



ITX76M User Manual

Issue 1.0

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	EDP	HDMI	VGA	LVDS	LAN	USB	PS2	LPT	COM/ 485	POWER
1	ITX76M-L12 VER1.0	HM76	DDR3L	1	1	1	1	1	10	1	1	2/1	12V
2	ITX76M-L16 VER1.0	HM76	DDR3L	1	1	1	1	1	10	1	1	6/2	12V
3	ITX76M-L26 VER1.0	HM76	DDR3L	1	1	1	1	2	10	1	1	6/2	12V

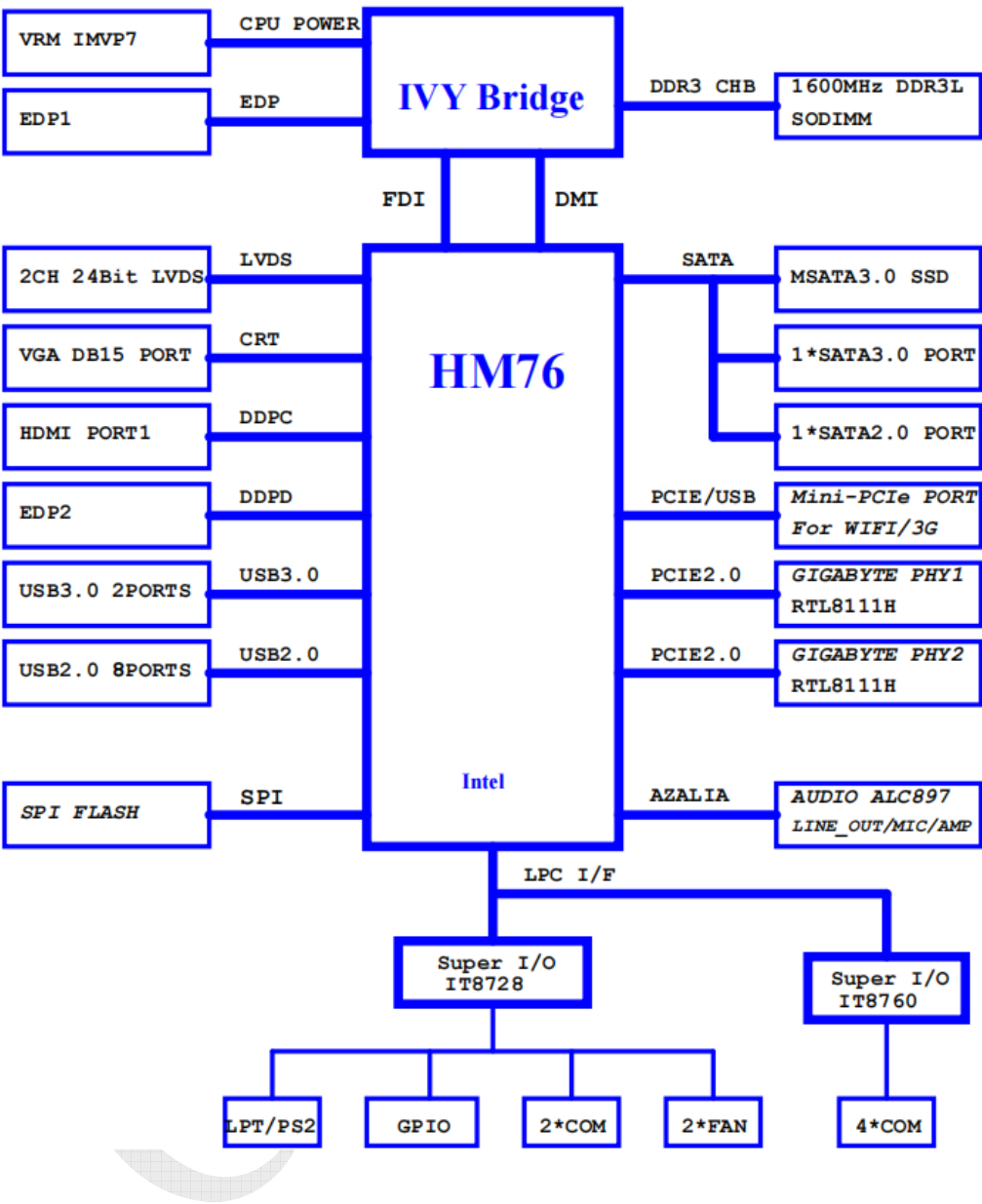
1. Product Description

The ITX76M is a CoreIPC ITX-series industrial motherboard supporting Intel® PGA988 Sandy Bridge and Ivy Bridge 2nd/3rd Generation Celeron®, Pentium®, and Core™ i3/i5/i7 processors.

The main features of the ITX76M motherboard are as follows:

- Supports Sandy Bridge or Ivy Bridge Celeron®, Pentium®, and Core™ i3/i5/i7 processors;
- Supports single-channel 1600/1333 MHz DDR3 SO-DIMM memory, up to 8 GB;
- Supports VGA, HDMI, LVDS1/eDP1, and eDP2 display outputs, including dual-eDP display;
- Supports up to 2 Gigabit Ethernet ports;
- Supports 1 × Mini PCIe slot for Wi-Fi/4G and 1 × mSATA slot;
- Supports 2 × USB 3.0 ports and 8 × USB 2.0 ports;
- Provides 6 onboard RS-232 serial ports, with support for 2 × RS-485;
- Supports Windows XP, Windows 7, Windows 10, and Linux.

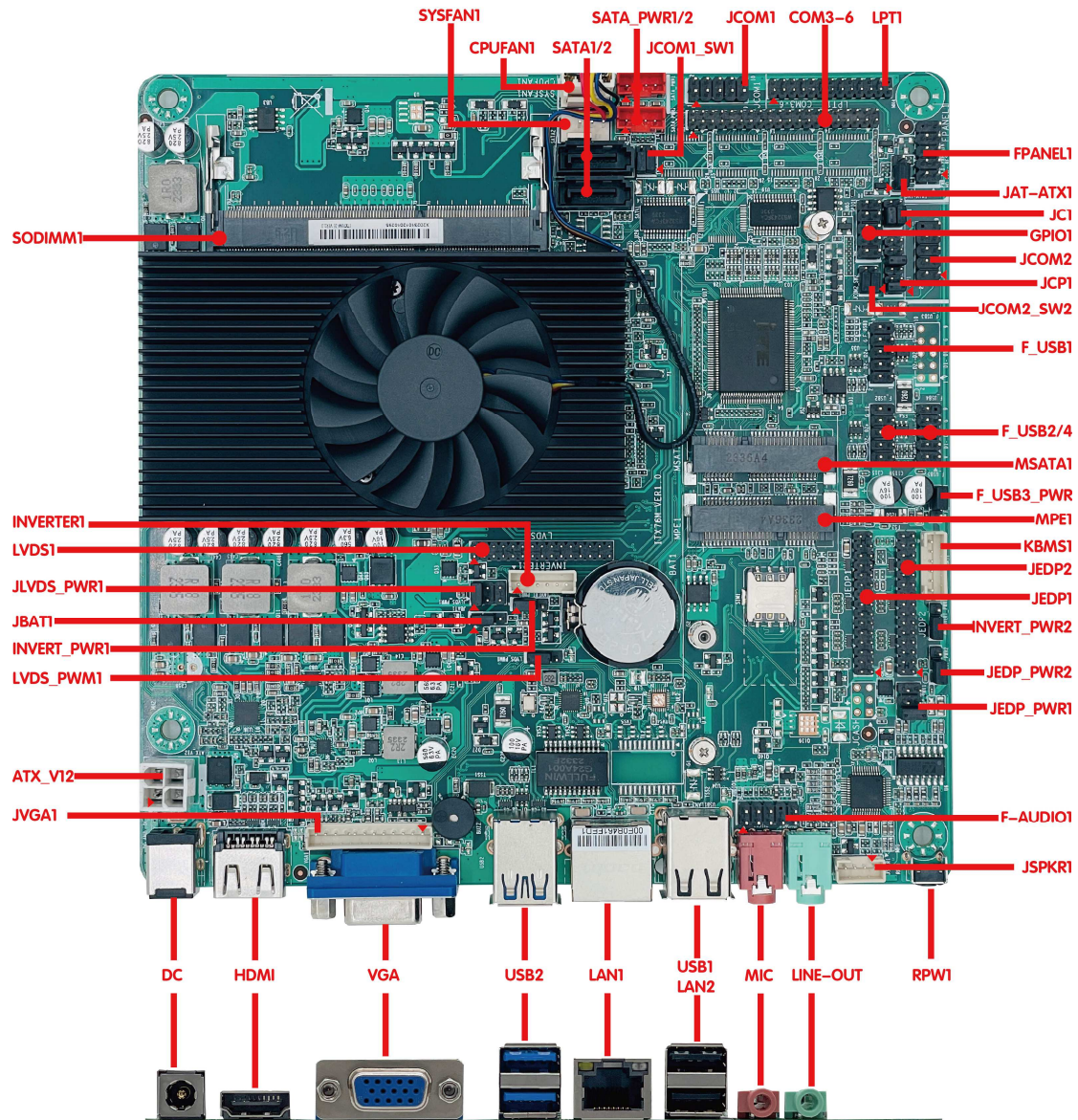
2. Motherboard Block Diagram



3. Motherboard Specifications

Item	Description
Processor	Supports Intel® PGA988 Sandy Bridge/Ivy Bridge 2nd/3rd Generation Celeron®, Pentium®, and Core™ i3/i5/i7 processors
Chipset	Intel® HM77/HM76 chipset
Memory	1 × SO-DIMM slot; supports single-channel 1600/1333 MHz DDR3 memory, up to 8 GB
Display	Integrated Intel® HD Graphics 4000
	1 × VGA, 1 × HDMI, 1 × LVDS, and 2 × eDP interfaces (supports dual-eDP display)
	Supports synchronous/asynchronous dual-display output through VGA, HDMI, LVDS, and eDP
Network	1 × Realtek RTL8111H Gigabit Ethernet controller (second LAN optional), supporting Wake-on-LAN and PXE boot
Storage	2 × SATA 2.0 interfaces
	1 × full-size mSATA 3.0 slot
Audio	Onboard ALC897 7.1-channel HD audio controller with MIC, Line-out, and 2 Ω/5 W stereo amplifier output
Expansion Slots	1 × Mini PCIe slot supporting half-size and full-size Wi-Fi/4G modules
Rear I/O	1 × HDMI display port
	1 × VGA display port
	2 × USB 3.0 ports
	2 × USB 2.0 ports (mutually exclusive with LAN2)
	1 × RJ-45 Gigabit Ethernet port (LAN2 is mutually exclusive with 2 × USB 2.0 ports)
	1 × Line-out port (green) and 1 × MIC port (red)
	1 × Clear CMOS push button
	1 × 12 V DC power input connector
Onboard I/O	1 × 1 × 12-pin JVGA header (same signals as DB15)
	1 × 2 × 15-pin LVDS header supporting dual-channel 24-bit output
	2 × 2 × 15-pin eDP headers supporting dual-eDP display
	1 × 1 × 6-pin panel backlight power connector
	8 × USB 2.0 ports via 2 × 5-pin headers (single-LAN version supports only 6 onboard ports)
	1 × 2 × 5-pin front-audio header
	1 × 1 × 4-pin amplifier connector
	6 × COM headers (COM1 and COM2 optionally support RS-485; Pin 9 of COM1/COM2 can supply power)

	1 × LPT header
	1 × 1 × 6-pin PS/2 header
	2 × drive power connectors
	1 × 4-pin ATX power connector
	1 × 2 × 5-pin front-panel switch and LED header
Fan Connectors	1 × 4-pin CPU fan connector and 1 × 4-pin system fan connector
GPIO	Supports 4-channel GPIO input/output
BIOS	32Mb Flash ROM
Watchdog	Supports hardware reset watchdog (256 levels, 0–255 seconds)
Operating Systems	XP /Windows 7/Windows 10/Linux
Power Input	12 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	170 mm × 170 mm



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

The image above shows the ITX76M-L12 VER1.0 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 **1 × 204-pin DDR3 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.

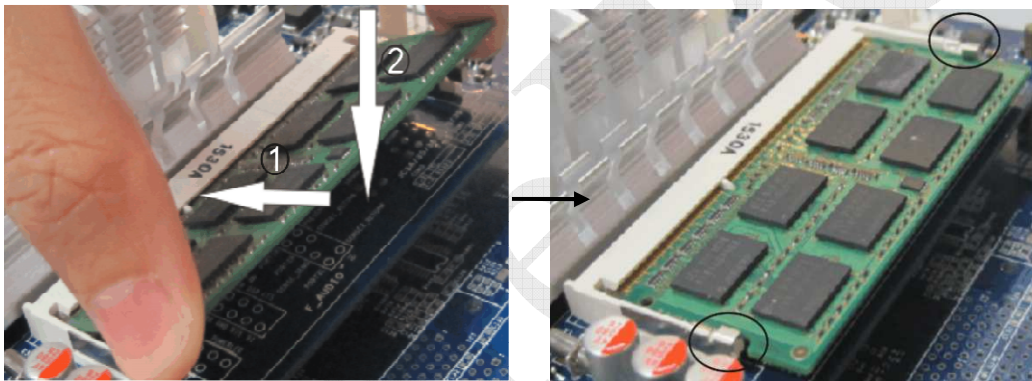
Memory Installation Steps:

- 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.

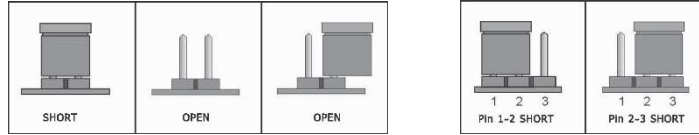


5. Jumper Settings

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

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6. Pin Definitions

6.1. The motherboard provides $2 \times 2 \times 5$ -pin standard COM headers (pitch: 2.54 mm).

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 supports $2 \times$ RS-485 ports. The RS-232/RS-485 selection jumpers for COM1 and COM2 are described below:

The JCOM1_SW1 and JC1 settings are as follows:

Interface	Function	JCOM1_SW1Setting	JC1Setting	Definition
COM1	RS232	1-3Pin ,2-4Pin (Default)	1-3Pin (Default)	COM1 Pin 2: DCD COM1 Pin 3: RXD
	RS485	3-5Pin ,4-6Pin	3-5Pin	COM1 Pin 1: A COM1 Pin 2: B

The JCOM2_SW2 and JC1 settings are as follows:

Interface	Function	JCOM2_SW2Setting	JC1Setting	Definition
COM2	RS232	1-3Pin ,2-4Pin (Default)	2-4Pin (Default)	COM2 Pin 2: DCD COM2 Pin 3: RXD
	RS485	3-5Pin ,4-6Pin	4-6Pin	COM2 Pin 1: A COM2 Pin 2: B

COM1 and COM2 Pin 9 voltage-selection jumper (pitch: 2.0 mm), JCP1 settings:

Interface	Function	JCP1Setting	Interface	Function	JCP1Setting
COM1	RI	Pins 1–2 (Default)	COM2	RI	Pins 7–8 (Default)
	5V	3-4Pin		5V	9-10Pin
	12V	5-6Pin		12V	11-12Pin

6.2. The motherboard provides $1 \times 2 \times 20$ -pin header for four standard serial ports (pitch: 2.0 mm).

The COM3–COM6 pin definitions are 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

6.3. The motherboard provides $1 \times 2 \times 13$ -pin parallel-port header LPT1 (pitch: 2.0 mm). The LPT1 pin definition is as follows:

Pin	Signal Name	Pin	Signal Name
1	STB-	2	AFD-
3	PD0	4	ERR-
5	PD1	6	INIT-
7	PD2	8	SLIN-
9	PD3	10	GND
11	PD4	12	GND
13	PD5	14	GND
15	PD6	16	GND
17	PD7	18	GND
19	ACK-	20	GND
21	BUSY	22	GND
23	PE	24	GND
25	SLCT	26	NC

6.4. The motherboard provides $1 \times 1 \times 12$ -pin JVGA1 connector (pitch: 2.0 mm), carrying the same signals as VGA1.

JVGA1 definition:

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

6.5. The motherboard provides $1 \times 2 \times 15$ -pin LVDS header (pitch: 2.0 mm). 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 board provides 3.3 V, 5 V, and 12 V panel operating-voltage options, as well as 5 V and 12 V panel backlight power options.

Before using LVDS, confirm the panel's rated operating voltage. The LCD panel can operate 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 JP_BC1)
2	12 V/5 V (set by JP_BC1)
3	Backlight Enable
4	Backlight Brightness Control
5	GND
6	GND

INVERT_PWR1 (panel backlight power) settings:

Interface	Function	INVERT_PWR1Setting
LVDS1	12 V (Default)	1-2Pin
	5V	2-3Pin

LVDS_PWR1 (panel operating voltage) settings:

Interface	Function	JLVDS_PWR1Setting
LVDS1	3.3 V (Default)	1-2Pin
	5V	3-4Pin
	12V	5-6pin

6.6. The motherboard provides $2 \times 2 \times 15$ -pin eDP headers (pitch: 2.0 mm).

The JEDP1/JEDP2 pin definitions are as follows:

PIN	Signal Name	PIN	Signal Name
1	PVDD	2	PVDD
3	NC	4	NC
5	EDP_TX0+	6	EDP_TX0-
7	GND	8	GND
9	EDP_TX1+	10	EDP_TX1-
11	GND	12	GND
13	EDP_TX2+	14	EDP_TX2-
15	GND	16	GND
17	EDP_TX3+	18	EDP_TX3-
19	GND	20	GND
21	EDP_AUX+	22	EDP_AUX-
23	GND	24	HPD_DET
25	BKLT_PWM Backlight Brightness Control	26	BKLT_EN (Backlight Enable)

27	GND	28	GND
29	INVERT_PWR (Backlight Power)	30	INVERT_PWR (Backlight Power)

INVERT_PWR2 (panel backlight power) settings:

Interface	Function	INVERT_PWR1Setting
JEDP2	12 V (Default)	1-2Pin
	5V	2-3Pin

JEDP_PWR1 (panel operating voltage) settings:

Interface	Function	JLVDS_PWR1Setting
JEDP2	3.3 V (Default)	1-2Pin
	5V	3-4Pin
	12V	5-6pin

JEDP_PWR2 (panel PWM inversion) settings:

Interface	Function	INVERT_PWR1Setting
JEDP2	Default	1-2Pin
	Inverted	2-3Pin

6.7. The motherboard provides 1 × 2 × 5-pin front-audio header (pitch: 2.54 mm). 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

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

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

6.9. The motherboard provides 1 × 1 × 6-pin PS/2 keyboard/mouse connector (pitch: 2.0 mm). The KBMS1 pin definition is as follows:

Pin	Signal Name
1	+5V(standby)
2	KB_DT

3	KB_CK
4	MS_DT
5	MS_CK
6	GND

6.10. The motherboard provides $4 \times 2 \times 5$ -pin USB 2.0 headers (pitch: 2.54 mm). With dual LAN, the motherboard supports 8 onboard USB ports. With single LAN, it supports 6 onboard USB ports.

The F_USB1, F_USB2, F_USB3, and F_USB4 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

6.11. The board provides $2 \times 1 \times 4$ -pin fan connectors. The CPUFAN1 and SYSFAN1 pin definitions are 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.

6.12. The board provides $2 \times 1 \times 4$ -pin red SATA drive power connectors (pitch: 2.0 mm). The SATA_PWR1 pin definition is as follows:

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

Be sure to identify Pin 1 of SATA_PWR1 correctly; otherwise, the drive may be damaged. Use only the power cable supplied by CoreIPC.

6.13. The board provides $1 \times 2 \times 5$ -pin FPANEL1 header (pitch: 2.54 mm).

The chassis power switch, reset switch, HDD 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	

6.14. The motherboard provides $1 \times 2 \times 5$ -pin GPIO header (pitch: 2.54 mm). 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

6.15. The motherboard provides $1 \times 2 \times 3$ -pin cash-drawer GPIO header (pitch: 2.54 mm). The JCASH pin definition is as follows:

Pin	Signal Name	Pin	Signal Name
1	GND	2	Drive Signal
3	Switch Status Signal	4	12V
5	NC	6	GND