华北工控
NORCO

BIS-6360ARA-A10
Operating Manual

用户手册
USER'Manual

Industrial & Communication Computer

做中国最可信赖的工控产品

BIS-6360ARA-A10
Operating Manual

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For more product information, please visit www.norco.com.cn

Description

The contents contained in this manual do not represent our commitment, except for the accessories that accompany the product. We reserve the right to change this manual without prior notice. It is not responsible for any direct, indirect, intentional or unintentional damage and hidden dangers caused by improper installation and use.

Before ordering products, please ask the distributor to know whether the product performance meets your needs in detail. NORCO is a registered trademark of Shenzhen NORCO Intelligent Technology Co., Ltd. The ownership of other trademarks involved in this manual is owned by the corresponding product manufacturers.

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Warm Tips

1. Before using the product, be sure to read the operating manual carefully.
2. For boards that are not ready to be installed, they should be stored in anti-static protection bags.
3. Before taking the board from the packaging bag, put your hands on the grounded metal object for a while to release static electricity from your body and hands.
4. When holding the board, wear electrostatic protective gloves, and get into the habit of touching only the edge.
5. When the motherboard is connected to the power supply, please confirm the power supply voltage.
6. In order to avoid electric shock to human body or damage to products, the AC power must be turned off or the AC power cord must be unplugged from the power socket every time the motherboard and board are unplugged or reconfigured.
7. Unplug the AC power cord from the power outlet before moving the board.
8. Before you need to connect or unplug any equipment, make sure that all power cords have been unplugged in advance.
9. In order to avoid unnecessary damage to products caused by frequent switching on and off, wait at least 30 seconds before starting up.
10. If there is any abnormal situation during the use of the equipment, please find a professional to handle it.
11. This is a Class A product, which may cause radio interference in living environment. In this case, it may be necessary for users to take practical measures against their interference.

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Packaging List

Thank you very much for purchasing NORCO products. After opening the packaging box, please check the accessories according to the packaging list first. If you find that the items are damaged or there is any shortage of accessories, please contact your distributor as soon as possible.

BIS-6360ARA-A10 1 set

Chapter 1. Product Introduction

华北工控
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Chapter 1 Product Introduction

1.1 Specification

Dimensions

● Size: 188mmx140mmx54.5 mm

Processor

● CPU: RK3399, 6-core (dual-core A72 2GHz + quad-core A53 1.5 GHz)

System memory

● Onboard memory: ON BOARD memory, support LPDDR4, support 2G/4G Bytes, default 4GB

Display

● Provide 1 HDMI interface and support resolution of 4K @ 60Hz

Storage

● Provide 1 TF card holder with maximum support of 128GB

● Onboard 16G/32G/64G/128G EMMC

AUDIO

●Using ES8316+NS4258T audio control chip

●Provides 1 2X4 small white socket, supports dual-channel power amplifier output and 1-channel MIC audio input

●Onboard power amplifier chip supports 5W dual-channel power amplifier and provides an onboard CTIA standard headphone interface

LAN

●Provides 2 onboard RJ45 network ports, supporting 100/1000M network

I/O

● Serial port: 6 serial ports, in which COM1/3 > RS232/RS485/TTL; COM4-7-> RS232/TTL.

Extracted by 2.00 mm row of needles

● USB: Provide 6 USB interfaces; Among them, 3 USB3.0, 2 USB2.0 are led out through 2.00 mm pin row and 1 OTG interface

● Provide 1-channel PWM

● Provide 1-channel I2C interface

Extension ports:

● 1 MINI PCIe slot

● 1 PCIEX4 slot

● 1 2x15 PIN GPIO interface, including 11 GPIO, 1 I2C, 1 MIPI_DSI;

● 1 rechargeable button battery

● Provide 1 onboard WIFI module

● Provide 1 EDP expansion interface

Power support

● Support single power supply +12V power supply, supports hardware and software auto-start function when incoming calls

Watchdog

● Support hardware reset function

Operating environment

● Operating temperature: 0℃ ~ 60℃

● Operating humidity: 5% ~ 95%, no condensation

Chapter 2 Installation Instructions

Chapter 2 Installation Instructions

Instructions for safe use

Electric current can be used to achieve many useful functions, but it can also cause personal injury and property loss due to improper use. "Safety" is considered as the primary condition in the design and manufacturing process of this product. Electric shock and fire caused by improper use are not excluded. Therefore, in order to ensure your personal and property safety and prolong the service life of the product, please read carefully and follow the following product safety operating instructions for installation and use.

Safety warning!

Always disconnect the power supply of the chassis before operating the equipment to prevent electric shock. Do not connect CPU card or any original on other cards when the power is turned on. Disconnect the power before changing any configuration to prevent transient surge damage to sensitive electronic components when you connect jumpers or install cards.

Precautions!

Before touching the CPU, please put your hands on the grounded metal object for a while to release static electricity from your body and hands. Modern electronic equipment is very sensitive to static electricity. For the sake of safety, anti-static bracelets must be worn at all times when operating equipment. Place unused or uninstalled electronic components on the surface of electrostatic dissipating objects or in anti-static protective bags.

The data and pictures listed in this manual are for illustration only and are subject to change without prior notice.

Safety instructions

Electrical safety

● If the power supply is damaged, please do not repair it by yourself, but find a professional or contact your dealer

● When you connect or unplug any equipment, make sure that the power cord of all equipment is unplugged before the signal cable is connected

● To avoid the danger of electric shock to human body, turn off the AC power supply or unplug the AC power cord from the power socket every time the system is unplugged or reconfigured.

● Make sure all devices are unplugged before connecting and disconnecting the signal cables on the motherboard

● Do not pull, bend or place heavy objects on the power cord, or cause any damage to the power cord, which may cause fire or electric shock accidents

● Make sure the power supply voltage is set correctly, otherwise personal injury or system damage may be caused

Instructions for safe use:

Electric current can be used to achieve many useful functions, but it can also cause personal injury and property loss due to improper use. "Safety" is considered as the primary condition in the design and manufacturing process of this product. Electric shock and fire caused by improper use are not excluded. Therefore, in order to ensure your personal and property safety and prolong the service life of the products, please read and follow the following products carefully

Operating safety

● Before installing the motherboard or connecting the device, carefully read the safety instructions that come with the product packaging

● To avoid short circuits in the system, keep paper clips, screws, staples, etc. away from connectors/interfaces, slots, sockets, and circuitry

● Do not use equipment in damp and dusty environments or in environments where the system or equipment is exposed to oil, steam, etc., which may lead to fire accidents

● Ensure that the device does not come into contact with water or other forms of liquid, and check whether other objects such as paper clips and pins are left in the system, otherwise it may cause electric shock to the human body

● To avoid system or equipment damage, do not place equipment on unsafe surfaces, or cause equipment or system to fall or overturn due to strong impact

● Do not use equipment or system near heat dissipation equipment or in high temperature environment, which may lead to overheating of the system and cause fire

● Never expose the equipment to direct sunlight

The data and pictures listed in this article are for illustration only, and are subject to change without prior notice!

2.1 Front view

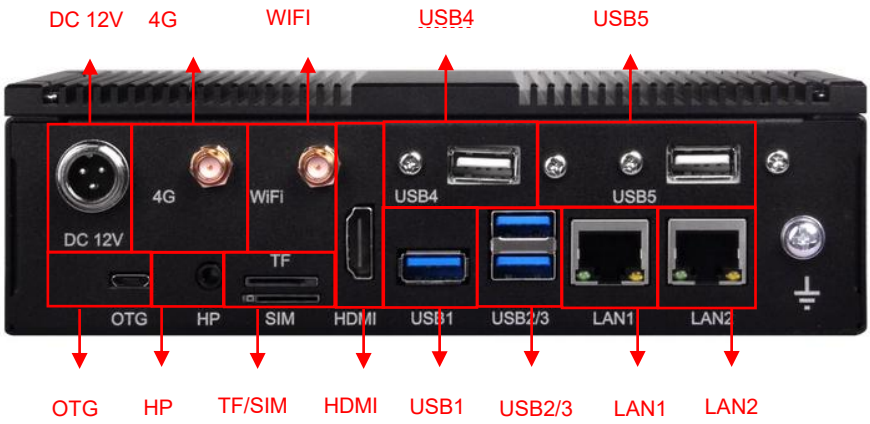
2.2 Rear view

Chapter 3 Hardware Functions

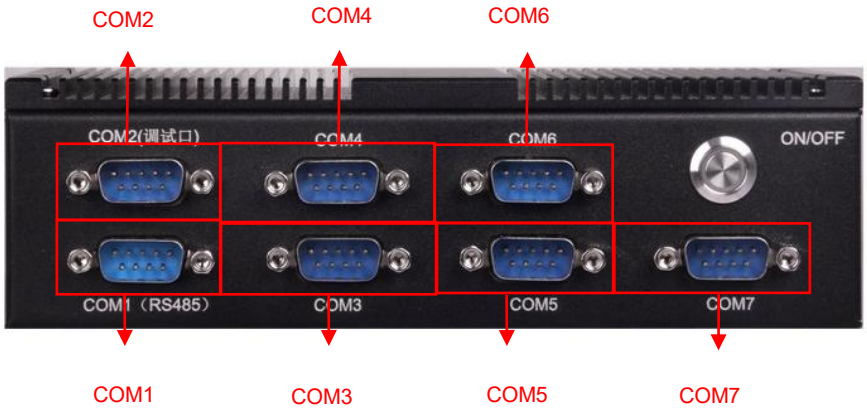
Chapter 3 Hardware Functions

3.1 External interface indicator diagram

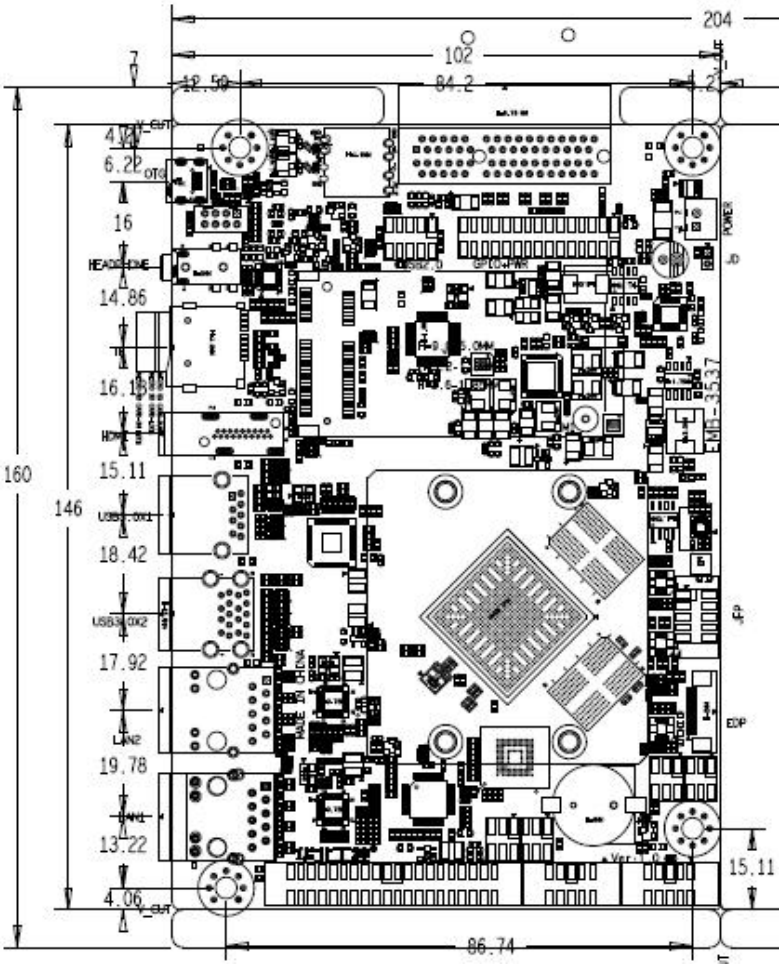
3.1. 1: BIS-6360 ARA-A10 Front View



3.1.2: BIS-6360ARA-A10 rear view



3.2 Interface position and dimension drawing



Note: When handling, please wear electrostatic gloves, because static electricity may damage the components.

3.3 Installation steps

Please follow these steps to assemble your computer:

1. Adjust all Jumpers on EMB-3537 V1.0 correctly with reference to the user manual.

2. Install other expansion cards.

3. Connect all signal lines, cables, panel control lines and power supplies.

⚠ **The key components of this motherboard are all integrated circuits, and these components are easily damaged due to the influence of static electricity. Therefore, please make the following preparations before officially installing the motherboard:**

1. When holding the motherboard, hold the edge of the board and try not to touch the pins of components and plugs and sockets.

2. When contacting integrated circuit components (such as CPU, RAM, etc.), it is best to wear anti-static bracelets/gloves.

3. Before the integrated circuit components are installed, they should be placed in anti-static pads or anti-static bags.

4. After confirming that the power switch is in the off position, plug in the power plug.

Before installing computer accessories

Following the following security principles can help prevent potential damage to your computer and help ensure your personal safety.

1. Make sure your computer is not powered.

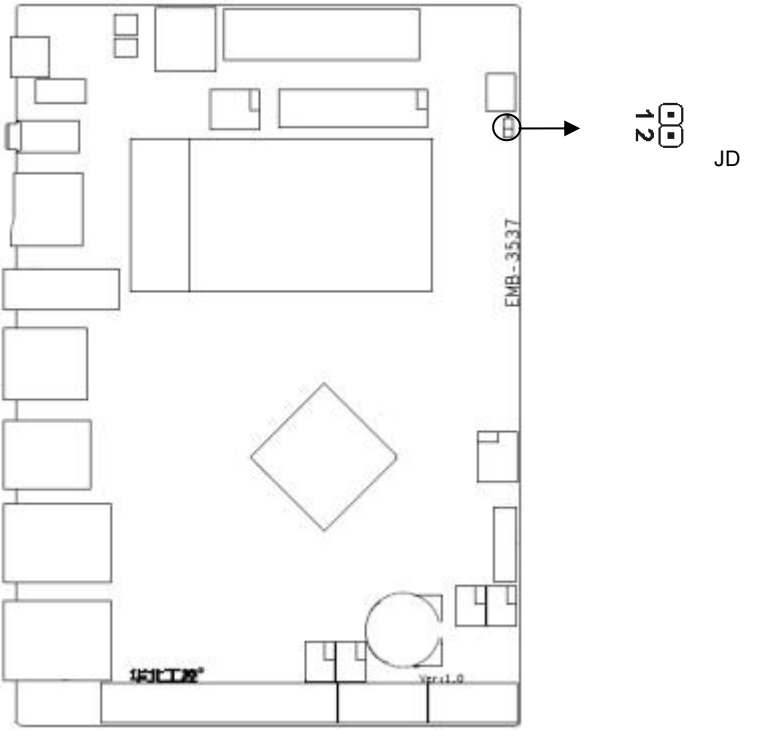
2. When contacting integrated circuit components (such as RAM, etc.), it is best to wear anti-static bracelets/gloves.

3.4 Jumper function settings

Before installing the hardware device, please set the jumper according to your needs according to the following table.

Tip: How to identify jumper, the first pin of the interface, and observe the text mark next to the plug and socket, which will be represented by "1" or bold lines or triangular symbols; Look at the pad on the back, the square pad is the first pin; All jumpers have a white arrow next to pin 1.

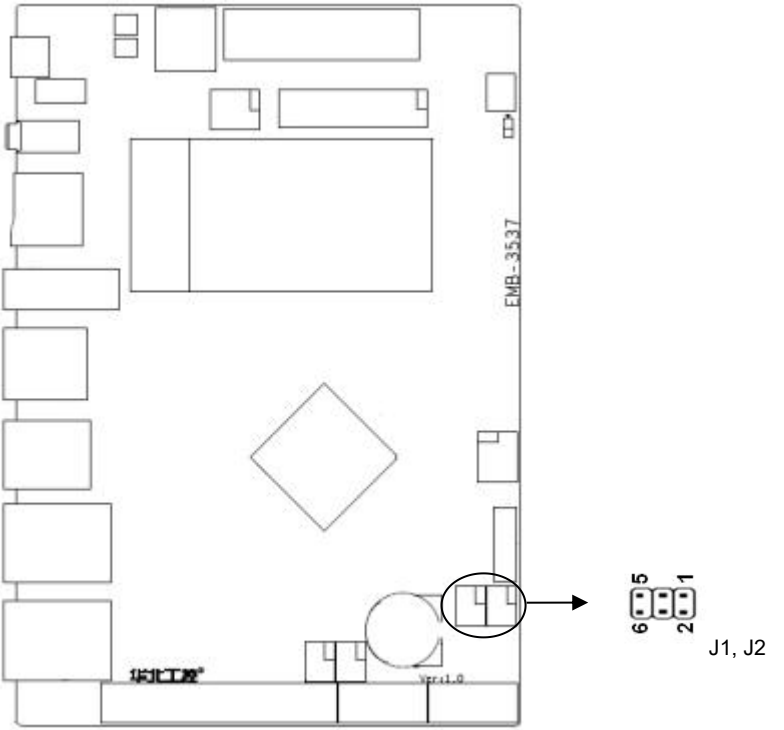
3.4.1 Burning Jumper



JD:

JD	
1-2	Down load
NC	Default

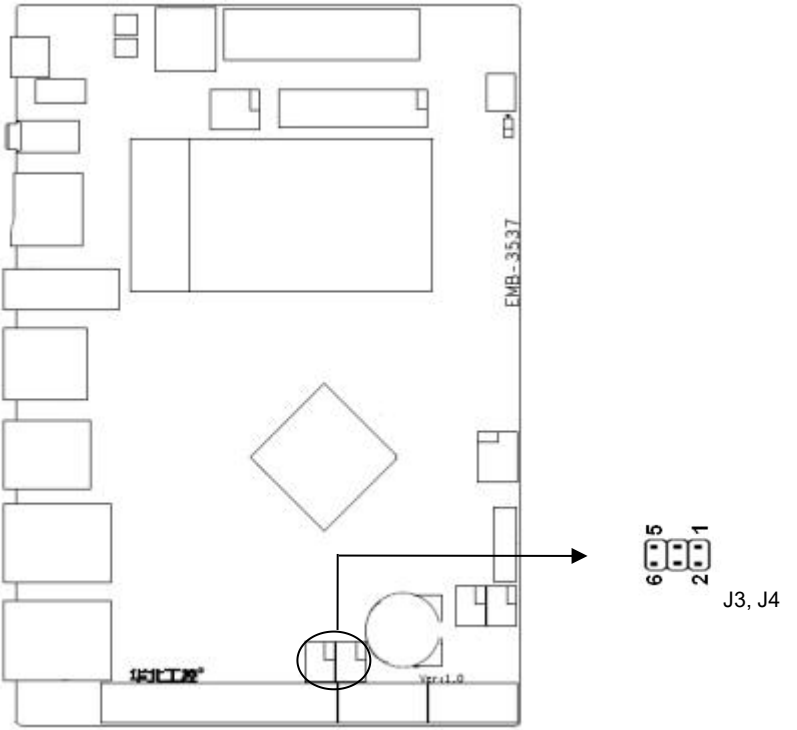
3.4.2 COM 1 Jumper (J1, J2)



J1, J2:

COM1 AS RS232 PORT		COM1 AS RS485 PORT	
J1	1-2	J1	3-4 5-6
J2	1-3 2-4	J2	3-5 4-6

3.4.3 COM2_3 Jumper (J3, J4)



J3, J4:

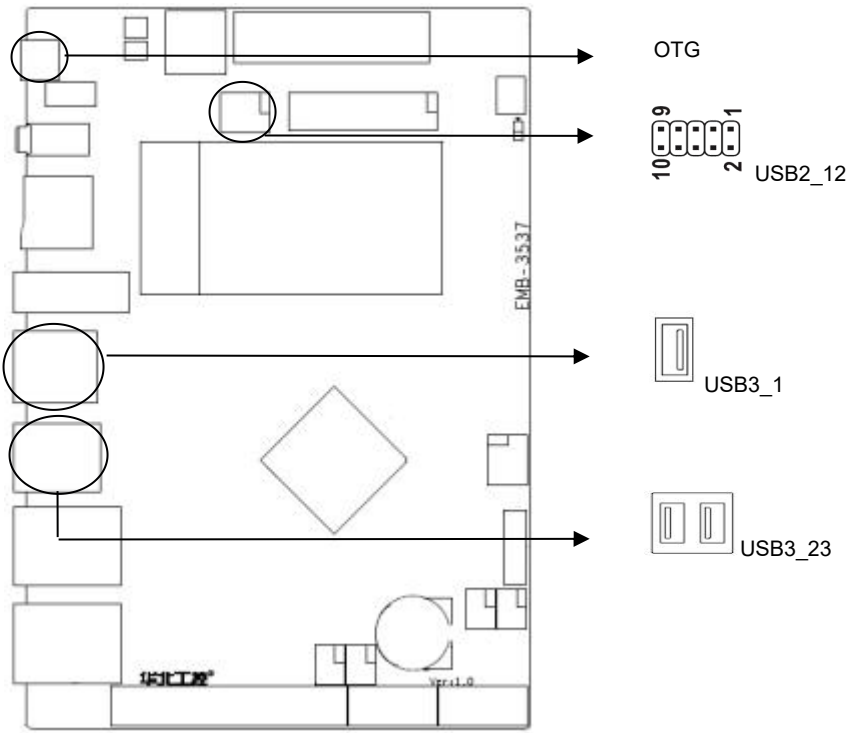
COM3 AS RS232 PORT		COM3 AS RS485 PORT	
J3	1-2	J3	3-4 5-6
J4	1-3 2-4	J4	3-5 4-6

3.5 Interface description

⚠ **Please read this manual carefully before connecting external connectors to avoid damage to the motherboard**

3.5.1 USB interface (USB3_1, USB3_23, USB2_12, OTG)

Provides 6 USB interfaces; 3 USB3.0 interfaces with exposed panels, 2 USB2.0 interfaces through 2.00mm pin headers, and 1 OTG interface

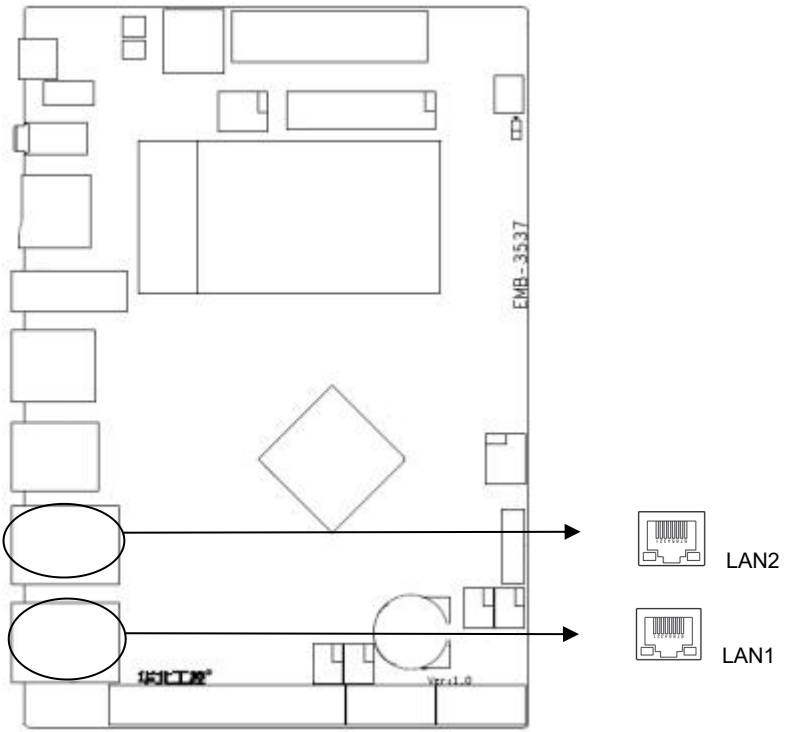


USB2_12:

Signal name	Pin		Signal name
VCC	1	2	GND
HUB_1-R	3	4	GND
HUB_1+R	5	6	HUB_2+R
GND	7	8	HUB_2-R
GND	9	10	VCC

3.5.2 Ethernet Interface (LAN)

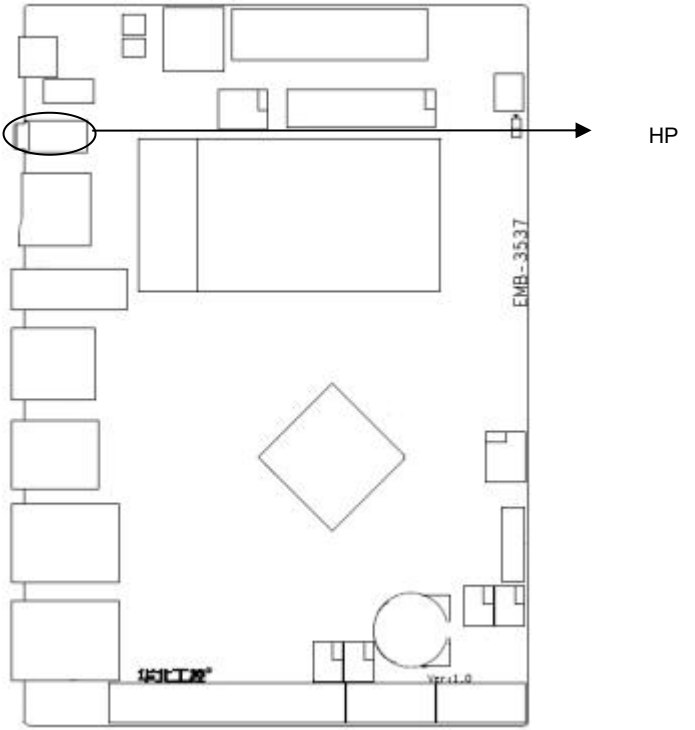
Two RJ45 network interfaces are provided, yellow indicates data transmission status and green indicates network connection status.



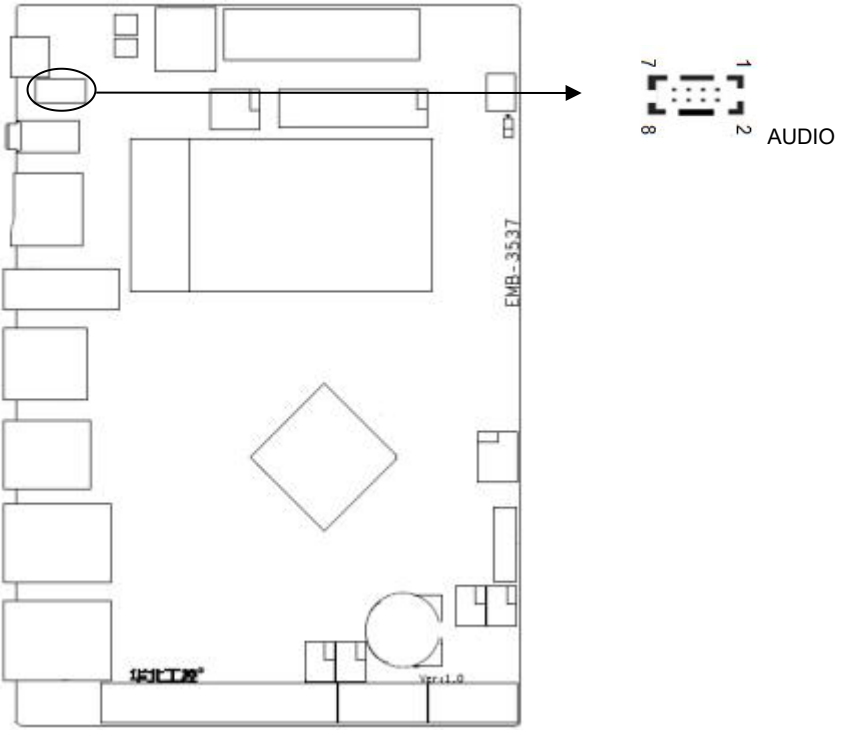
RJ45 LAN LED status description:

LILED (green) state	Function	ACTLED (yellow) status	Function
ON	100/1000 m link	Flash	Carry out data
OFF	10M link or close	OFF	Data transfer stop

3.5.3 Headphone Interface (HP)



3.5.4 Power amplifier interface (AUDIO)



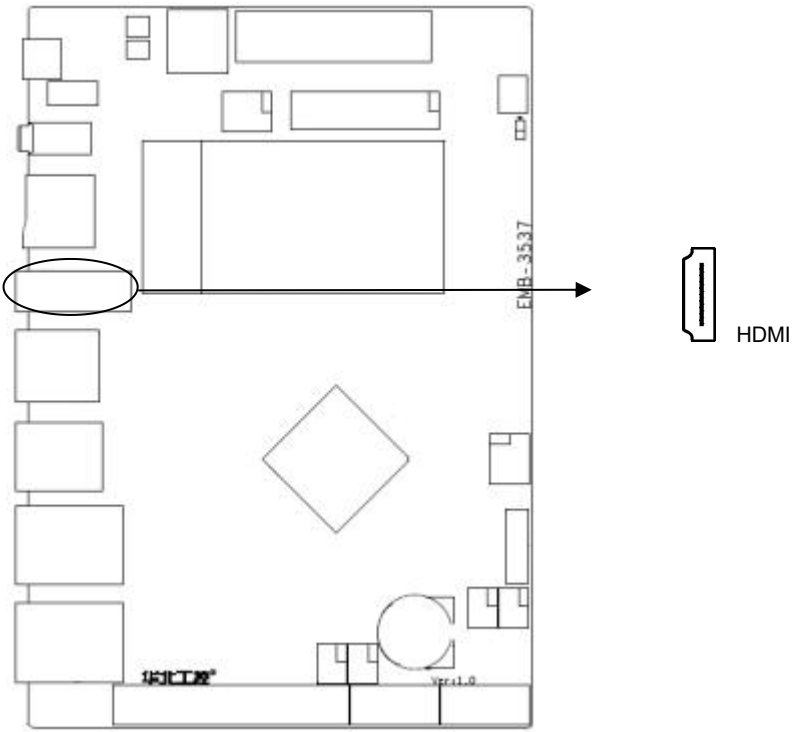
AUIO:

Signal name	Pin		Signal name
VCC3	1	2	OUTPL
GND	3	4	OUTNL
MIC+	5	6	OUTNR
MIC-	7	8	OUTPR

Note: Connect the microphone. If it is a single-ended input microphone, the positive pole is connected to PIN5 (MIC +) and the negative pole is connected to PIN3 (MIC-). If it is a differential input microphone, the positive and negative poles are respectively connected to PIN5 (MIC +) and PIN3 (MIC-)

3.5.5 Display interface (HDMI)

Provide 1 HDMI HD display interface with 4K @ 60Hz resolution



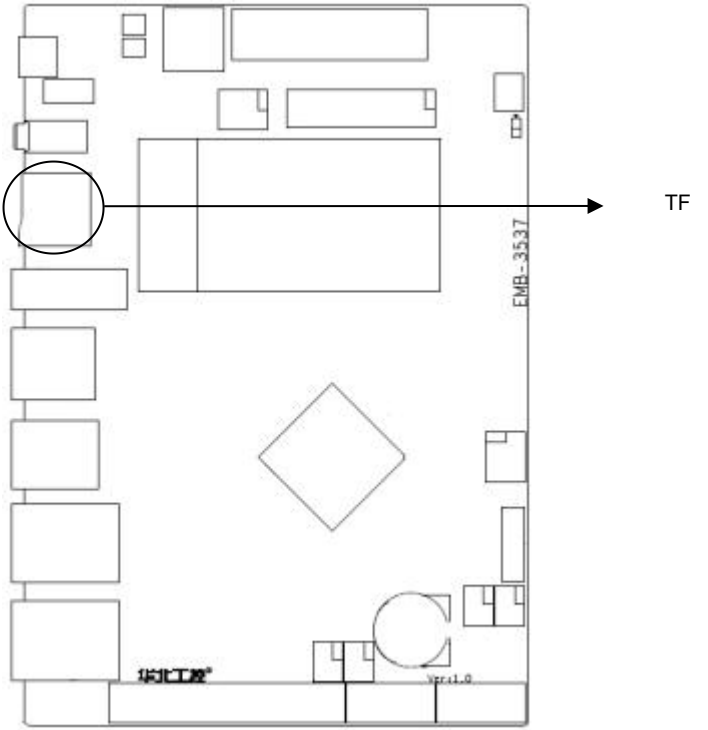
HDMI:

Signal name	Pin		Signal name
D2 +	1	2	D2 Shield
D2-	3	4	D1 +
D1 Shield	5	6	D1-
D0 +	7	8	D0 Shield
D0-	9	10	CK +
CK Shield	11	12	CK-
CE Remote	13	14	NC
DDC CLK	15	16	DDC DATA

GND	17	18	+ 5V
HP DET	19	20	NC

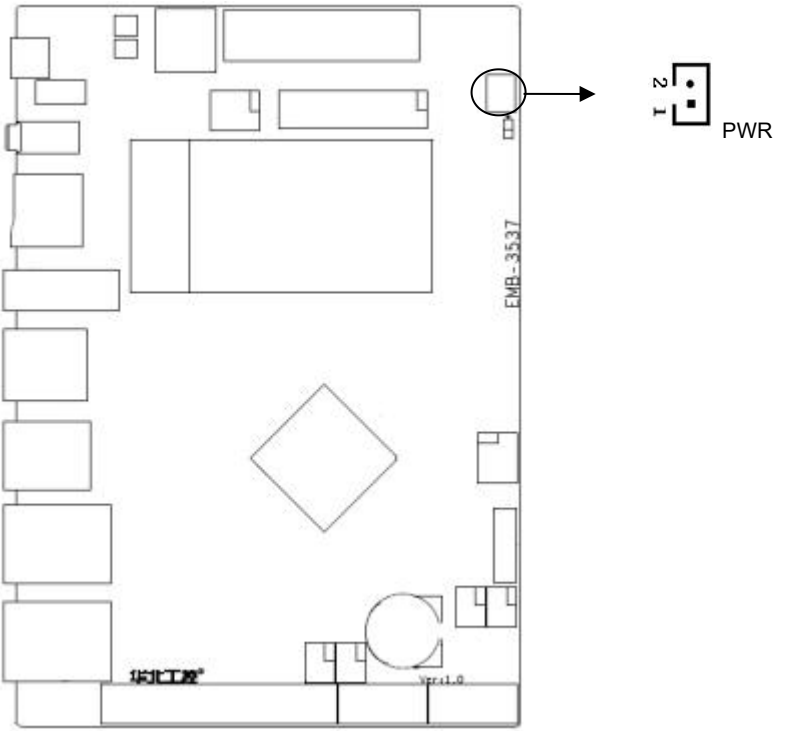
3.5.6 Interface (TF)

Provide a TF card interface.



3.5.7 Power interface (PWR)

A power outlet and a 1x2 pin 2.54 mm small white seat are provided on the board.

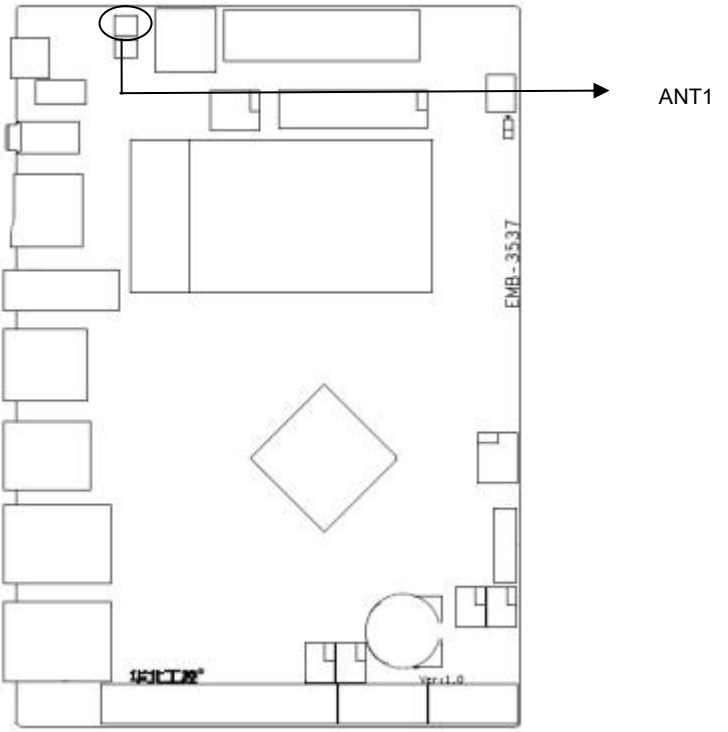


PWR:

Pin	Signal name
1	+ 12V
2	GND

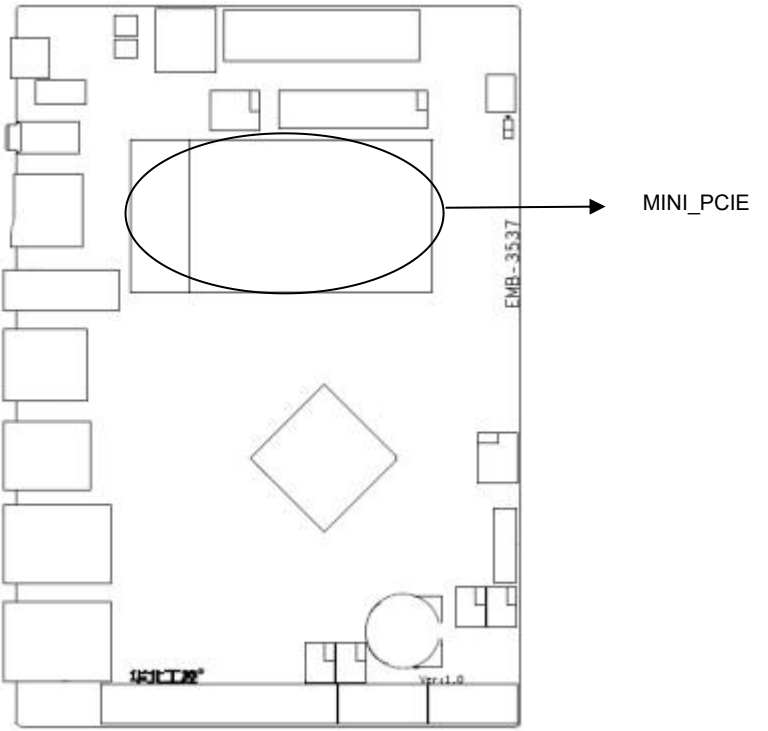
3.5.8 WiFi interface (ANT1)

The motherboard provides 1 WIFI interface.



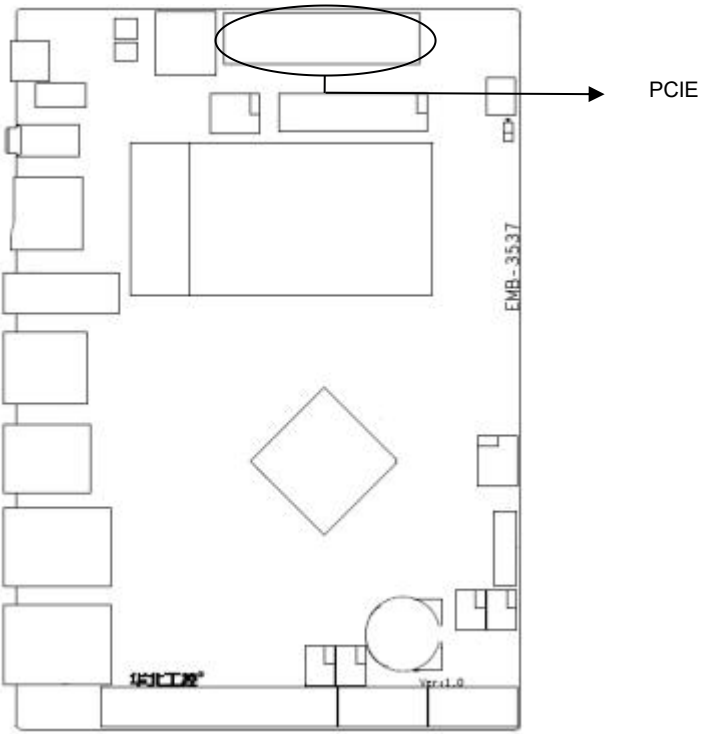
3.5.9 MINI PCIe interface and SIM card slot

Users can expand MINI PCIe devices according to their own needs



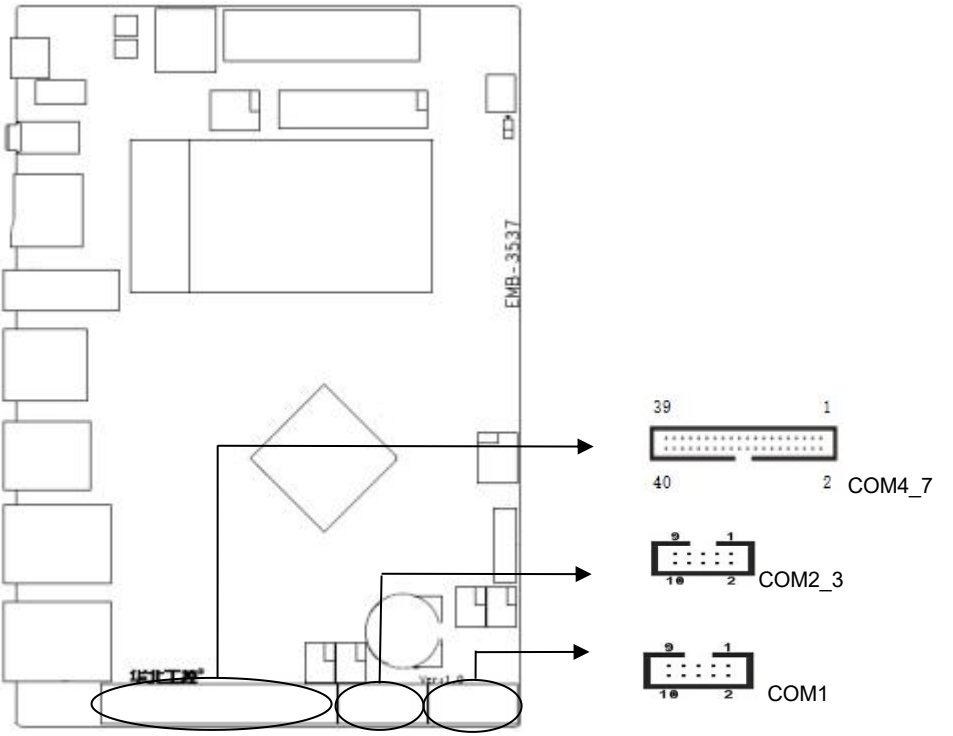
3.5.10 PCIe interface

The motherboard provides a PCIe interface, and users can expand PCIe devices according to their own needs.



3.5.11 Serial interfaces (COM1, COM2_3, COM4_7)

6 serial ports are provided, of which COM1/3-> RS232/RS485/TTL is led out through 2*5PIN 2.00 mm pin arrangement; COM4-7-> RS232/TTL. Extracted by 2*20PIN 2.00 mm row of needles



COM1:

Signal name	Pin		Signal name
DATA-	1	2	NC
DATA +/RXD	3	4	RTS
TXD	5	6	CTS
NC	7	8	NC
GND	9	10	GND

COM2_3: Where DB_RXD and DB_TXD are debugging serial ports

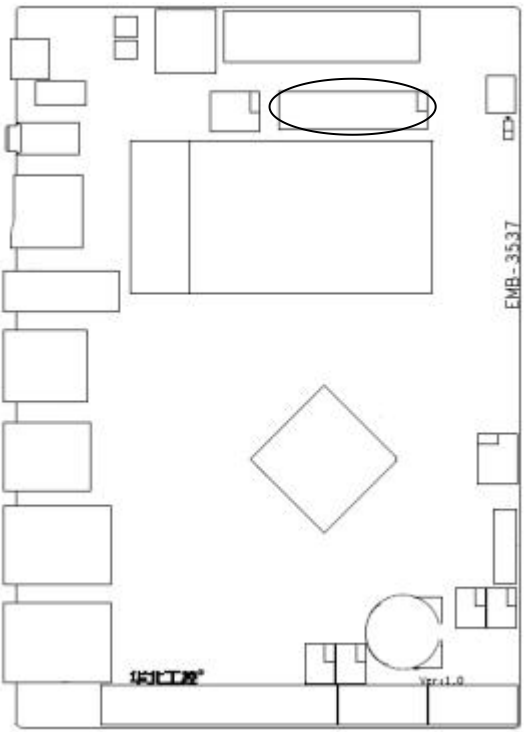
Signal name	Pin		Signal name
DATA-	1	2	DB_RXD
DATA +/RXD	3	4	DB_TXD
TXD	5	6	NC
NC	7	8	NC

GND	9	10	GND

COM4_7:

Signal name	Pin		Signal name
NC	1	2	NC
RXD	3	4	RTS
TXD	5	6	CTS
NC	7	8	NC
GND	9	10	GND
NC	11	12	NC
RXD	13	14	RTS
TXD	15	16	CTS
NC	17	18	NC
GND	19	20	GND
NC	21	22	NC
RXD	23	24	RTS
TXD	25	26	CTS
NC	27	28	NC
GND	29	30	GND
NC	31	32	NC
RXD	33	34	RTS
TXD	35	36	CTS
NC	37	38	NC
GND	39	40	GND

3.5.12 Programmable input output port (GPIO)



GPIO

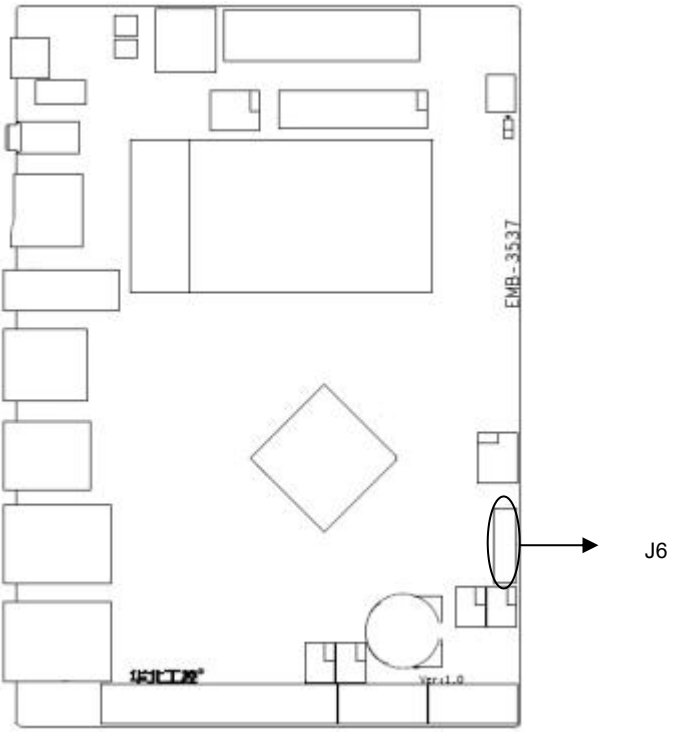
GPIO:

Signal name	Pin		Signal name
3.3V	1	2	5V
PWM	3	4	SPI5_RX_33
I2C4_SCL	5	6	SPI5_TX_33
I2C4_SDA	7	8	SPI5_CLK_33
GPIO	9	10	SPI5_CS_33
I2S_SDI	11	12	I2S_SCLK
I2S_SDO	13	14	I2S_LRCK_RX
I2S_CLK	15	16	I2S_LRCK_TX
GND	17	18	GND

MIPI_TX0_D0N	19	20	MIPI_TX0_D0P
MIPI_TX0_D1N	21	22	MIPI_TX0_D1P
MIPI_TX0_CLKN	23	24	MIPI_TX0_CLKP
MIPI_TX0_D2N	25	26	MIPI_TX0_D2P
MIPI_TX0_D3N	27	28	MIPI_TX0_D3P
GND	29	30	GND

3.5.13 EDP FPC socket (J6) needs to be re-made as an expansion board

Seposon model: Trimer Electronic FPV-12W0518-Ruzp 18PIN 0.5 mm Pitch H=2. 0mm Drawer Down FPC Connector



PWR:

Pin	Signal name
1	EDP_AUXN
2	EDP_AUXP
3	GND
4	EDP_TX1N
5	EDP_TX1P
6	GND
7	EDP_TX0N
8	EDP_TX0P
9	GND
10	I2C2_SDA
11	I2C2_SCL
12	GPIO2_B1
13	PWM
14	GPIO2_B0
15	3.3V
16	3.3V
17	GND
18	12V

Chapter 4 Software Functions

Chapter 4 Software Functions

4.1 Android 9 system

4.1.1 HDMI

Support HDMI output

Instructions: Use HDMI cable to connect the motherboard with the monitor, and you can see the Android interface after starting up.

4.1.2 LVDS

Not supported

4.1. 3 USB

Support for 3xUSB3.0 2xUSB2.0 (pins)

Instructions: Connect USB flash drive to the motherboard USB interface, open the file browser and enter /mnt/media_rw/ directory to view the folder of USB flash drive.

4.1. 4 COM

Support 6 serial ports

Device node: CPU comes with/dev/ttyS0 ~/dev/ttyS1 extension ttyVIZ0-ttyVIZ3

Instructions: Install ComAssistant program, short-circuit rx, tx. Select to open the above device node and click Send. The data sent by the sender can be seen in the receiving area as normal. (Note that there are many serial ports, and short-circuit rx tx should correspond one to one)

4.1.5 CAN

Not supported

4.1.6 TF card

Support

Instructions: The tf card access to the motherboard, open the file browser into /mnt/media_rw/ directory can view the tf card folder.

4.1.7 WiFi

Support, see Android interface for specific operating

Instructions:

Open Settings-> Wireless and Network-> Wi-Fi under the system, turn on Wi-Fi, and you can view the SSID of the searched wireless router on the right, select one of them to connect, and enter the password if the router has a password

4.1.8 Ethernet

Support, see android interface for specific operating

Instructions:

Instructions: Open the network cable under the system settings-> More-> Ethernet, select HDCP or Static IP according to actual needs.

4.1.9 Sound card

Support, local sound card output, HDMI sound output

Instructions:

The default sound is output from the local power amplifier. If you need HDMI port to output sound, you need to recustomize the system.

4.2.0 PCIE interface

Support

Drivers should be customized according to the actual use of pcie devices by customers.

Appendix

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Appendix

Appendix I: Glossary of terms

ACPI

Advanced Configuration and Power Interface. The ACPI specification allows the operating system to control most of the power of computers and their additional devices.

Windows 98/98 SE, Windows 2000, and Windows ME all support this specification, giving users the flexibility to manage system power.

BIOS

Basic input/output system. It is the software that contains all the input/output control code interfaces in PC. It detects the hardware when the system starts, starts the operating of the operating system, and provides an interface between the operating system and the hardware. The BIOS is stored in a read-only memory chip.

BUS

In a computer system, the channel through which different components exchange data is a set of hardware circuits. By BUS, we usually refer to local lines within CPU and main memory elements.

Chipset

It is an integrated chip designed to perform one or more related functions. We mean the system-level chipset composed of South Bridge and North Bridge, which determines the architecture and main functions of the motherboard.

CMOS

Complementary metal-oxide semiconductor. It is a widely used semiconductor type. It has the characteristics of high speed and low power consumption. CMOS is a part of space reserved in CMOS RAM on the motherboard, which is used to store date, time, system information and system parameter setting information.

COM

A general-purpose serial communication interface, generally using a standard DB 9 male interface connection.

DIMM

Dual in-line memory modules. It is a small circuit board with a memory chipset. Provide 64bit memory bus width.

DRAM

Dynamic random access memory. It is a general-purpose memory type for ordinary computers. Typically a transistor and a capacitor are used to store a bit. As technology develops, DRAM types and specifications have become increasingly diverse in computer applications. For example, the commonly used ones now include: SDRAM, DDR SDRAM and RDRAM.

LAN

LAN interface. A computer network composed of interconnected computers in a small area, usually in an enterprise or a building. A local area network generally consists of servers, workstations, and some communication links. A terminal can access data and equipment anywhere through wires, and many users can share expensive equipment and resources.

LED

Light emitting diode, a semiconductor device that lights up when current flows, is usually used to express information very intuitively, such as that the power supply is turned on or the hard disk drive is working.

PnP

Plug and play. A specification that allows the PC to automatically configure external devices and work on its own without the user's manual operating system. In order to achieve this feature, BIOS support for PnP and a PnP expansion card are both necessary.

POST

Power-on self-test. During booting the system, the BIOS performs a continuous inspection

operating on the system, including checking RAM, keyboard, hard disk drive, etc. to see if they are connected correctly and working properly.

PS/2

An interface specification developed by IBM for keyboard and mouse connection. PS/2 is a 6PIN DIN interface that can also be used to connect other devices, such as modems.

USB

Universal serial bus. A hardware interface suitable for low-speed peripheral devices, which is generally used to connect keyboards, mice, etc. A PC can connect up to 127 USB devices and provide a transmission bandwidth of 12Mbit/s; USB supports hot-swap and multi-data stream functions, that is, USB devices can be inserted when the system is working, and the system can automatically identify and make the inserted devices normal.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and

(2) This device must accept any interference received, including interference that may cause undesired operation.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment. This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- - Reorient or relocate the receiving antenna.
- - Increase the separation between the equipment and receiver.
- - Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- - Consult the dealer or an experienced radio/TV technician for help.ct.

This equipment complies with the FCC RF radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 20cm between the radiator and any part of your body.