



# ITX120U-L26 User Manual

Issue 1.1

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## 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              | CPUModel  | Cores | Freq.      | DDR    | HDMI | VGA | LVDS | EDP | LAN | USB | LPT | COM/485 | POWER |
|-----|--------------------|-----------|-------|------------|--------|------|-----|------|-----|-----|-----|-----|---------|-------|
| 1   | ITX120U-L26-1215U  | I3-1215U  | 2P/4E | 1.2-4.4Ghz | DDR4*2 | 1    | 1   | 1    | 1   | 2   | 8   | 1   | 6/2     | 19V   |
| 2   | ITX120U-L26-1235U  | I5-1235U  | 2P/8E | 1.3-4.4Ghz | DDR4*2 | 1    | 1   | 1    | 1   | 2   | 8   | 1   | 6/2     | 19V   |
| 3   | ITX120U-L26-1265U  | I7-1265U  | 2P/8E | 1.8-4.8Ghz | DDR4*2 | 1    | 1   | 1    | 1   | 2   | 8   | 1   | 6/2     | 19V   |
| 4   | ITX120U-L26-1240P  | I5-1240P  | 4P/8E | 1.7-4.4Ghz | DDR4*2 | 1    | 1   | 1    | 1   | 2   | 8   | 1   | 6/2     | 19V   |
| 5   | ITX120U-L26-12450H | I5-12450H | 4P/4E | 2.0-4.4Ghz | DDR4*2 | 1    | 1   | 1    | 1   | 2   | 8   | 1   | 6/2     | 19V   |
| 6   | ITX120U-L26-1340P  | I5-1340P  | 4P/8E | 1.9-4.6Ghz | DDR4*2 | 1    | 1   | 1    | 1   | 2   | 8   | 1   | 6/2     | 19V   |
| 7   | ITX120U-L26-1335U  | I5-1335U  | 2P/8E | 1.3-4.6Ghz | DDR4*2 | 1    | 1   | 1    | 1   | 2   | 8   | 1   | 6/2     | 19V   |
| 8   | ITX120U-L26-13420H | I5-13420H | 4P/4E | 2.1-4.6Ghz | DDR4*2 | 1    | 1   | 1    | 1   | 2   | 8   | 1   | 6/2     | 19V   |

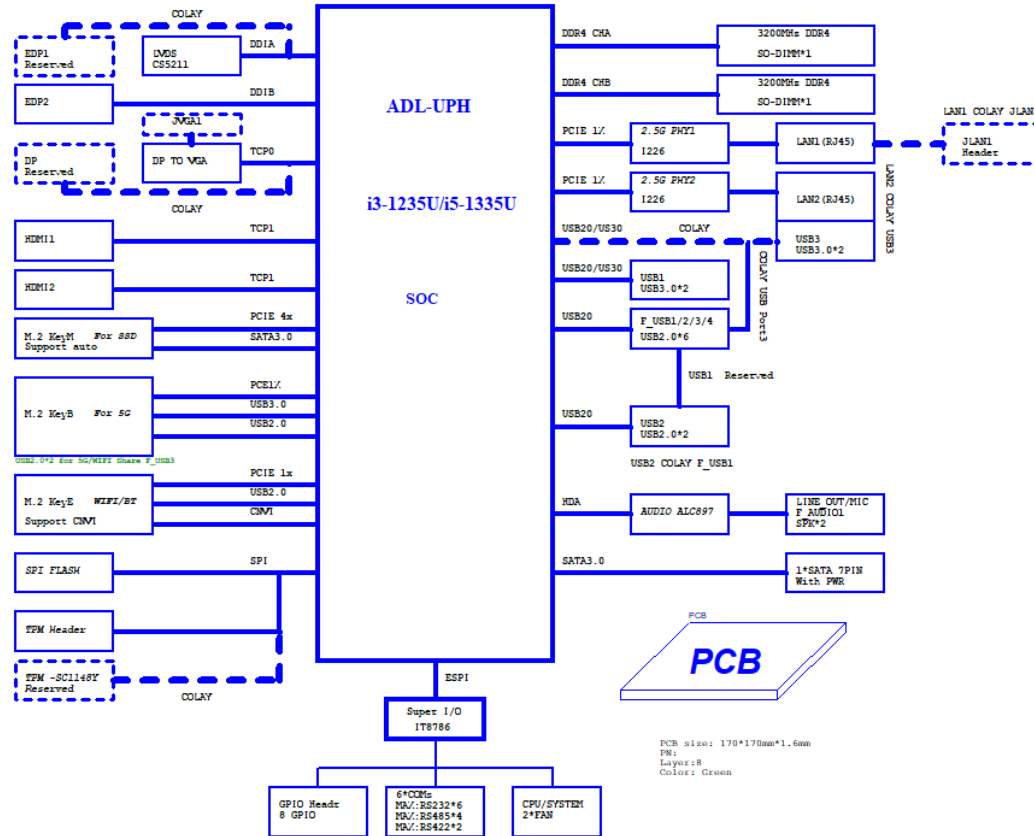
## 1. Product Description

ITX120U is a CoreIPC ITX industrial motherboard supporting Alder Lake-U/P 12th /Raptor Lake-U/P 13th I3/I5/I7series processors. It is widely applicable to commercial displays, machine vision, medical instruments, industrial control, financial equipment, cloud terminals, and other fields.

**ITX120UThe main features of the motherboard are as follows:**

- SupportsIntel Alder Lake Raptor Lake -U/P I3/I5/I7 series processors;
- Supports dual-channel3200MHz DDR4 SO-DIMMmemory, up to64GB;
- Display support includesVGAorDP、LVDSoreDP、EDP2、HDMIor dual-stackHDMI, supporting four simultaneous or independent displays;
- Supports2×intel I226Gigabit Ethernet ports;
- Supports1×M.2 Key-MNVMEorSATA auto-detectionSSD;
- Supports1×M.2 Key-E (WIFI/BT) , 1×M.2 Key-B (4G/5G) ;
- Supports8×USBinterface;
- Onboard6×RS232serial ports, supporting up to4×RS485.

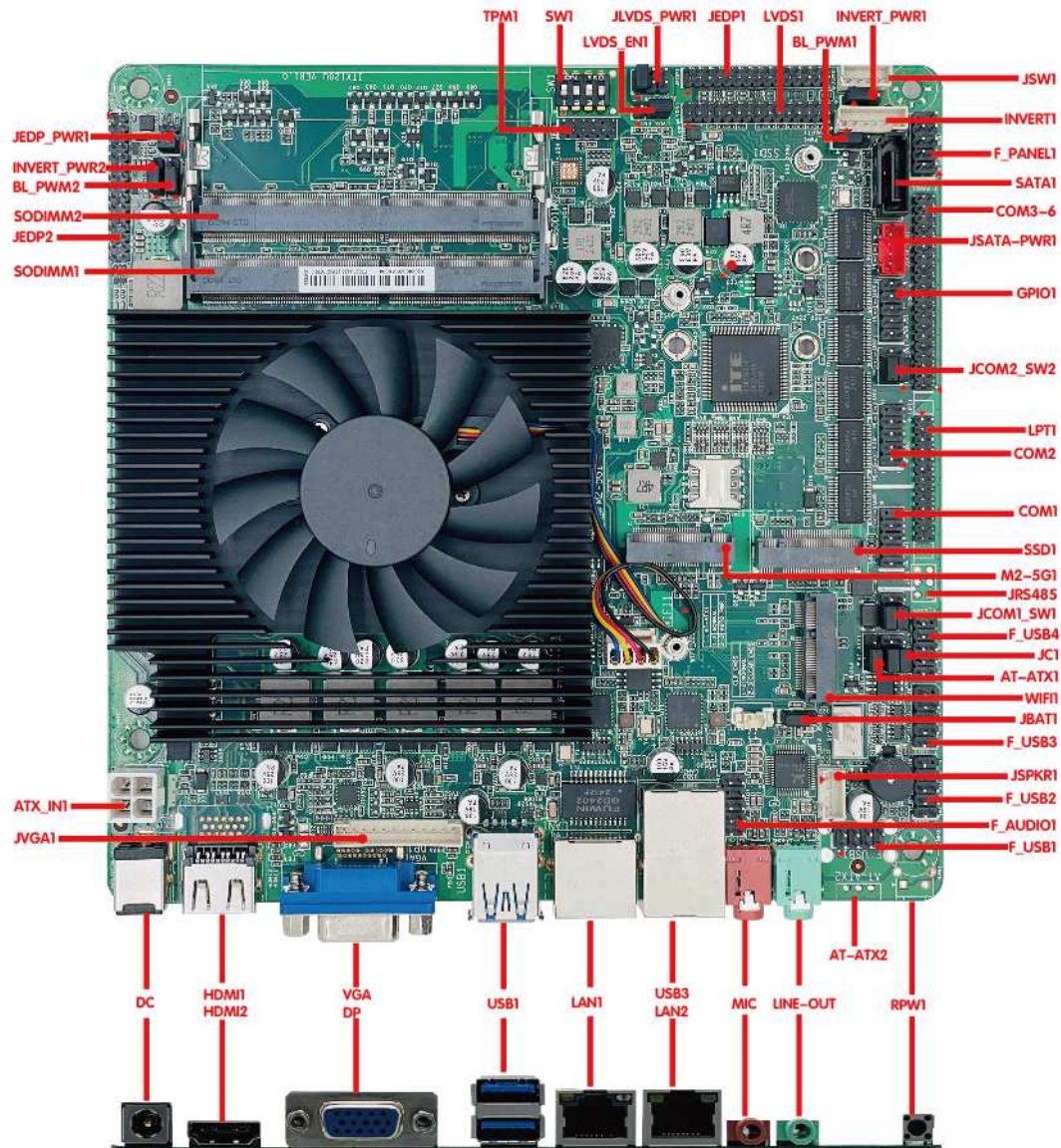
## 2. Motherboard Block Diagram



### 3. Motherboard Specifications

| Item                        | Description                                                                                                                                                    |
|-----------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Processor</b>            | Supports Alder Lake-U/P/H 12th /Raptor Lake-U/P/H 13th i3/i5/i7 Processor                                                                                      |
| <b>Memory</b>               | 2*SO-DIMMSO-DIMM slots supporting dual-channel 3200 DDR4 memory, up to 64GB                                                                                    |
| <b>Display</b>              | Integrated Intel® Iris® Xe Graphics eligible graphics supporting DirectX12.1,OpenGL4.6, Supports 4K display                                                    |
|                             | 1* VGA interface, maximum resolution 1920*1080@60HZ, optional support for DP display interface, maximum resolution 4096x2160@60Hz                              |
|                             | 1* HDMI2.1interface; optional dual-stack HDMI display interface, maximum resolution 4096x2160@60Hz                                                             |
|                             | 1* LVDS interface; optional support for EDP1 display                                                                                                           |
|                             | 1* EDP2 Interface                                                                                                                                              |
| <b>Network</b>              | 2* Intel I226 Gigabit Ethernet controllers, supporting Wake-on-LAN and PXE boot/PXE                                                                            |
| <b>Storage</b>              | 1* SATA3.0 Interface                                                                                                                                           |
|                             | 1* M.2 KeyM 2280/2242 PCIE4.0 X4slot supporting NVME and SATA storage-device auto-detection                                                                    |
| <b>Audio</b>                | Onboard ALC897 6-channel high-definition audio controller supporting MIC /Line-out/amplifier (supports2ohm5W )                                                 |
| <b>Expansion Slots</b>      | 1* M.2 Key-Bslot supporting5G (3052), compatible with4G (3042)                                                                                                 |
|                             | 1* M.2 Key-Eslot supporting PCIE protocol WIFI1、BT, supporting CNVI2 protocol WIFI6 Emodules.                                                                  |
| <b>Rear Panel/Interface</b> | 1* HDMI2.1display interface (optional dual-stackHDMI display interface)                                                                                        |
|                             | 1* VGA display interface (optional DP interface)                                                                                                               |
|                             | 4* USB3.0 ports (of which USB3 and LAN2 are mutually exclusive; dual-LAN configuration supports only2×USB3.0)                                                  |
|                             | 1* Clear CMOS push-button switch (not populated by default; configurable as a one-key recovery button)                                                         |
|                             | 2* RJ-45 Gigabit Ethernet ports (LAN2 andLAN2 and 2×USB3.0are mutually exclusive)                                                                              |
|                             | 1* DIP switch for auto power-on after power restoration (not populated by default)                                                                             |
|                             | 1* Line outInterface(green)、1* MIC Interface(red)                                                                                                              |
|                             | 1* 12~19V DCDC power input                                                                                                                                     |
| <b>OnboardI/OInterface</b>  | 1*EDP2 interface 2*15Pin                                                                                                                                       |
|                             | 1* LVDS interface 2*15 Pin(mutually exclusive with EDP1; optional)                                                                                             |
|                             | 1* display backlight power connector 1*6 Pin                                                                                                                   |
|                             | 4* USB2.0 header 2*5 Pin; onboard headers support up to8×USB2.0 (by default, the single-LAN version supports 4×USB2.0; the dual-LAN version supports 6×USB2.0) |
|                             | 1* front-panel audio header 2*5 Pin, supporting line-outand MIC in                                                                                             |
|                             | 1* amplifier connector 1*4 Pin(small white connector located near the audio interface)                                                                         |

|                              |                                                                                                                       |
|------------------------------|-----------------------------------------------------------------------------------------------------------------------|
|                              | 6* COM header interfaces (COM1~6 default to RS232, of which COM1 optional support for RS485/422, COM2 Supports RS485) |
|                              | 1* ATX power connector 2*2 Pin                                                                                        |
|                              | 1* SATA drive power connector (small red connector)                                                                   |
|                              | 1* LPT/LPT interface                                                                                                  |
|                              | 1* front-panel switch, button, and LED header 2*5 Pin                                                                 |
| <b>Fan Connectors</b>        | 1*4 Pin CPU fan connector; 1*4 Pin system fan connector                                                               |
| <b>GPIO</b>                  | Supports 4 channels of input/output GPIO                                                                              |
| <b>TPM</b>                   | Supports TPM2.0 external header 2*6 Pin, optional onboard TPM2.0                                                      |
| <b>BIOS</b>                  | 64Mb Flash ROM                                                                                                        |
| <b>Watchdog</b>              | Supports hardware reset (256 levels, 0~255 seconds)                                                                   |
| <b>Operating System</b>      | Windows 10/11 Linux                                                                                                   |
| <b>Power Supply</b>          | Supports 12~19V DCDC power input                                                                                      |
| <b>Operating Temperature</b> | 60°C ~ -10°C                                                                                                          |
| <b>Storage Temperature</b>   | -20°C ~ 70°C                                                                                                          |
| <b>Operating Humidity</b>    | 5%-95% relative humidity, non-condensing                                                                              |
| <b>Dimensions</b>            | 170mm x 170mm                                                                                                         |



The image can be enlarged. Pin1 Pinof each header is marked with a red triangle;

The image above shows the ITX120U-L26 VER1.1 actual product; 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 × 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.

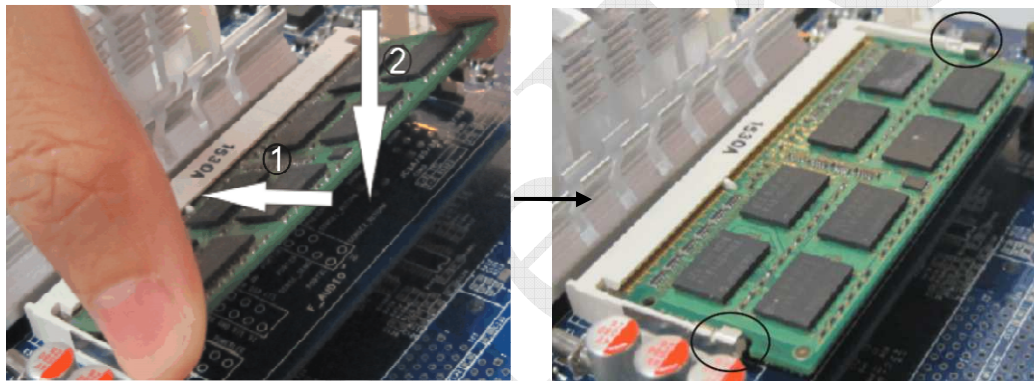
**Memory Installation Steps:**

- 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.

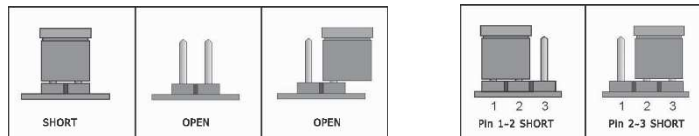


## 5. Jumper Settings

### 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

1. The motherboard supports 6 serial ports, including COM1 Supports RS232/RS485. COM2 Supports RS232/RS485/RS422. COM3 Supports RS232/RS485/RS422, COM4 Supports RS232/RS485, COM5、COM6 Supports RS232;

2×2\*5Pin standard COM header ports (pitch:2.54mm), COM1、COM2 standard pin definition:

| 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          |

**Note:** the standard 2-COM version supports 1×RS485, 6-COM version supports 2×RS485

COM1 and COM2 supports not only RS232 and RS485, COM2 but also supports through hardware modification RS422;

**COM3 and COM4 Supports RS485 requires hardware modification, RS485 function is available on the JRS1 header. Please consult us before ordering.**

COM1 and COM2 RS232 and RS485 selection jumpers:

| Interface | Function | JCOM1_SW1Setting         | JC1Setting       | Definition                                  |
|-----------|----------|--------------------------|------------------|---------------------------------------------|
| COM1      | RS232    | 1-3Pin ,2-4Pin (default) | 1-3Pin (default) | COM1Pin2PINis a(RXD)<br>COM1Pin3PINis (TXD) |
|           | RS485    | 3-5Pin ,4-6Pin           | 3-5Pin           | COM1Pin1PINis (A)<br>COM1Pin2PINis (B)      |

| Interface | Function | JCOM2_SW1Setting         | JC1Setting       | Definition                                                              |
|-----------|----------|--------------------------|------------------|-------------------------------------------------------------------------|
| COM2      | RS232    | 1-3Pin ,2-4Pin (default) | 2-4Pin (default) | COM2Pin2PINis a(RXD)<br>COM2Pin3PINis (TXD)                             |
|           | RS485    | 3-5Pin ,4-6Pin           | 4-6Pin           | COM2Pin1PINis (A)<br>COM2Pin2PINis (B)                                  |
|           | RS422    | /                        | /                | Available through hardware modification; please consult us for details. |

**COM3 and COM4 Supports RS485 requires hardware modification, RS485 function is available on the JRS1 header.**

**COM3 To support RS422 hardware modification is required. Please consult us before ordering.**

The motherboard provides 1×2\*3 Pin RS485 wiring header, JRS1(pitch2.00mm).

JRS1 Pindefinition 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         |

The motherboard provides 1×2\*20 Pin standard 4 standard serial-port header (pitch:2.0mm),

COM3-6 Definition:

| 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       |

2. The motherboard provides 1×2\*15 Pin LVD Sheader (pitch:2.0mm), LVDS 1 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 3.3V、5V、12V three panel operating voltage options, and 5V and 12V panel backlight power supply voltage options;

Before using LVDS, first determine the required rated operating voltage, When the selected LCD voltage matches the LCD panel voltage, LCD the panel will display correctly. Configure it as follows:

**INVERTER1(backlight power connector)Definition:**

| Pin | Signal Name                  |
|-----|------------------------------|
| 1   | 12V/5V(INVERT_PWR1Setting)   |
| 2   | 12V/5V(INVERT_PWR1Setting)   |
| 3   | Backlight Enable             |
| 4   | Backlight Brightness Control |
| 5   | GND                          |
| 6   | GND                          |

**INVERT\_PWR1(panel backlight power)Setting:**

| Interface    | Function         | JP_BC1Setting |
|--------------|------------------|---------------|
| LVDS/E<br>DP | 12V<br>(default) | 1-2 Pin       |
|              | 5V               | 2-3 Pin       |

**JLVDS\_PWR1(panel operating voltage)setting:**

| Interface    | Function          | INVERT_PWR1Setting |
|--------------|-------------------|--------------------|
| LVDS/E<br>DP | 3.3V<br>(default) | 1-2 Pin            |
|              | 5V                | 3-4 Pin            |
|              | 12V               | 5-6 Pin            |

**BL\_PWM1(panel backlightPWM inversion control)Setting:**

| BL_PWM1Setting | PWMFunction |
|----------------|-------------|
| 1-2Pin         | Normal      |
| 2-3Pin         | Inverted    |

LVDS function enable jumper: The motherboard provides 1×1\*3PIN LVDS\_EN1 jumper (pitch:2.54 mm),The jumper controls LVDS enable/disable status.

**LVDS\_EN1 definition:**

| Interface | Function    | LVDS_EN1Setting |
|-----------|-------------|-----------------|
| LVDS1     | DisableLVDS | 1-2Pin          |
|           | EnableLVDS  | 2-3Pin          |

**JSW1(panel brightness adjustment Interface, pitch2.00mm)Definitionas follows::**

| PIN | Signal Name          |
|-----|----------------------|
| 1   | BLU+ Brightness Up   |
| 2   | BLU- Brightness Down |
| 3   | Backlight Enable     |
| 4   | GND                  |

The motherboard provides1×SW1DIP switchis used to set LVDS resolution. Detailed settings are as follows:

| N o. | DIP Switch Setting                                                                  | Resolution/ Bit Depth      | N o. | DIP Switch Setting                                                                  | Resolution/ Bit Depth       | N o. | DIP Switch Setting                                                                   | Resolution/ Bit Depth       |
|------|-------------------------------------------------------------------------------------|----------------------------|------|-------------------------------------------------------------------------------------|-----------------------------|------|--------------------------------------------------------------------------------------|-----------------------------|
| 1    |  | 800x600<br>Single-channel6 | 2    |  | 1024x768<br>Single-channel6 | 3    |  | 1280x768<br>Single-channel6 |

|    |                                                                                   |                                      |    |                                                                                   |                                        |    |                                                                                    |                                        |
|----|-----------------------------------------------------------------------------------|--------------------------------------|----|-----------------------------------------------------------------------------------|----------------------------------------|----|------------------------------------------------------------------------------------|----------------------------------------|
| 4  |  | 1280x800<br>Single-channel6          | 5  |  | 1280x960<br>Single-channel6            | 6  |  | 1280x1024<br>Dual-channel8             |
| 7  |  | 1366*768<br>Single-channel6          | 8  |  | 1366x768<br>Single-channel8            | 9  |  | 1440x900<br>Dual-channel8              |
| 10 |  | 1024*600<br>Single-channel6          | 11 |  | 1920x1080<br>Dual-channel6<br>15.6inch | 12 |  | 1920x1080<br>Dual-channel8<br>21.5inch |
| 13 |  | 1920x1080<br>Dual-channel8<br>42inch | 14 |  | 1280x1024<br>Dual-channel8             | 15 |  | 1280x800<br>Single-channel8            |
| 16 |  | 1024x768<br>Single-channel8          | 17 |                                                                                   |                                        | 18 |                                                                                    |                                        |

3. The motherboard provides 2×2\*15Pin eDP header (pitch:2.0mm), JEDP1 and JEDP 2pin definition is 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_PWMBacklight<br>Brightness Control | 26  | BKLT_EN(Backlight<br>Enable)   |
| 27  | GND                                     | 28  | GND                            |
| 29  | INVERT_PWR(Backlight<br>Power)          | 30  | INVERT_PWR(Backlight<br>Power) |

#### INVERT\_PWR2(panel backlight power)Setting:

| Interface    | Function         | INVERT_PWR2Setting |
|--------------|------------------|--------------------|
| LVDS/E<br>DP | 12V<br>(default) | 1-2 Pin            |
|              | 5V               | 2-3 Pin            |

#### JEDP\_PWR2(panel operating voltage)setting:

| Interface    | Function          | INVERT_PWR2Setting |
|--------------|-------------------|--------------------|
| LVDS/E<br>DP | 3.3V<br>(default) | 1-2 Pin            |
|              | 5V                | 3-4 Pin            |
|              | 12V               | 5-6 Pin            |



**BL\_PWM2(panel backlight PWM inversion control)Setting:**

| BL_PWM2Setting | PWMFunction |
|----------------|-------------|
| 1-2Pin         | Normal      |
| 2-3Pin         | Inverted    |

4. The motherboard provides 1×2\*5 Pin(pitch:2.54mm) front-panel audio interface; 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 |

5. The motherboard provides 1×1\*4 Pin(pitch:2.0mm) amplifier connector (supports 2ohm5Wstereo),JSPKR1 Pin definition is as follows:

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

6. The motherboard provides 4× 2\*5 Pin header-type USB2.0 interface (pitch:2.54mm); by default, the dual-LAN onboard headers support expansion of 6×USB2.0 interfaces, while the single-LAN version supports expansion of 4×USB2.0 interfaces (when the motherboard does not require4G and Bluetooth, up to8×USB2.0 interfaces can be supported; refer to the specific motherboard model);

F\_USB1、F\_USB2、F\_USB3、F\_USB4 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. The motherboard provides1 × 2\*5 Pin GPIO header (pitch:2.54mm), 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        |

7. This board provides 2 smart fan connectors; CPU/SYS FAN1 Pin definition is as follows:

CPU/SYS FAN1 Pin definition is as follows:

| Pin | Signal Name |
|-----|-------------|
| 1   | GND         |

|   |      |
|---|------|
| 2 | +12V |
| 3 | DET  |
| 4 | PWM  |

**Note:** DET: fan-speed pulse output;PWM: fan-speedPWM control

8. This board provides 1×1\*4 Pin red SATASATA drive power connector (pitch:2.0mm),

PWROUT1 Pin definition is as follows:

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

Please be sure to confirm SATA\_PWR1Pin1 Pin position; otherwise, the drive may be damaged. Use only the power cable supplied by CoreIPC.

9. This board provides 1×2\*5 Pin FPANEL1 interface (pitch:2.54mm)

The chassis power switch, reset switch, HDD LED, and power LED can be connected to this header. 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  |             |

10. Onboard provision includes 1×2\*6Pin TPM2.0 interface; TPM1 pin definition is as follows:

| PIN | Signal Name | PIN | Signal Name |
|-----|-------------|-----|-------------|
| 1   | SPI POWER   | 2   | SPI CS#     |
| 3   | SPI MISO    | 4   | SPI MOSI    |
| 5   | NC          | 6   | SPI CLK     |
| 7   | GND         | 8   | SPI RESET   |
| 9   | NC          |     |             |
| 11  | NC          | 12  | SPI IRQ     |

The bare-board power consumption AC measured at the AC input can be used as a reference for selecting a power adapter. The minimum recommended adapter for the bare board is 19V6.3A adapter.

| Processor Family | Model / Specification | Clock Frequency                  | TDP | Maximum Power Consumption | Long-Term Stable Power |
|------------------|-----------------------|----------------------------------|-----|---------------------------|------------------------|
| Core             | I5-1235U              | 10cores12threads3.3 up to 4.4GHZ | 15W | 90W                       | 35W                    |
| Core             | I5-1335U              | 10cores12threads3.4 up to 4.6GHZ | 15W | 90W                       | 35W                    |
| Core             | I5-12450H             | 8cores12threads3.3 up to 4.4GHZ  | 45W | 122W                      | 70W                    |
| Core             | I5-1340P              | 12cores16threads3.4 up to 4.6GHZ | 28W | 98W                       | 50W                    |
|                  |                       |                                  |     |                           |                        |