



ITX310D User Manual

Issue 1.2

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	DDR	HDMI	VGA	LVDS	LAN	USB	PS2	LPT	COM /485	POWER
1	ITX310D-L26 VER1.2	B365/B250	DDR4	1	1	1	2	8	0	0	6/2	12-19V

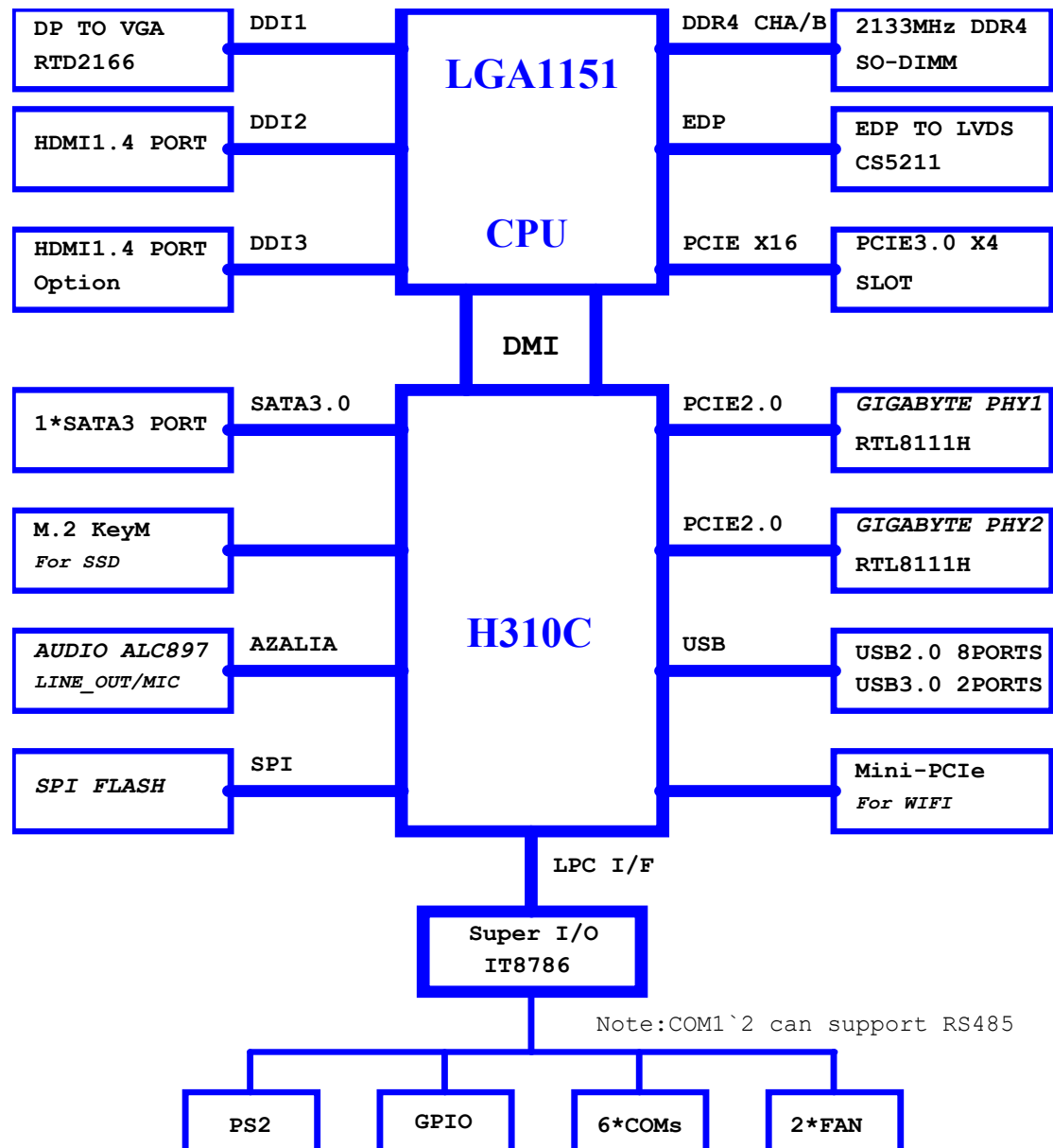
1. Product Description

ITX310D is a CorelPC Mini-ITX industrial motherboard supporting 6th, 7th, 8th, and 9th generation Intel® LGA1151 Pentium®, Celeron®, and Core™ i3/i5/i7 processors. It is widely applicable to commercial displays, machine vision, medical equipment, industrial control, financial equipment, cloud terminals, and other applications.

The main features of the ITX310D motherboard are as follows:

- Supports 6th, 7th, 8th, and 9th generation Intel® LGA1151 Pentium®, Celeron®, and Core™ i3/i5/i7 processors;
- Supports dual-channel 1600/2133 MHz DDR4 SO-DIMM memory, up to 64 GB;
- Supports VGA or HDMI, LVDS, and HDMI display outputs, enabling three independent displays; dual HDMI is optional;
- Supports up to two Gigabit Ethernet ports;
- Supports one Mini PCIe slot for Wi-Fi/4G and one M.2 Key M slot for an SSD;
- Supports 8 or 10 USB ports;
- Provides six onboard RS-232 serial ports, with support for up to two RS-485 ports.

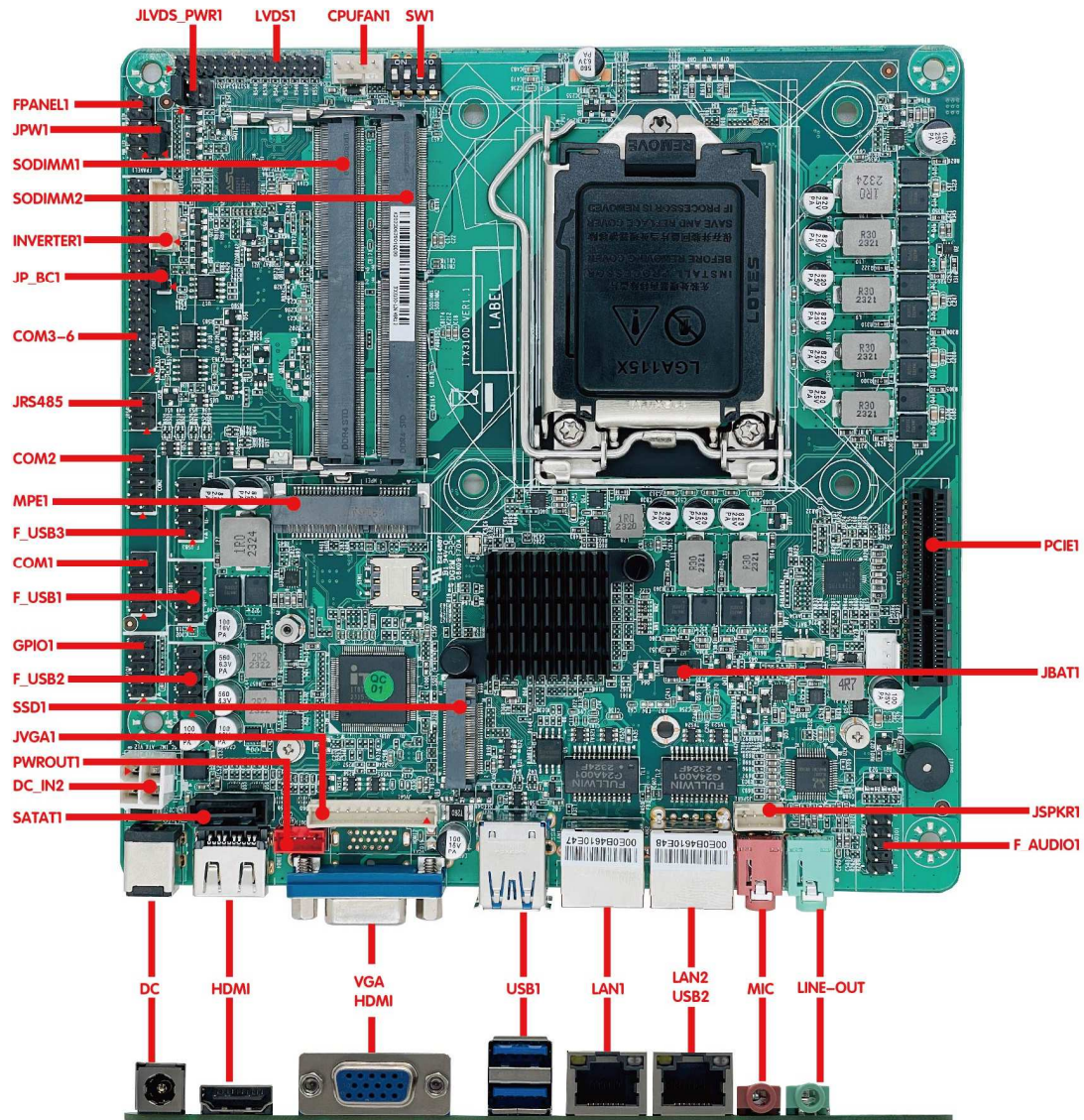
2. Motherboard Block Diagram



3. Motherboard Specifications

Item	Description
Processor	Supports 6th, 7th, 8th, and 9th generation Intel® LGA1151 Celeron®, Pentium®, and Core™ i3/i5/i7 processors
Chipset	Intel® H310C, B250, or B365 high-speed chipset
Memory	2 × SO-DIMM slots supporting dual-channel DDR4 1866/2133/2400 memory, up to 64 GB
Display	Integrated Intel® HD Graphics supporting DirectX 12, OpenGL 4.5, and 4K display output
	1 × VGA port, up to 1920 × 1200 at 60 Hz
	2 × HDMI 1.4 ports; one HDMI port is mutually exclusive with VGA, with VGA fitted by default; maximum resolution 4096 × 2304 at 24 Hz
	1 × LVDS interface
Network	2 × Realtek RTL8111H Gigabit Ethernet controllers supporting Wake-on-LAN and PXE boot
Storage	1 × SATA 3.0 interface
	1 × M.2 Key M slot; M.2 SATA is supported by default, and NVMe support requires a hardware configuration change. Confirm before ordering.
Audio	Onboard ALC897 6-channel HD audio controller supporting MIC input, line-out, and a 2-ohm, 5 W amplifier output
Expansion Slots	1 × Mini PCIe slot supporting Wi-Fi/4G
	1 × PCIe 3.0 x4 slot
Rear I/O Ports	1 × HDMI 1.4 display port
	1 × VGA display port; one HDMI 2.0 port is optional
	2 × USB 3.0 ports
	2 × USB 2.0 ports, mutually exclusive with LAN2
	2 × RJ-45 Gigabit Ethernet ports; LAN2 is mutually exclusive with two USB 2.0 ports
	1 × line-out port (green) and 1 × MIC port (red)
	1 × 12–19 V DC power input connector
Onboard I/O Headers	1 × 1 × 12-pin JVGA header carrying the same signals as the DB15 VGA port
	1 × 2 × 15-pin LVDS header supporting dual-channel 24-bit output
	1 × 1 × 6-pin LCD backlight power connector
	6 × USB 2.0 ports through three 2 × 5-pin headers
	1 × 2 × 5-pin front audio header
	1 × 1 × 4-pin amplifier connector
	6 × COM ports; COM1–COM6 default to RS-232, COM1 optionally supports RS-485/RS-422, and COM2 optionally supports RS-485
	1 × 4-pin ATX power connector

	1 × drive power connector
	1 × 2 × 5-pin front-panel switch and LED header
Fan Connectors	1 × 4-pin CPU fan connector and 1 × 3-pin system fan connector
GPIO	Supports four GPIO inputs and four GPIO outputs
BIOS	64Mb Flash ROM
Watchdog Timer	Supports hardware reset with 256 programmable levels from 0 to 255 seconds
Operating System	Windows 7/Windows 10/Linux
Power Input	Supports 12–19 V DC input
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.
The image above shows the ITX310D-L26 VER1.2 motherboard and is for reference only.

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 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.

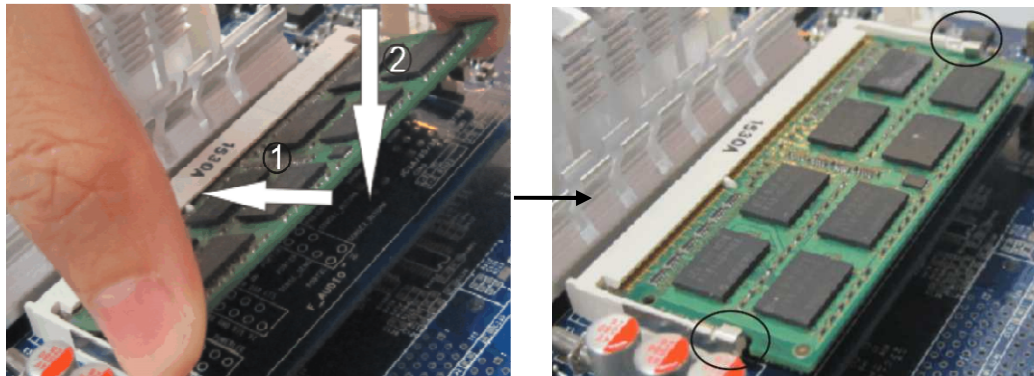
Memory Installation Steps:

- 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.

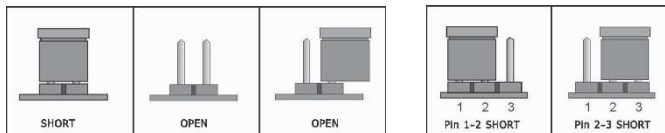


5. Jumper Settings

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 provides six serial ports. COM1 and COM2 are standard 2 × 5-pin COM headers (2.54 mm pitch) and can optionally support RS-485 through BIOS settings. COM3–COM6 are provided through one 2 × 20-pin header. The standard COM1 and COM2 pin definitions are 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

The motherboard provides one 2 × 3-pin RS-485 wiring header (2.54 mm pitch). When RS-485 is required for COM1 or COM2, connect the cable directly to the JRS485 header and configure the mode in BIOS:

BIOS > Advanced > IT8786 Super IO Configuration > Serial Port 1 Configuration > Serial Port Mode Select = RS-232/RS-485. Configure COM2 RS-485 under Serial Port 2 Configuration.

The JRS485 pin definition is as follows:

Pin	Signal Name	Pin	Signal Name
1	TXD+(A1)	2	TXD-(B1)
3	RXD+(A2)	4	RXD-(B2)
5	5V	6	GND

Note: COM1 and COM2 switch between RS-232 and RS-485 modes through BIOS settings.

The motherboard provides one standard 2 × 20-pin header for four serial ports (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. The motherboard provides one 2 × 15-pin LVDS header (2.0 mm pitch). The LVDS1 pin definition is as follows:

Pin	Signal Name	Pin	Signal Name
1	LCDVDD	2	LCDVDD

3	LCDVDD	4	NC
5	GND	6	GND
7	LVDS_A0-	8	LVDS_A0+
9	LVDS_A1-	10	LVDS_A1+
11	LVDS_A2-	12	LVDS_A2+
13	GND	14	GND
15	LVDSA_CLK-	16	LVDSA_CLK+
17	LVDS_A3-	18	LVDS_A3+
19	LVDS_B0-	20	LVDS_B0+
21	LVDS_B1-	22	LVDS_B1+
23	LVDS_B2-	24	LVDS_B2+
25	GND	26	GND
27	LVDSB_CLK-	28	LVDSB_CLK+
29	LVDS_B3-	30	LVDS_B3+

The motherboard provides 3.3 V, 5 V, and 12 V LCD operating-voltage options, as well as 5 V and 12 V backlight power options.

Before using LVDS, confirm the rated operating voltage required by the LCD panel. The LCD panel will display correctly only when the selected LCD voltage matches the panel voltage. Configure the settings as follows:

INVERTER1 (Backlight Power Connector) Definition:

Pin	Signal Name
1	12 V / 5 V (set by INVERT_PWR1)
2	12 V / 5 V (set by INVERT_PWR1)
3	Backlight Enable
4	Backlight Brightness Control
5	GND
6	GND

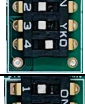
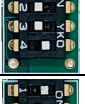
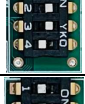
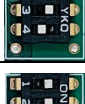
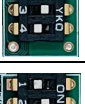
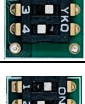
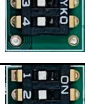
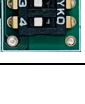
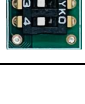
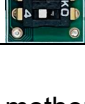
JP_BC1 (LCD Backlight Power) Setting:

Interface	Function	JP_BC1 Setting
LVDS1	12V (Default)	1-2 Pin
	5V	2-3 Pin

JLVDS_PWR1 (LCD Operating Voltage) Setting:

Interface	Function	INVERT_PWR1 Setting
LVDS1	3.3V (Default)	1-2 Pin
	5V	3-4 Pin
	12V	5-6 Pin

The motherboard provides one SW1 DIP switch for setting the LVDS resolution. The detailed settings are as follows:

No.	DIP Switch Setting	Resolution / Bit Width	No.	DIP Switch Setting	Resolution / Bit Width	No.	DIP Switch Setting	Resolution / Bit Width
1		800x600 Single 6-bit	2		1024x768 Single 6-bit	3		1280x768 Single 6-bit
4		1280x800 Single 6-bit	5		1280x960 Single 6-bit	6		1280x1024 Dual 8-bit
7		1366*768 Single 6-bit	8		1366x768 Single 8-bit	9		1440x900 Dual 8-bit
10		1024*600 Single 6-bit	11		1920x1080 Dual 6-bit 15.6-inch	12		1920x1080 Dual 8-bit 21.5-inch
13		1920x1080 Dual 8-bit 42-inch	14		1280x1024 Dual 8-bit	15		1280x800 Single 8-bit
16		1024x768 Single 8-bit	17			18		

6.3. The motherboard provides one 1 × 12-pin JVGA1 white wafer connector (2.0 mm pitch), carrying the same signals as the VGA1 port. JVGA1 Definition:

Pin	Signal Name	Pin	Signal Name
1	NC	2	VSYNC
3	HSYNC	4	GND
5	R	6	GND
7	G	8	GND
9	B	10	GND
11	DDC_SDA	12	DDC_SCL

6.4. The motherboard provides one 2 × 5-pin front audio header (2.54 mm pitch). The F_AUDIO1 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

6.5. The motherboard provides one 1 × 4-pin amplifier connector (2.0 mm pitch), supporting 2-ohm, 5 W stereo output. The JSPKR1 pin definition is as follows:

Pin	Signal Name	Pin	Signal Name
1	SPKL-	2	SPKL+
3	SPKR-	4	SPKR+

6.6. The single-LAN motherboard supports up to 10 USB ports, while the dual-LAN motherboard supports up to 8 USB ports. Refer to the specific motherboard model. The motherboard provides three 2 × 5-pin USB 2.0 headers (2.54 mm pitch), supporting

six USB 2.0 ports.

The F_USB1, F_USB2, and F_USB3 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

6.7. The motherboard provides one 2 × 5-pin GPIO header (2.54 mm pitch). The GPIO1 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

6.8. The motherboard provides two smart fan connectors. The SYSFAN1 pin definition is as follows:

Pin	Signal Name
1	GND
2	+12V
3	DET

The CPUFAN1 pin definition is as follows:

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

Note: DET is the fan-speed pulse output; PWM is the fan-speed PWM control signal.

6.9. The motherboard provides one red 1 × 4-pin SATA drive power connector (2.0 mm pitch). The PWROUT1 pin definition is as follows:

Pin	Signal Name
1	+12V
2	GND
3	GND
4	+5V

Make sure the Pin 1 position of SATA_PWR1 is correct; otherwise, the drive may be damaged. Use only the power cable supplied by CoreIPC.

6.10. The motherboard provides one 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
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1	HDDLED+	2	PWRLED+
3	HDDLED-	4	PWRLED-
5	GND	6	PWRBTN#
7	RESETBTN#	8	GND
9	NC	10	