
11	COM4_DCD	12	COM4_RXD
13	COM4_TXD	14	COM4_DTR
15	GND	16	COM4_DSR
17	COM4_RTS	18	COM4_CTS
19	COM4-RI	20	NC
21	COM5_DCD	22	COM5_RXD
23	COM5_TXD	24	COM5_DTR
25	GND	26	COM5_DSR
27	COM5_RTS	28	COM5_CTS
29	COM5-RI	30	NC
31	COM6_DCD	32	COM6_RXD
33	COM6_TXD	34	COM6_DTR
35	GND	36	COM6_DSR
37	COM6_RTS	38	COM6_CTS
39	COM6-RI	40	NC

6.2. RS-232/RS-485 Selection Jumpers for COM1 and COM2

The RS-485 function requires both the hardware jumper setting and the corresponding BIOS setting.

The BIOS setting is located at BIOS > Advanced > IT8786 Super IO Configuration > Serial Port 1 Configuration > Serial Port Mode Select = RS-232/RS-485. For COM2 RS-485, use Serial Port 2 Configuration.

Port	JCOM1_SW1 Setting	BIOS Setting	Function
COM1	1-3Pin 2-4Pin	Set COM1 to RS-232 in BIOS	COM1 Pin 1 (DCD)
			COM1 Pin 2 (RXD)
	3-5Pin 4-6Pin	Set COM1 to RS-485 in BIOS	COM1 Pin 1 (A)
			COM1 Pin 2 (B)
Port	JCOM2_SW2 Setting	BIOS Setting	Function
COM2	1-3Pin 2-4Pin	Set COM2 to RS-232 in BIOS	COM2 Pin 1 (DCD)
			COM2 Pin 2 (RXD)
	3-5Pin 4-6Pin	Set COM2 to RS-485 in BIOS	COM2 Pin 1 (A)

			COM2 Pin 2 (B)
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6.3. The motherboard provides 1 × 2 × 5-pin front-panel audio header F_AUDIO1 (2.54 mm pitch). The pin definition is as follows:

Pin	Signal Name	Pin	Signal Name
1	MIC-L	2	GND
3	MIC-R	4	NC
5	Line out-R	6	Sense Return1
7	GND	8	NC
9	Line OUT-L	10	Sense Return2

6.4. The motherboard provides 2 × 2 × 5-pin USB 2.0 headers (2.54 mm pitch). The F_USB1 and F_USB2 pin definitions are 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

6.5. The motherboard provides 2 × 1 × 4-pin fan headers. The CPUFAN1 and SYSFAN1 pin definitions are as follows:

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

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

6.6. The motherboard provides 1 × 2 × 5-pin FPANEL1 header (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	

6.7. The motherboard provides 1 × 2 × 5-pin GPIO header GPIO1 (2.54 mm pitch). The pin definition is as follows:

Pin	Signal Name	Pin	Signal Name
1	GND	2	+5V
3	GPO1	4	GPI1
5	GPO2	6	GPI2

7	GPO3	8	GPI3
9	GPO4	10	GPI4

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