

# **HM370Z3BW motherboard**

**(PCB Rev:1.10)**

**Manual Version 1.10**

**2020.03.12**

## 1 Introduction

HM370Z3B is our company's standard 3.5 "industrial motherboard, which uses Intel's 8th / 9th generation Coffee Lake-H series CPU, and the chipset uses Intel HM370 / QM370 / CM246. The main features are as follows.

### 1.1 Main features

- 1.1.2 Adopt Intel Coffee Lake-H series CPU.。
- 1.1.3 Adort Intel HM370/QM370/CM246 Chipset.
- 1.1.4 Onboard 4G/8G/16G DDR4 Ram, 2133/2400/2666Mhz
- 1.1.5 1 \*DDR4 SODIMM 260 Socket, Max support 32GB DDR4 Ram, 2133/2400/2666Mhz.。
- 1.1.6 Onboard 1\*Intel I211 gigabit ethernet and 1\*I219-LM gigabit ethernet (when I/O ports have 4 USB, only have 1\*Intel I211AT network card) 。
- 1.1.7 Onboard HDA ALC662, Provide MIC/LINE-OUT and pin header.
- 1.1.8 Onboard dual channel amplifier, each supports 6W 8  $\Omega$  trumpet(optional); support SPDIF Digital audio interface.
- 1.1.9 1\*Mini-PCIE port, 1\*NGFF(KEY E) port.
- 1.1.10 1\*Mini-SATA port.
- 1.1.11 One SATA 3.0 hard disk interface by default.(when chipset is QM370/HM370, SATA1 can't use ; when use CM246 chipset, SATA1, SATA2 all can use)
- 1.1.12 2\*USB 3.1, 6\*USB2.0 port, all is pin header (when motherboard is 1 lan port, 2\*USB port is I/O port, 4\*USB is Pin Header) 。
- 1.1.13 Provide 4\*RS232 and 2\*RS485 pin header(Can choose 6\*RS232), Two of these 485 are optically isolated.
- 1.1.14 1\*PS/2 port (Pin header,Can be connected to mouse and keyboard) 。
- 1.1.15 Support HDMI output (HDMI1.4) 4096\*2304@30HZ.。
- 1.1.16 support DP display output, support 4096\*2304@60HZ.。
- 1.1.17 support dual channel 24 bit LVDS output and EDP1.3, 4Lanes(4096\*2304) output(Only can choose one) 。
- 1.1.18 2\*3-Pin FAN port.
- 1.1.19 Provide 8 \*GPIO, For users to choose.
- 1.1.20 Support 255 watchdog.
- 1.1.21 Support Intel AMT remote management technology (need to use QM370/CM246 chipset, CPU has Vpro platform qualification and Intel I219-LM network card)

### 1.2 Power supply

Support DC 9-36V wide Voltage power supply.

**The CPU of I7 can run up to 65W, and the power consumption should not be lower than 65W.**  
Support automatic power-on function and jumper selection.

### 1.3 Dimension

154. 8\*117. 4 mm



### 2.3 HDMI1

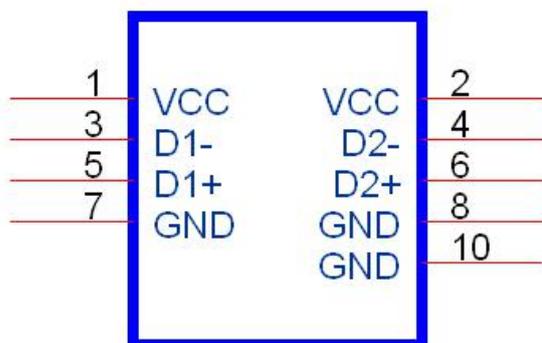
HDMI1 is standard HDMI output interface

### 2.4 USB1,

USB1 is 2 standard USB3.1 interfaces

### 2.5 USB3、USB4、USB5

USB3、USB4、USB5 is 2x5、2mm pin header interface , support USB 1.0/1.1/2.0 device, definition as below:



### 2.6 LAN1、LAN2 (When the I/O interface is 4 USB, there is only 1 Intel I211AT)

10/100/1000 M LAN is standard RJ45 interface, LAN1 is Intel I219-LM Gigabit network card, LAN2 is Intel I211AT

### 2.7 LINE\_OUT1、MIC IN1 and AUDIO1

LINE\_OUT1 is an audio output interface, using a universal connector.

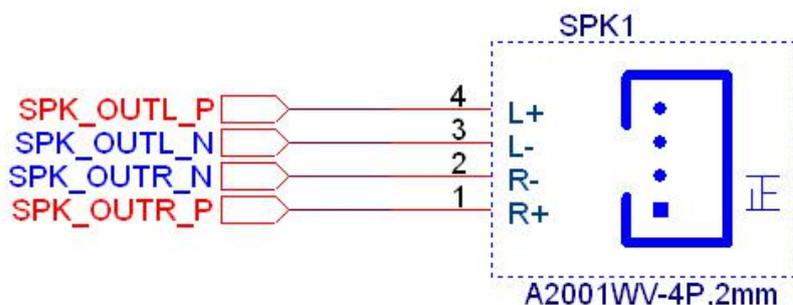
MIC IN1 is a microphone output interface, using a universal connector.

AUDIO1 is a 2x5, 2mm pin header interface, defined as follows:



## 2.8 Audio amplifier output interface SPK1 (optional)

The definition is as shown in the figure below. The dual-channel power amplifier supports 6W / 8Ω speakers per channel.



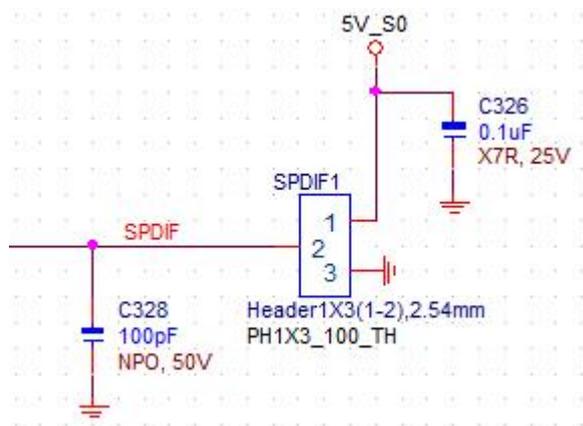
Note:

1. The front panel AUDIO1 has the highest priority. When the front panel AUDIO1 device is plugged in, MIC\_IN and LINE\_OUT cannot be used. When the LINE\_OUT audio output device is plugged in, SPK1 has no output.

2. PIN 7.9 is the sound source, PIN8.10 is the sound source input of the SPK1 amplifier, it needs to be shorted 7.8; 9.10, the SPK1 amplifier is valid

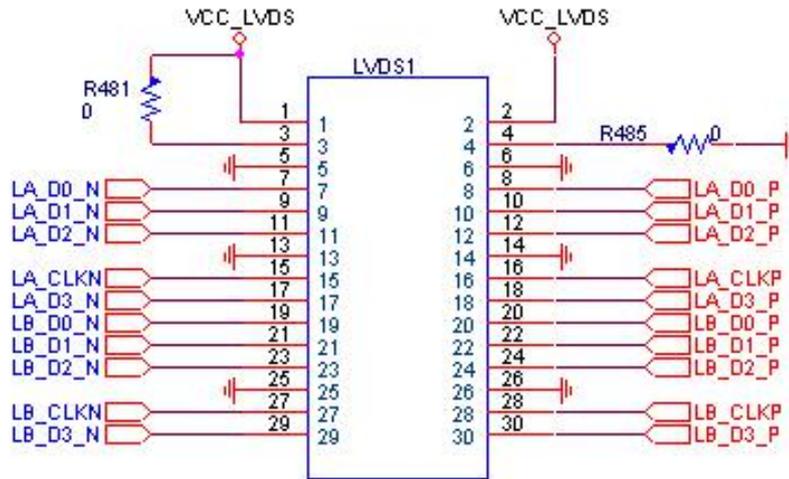
## 2.9 SPDIF1

Adopt 1x3、2.54mm pin header, defined as follows:

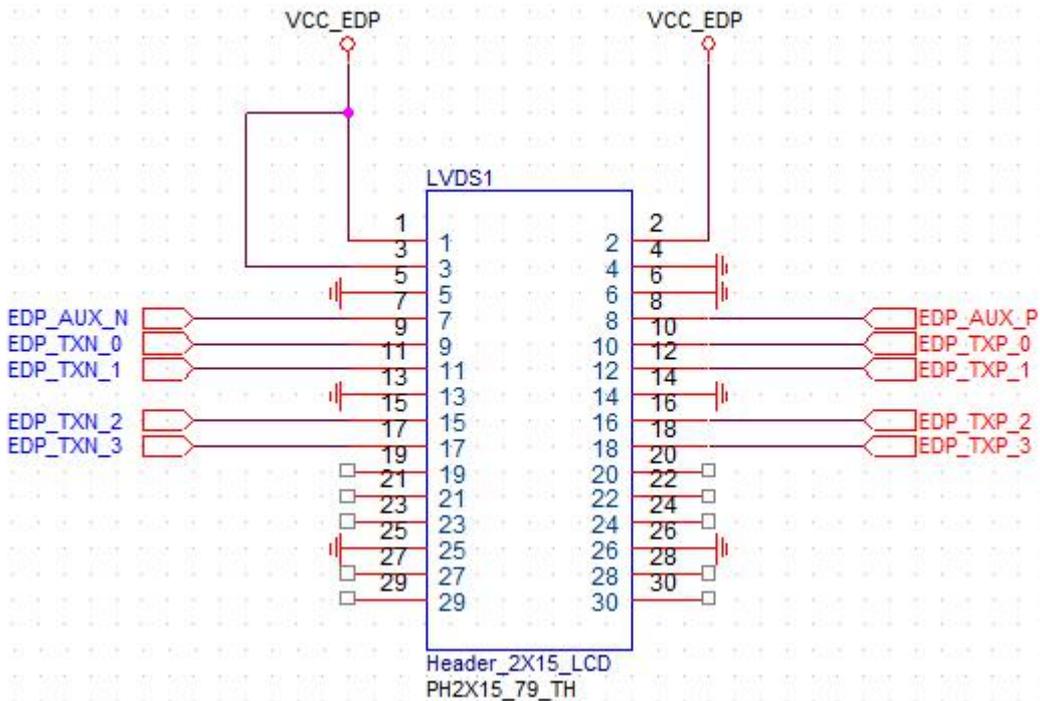


## 2.10 LVDS1 and EDP(Only can choose one)

24-bit dual-channel LVDS screen interface, using 2x15, 2mm pin header interface, the definition is shown below.



The EDP interface is defined as shown below



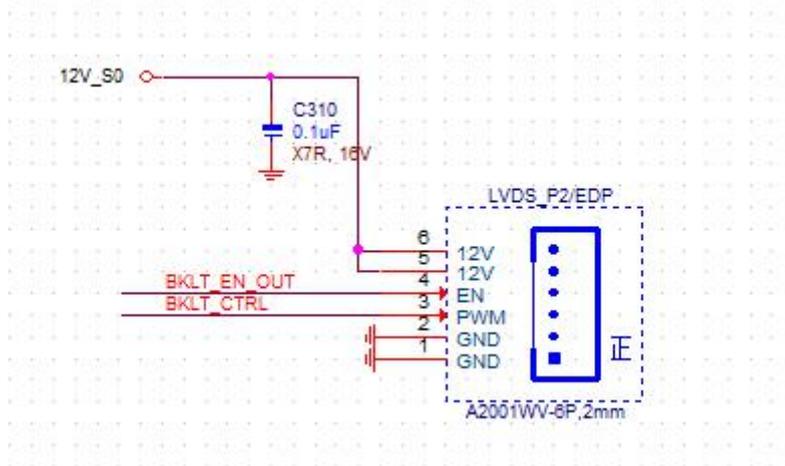
2.11 LCD\_3V\_5V and LCD\_12V

LVDS1 and EDP power supply VCC power supply selection.

optional	VCC_LVDS Voltage
LCD_3V_5V(1-2)、LCD_12V (Open)	3.3V (Default setting)
LCD_3V_5V(2-3)、LCD_12V (Open)	5V
LCD_3V_5V(Open)、LCD_12V (Close)	12V

2.12 LVDS\_P1 and EDP

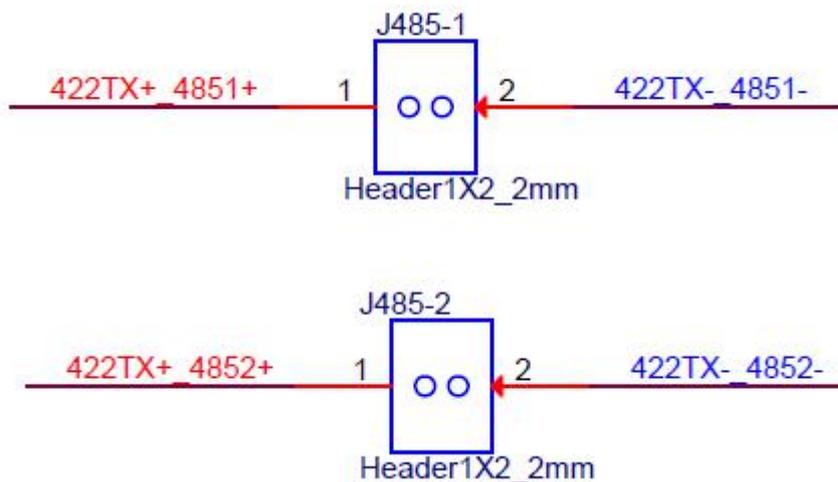
The interface between the LVDS screen and the EDP screen backlight board adopts CJT's A2001WR-6P-1 connector or other compatible connectors. The pins are defined as follows.



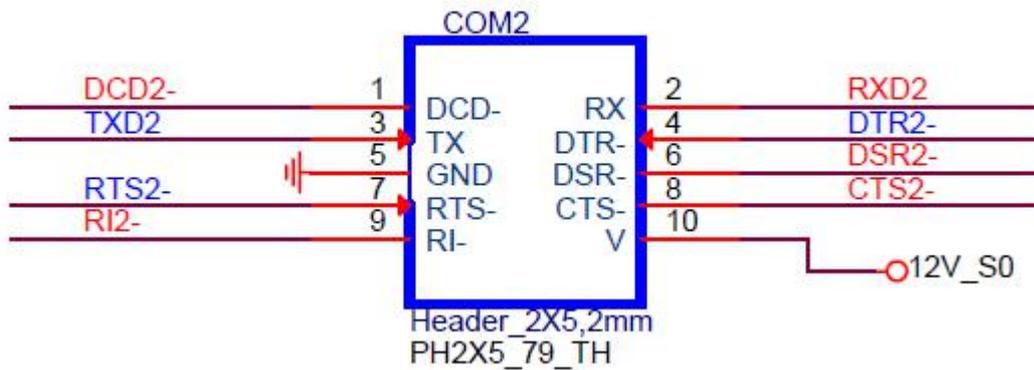
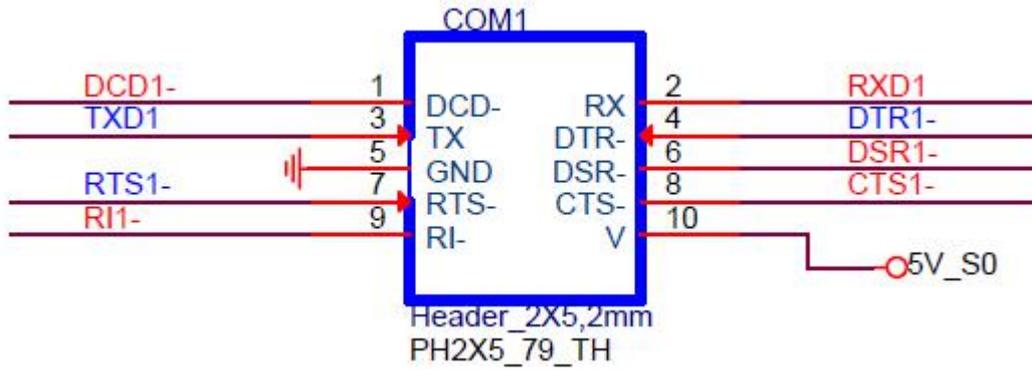
LVDS_P	LVDS_P Pin definition
1	Ground
2	Ground
3	Backlight brightness control
4	Backlight plate open
5	12V
6	12V

2.13 COM1、COM2(Can be selected as RS232 or RS485 through BIOS and jumper cap)

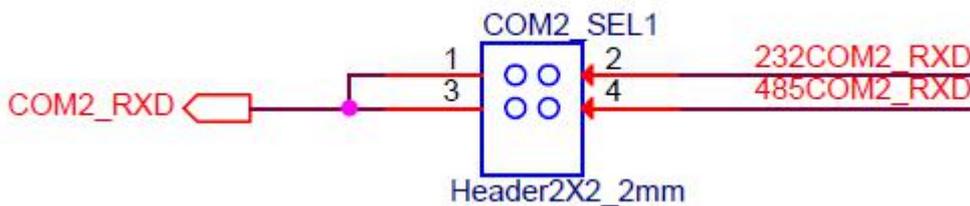
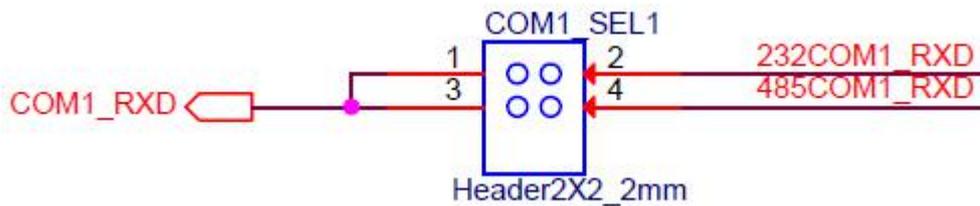
Adopt pin header interface, use 2x5, 2mm pin header, COM1, COM are RS485 the definition as follows:



COM1, COM2 are RS232, the definition is as follows:

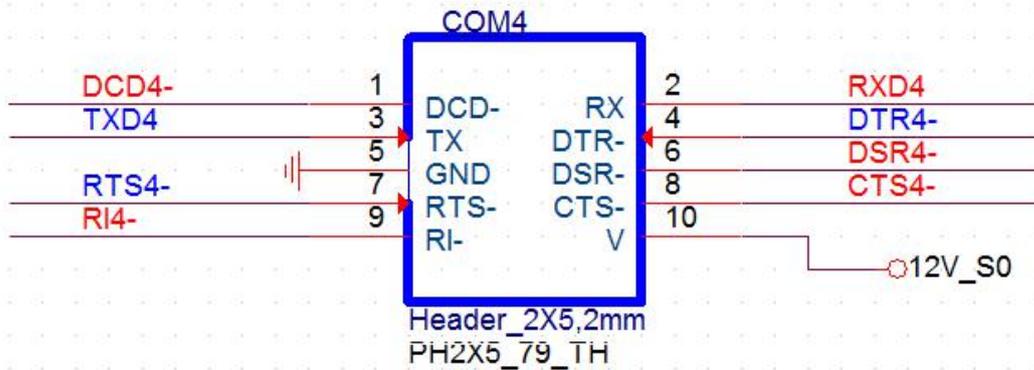
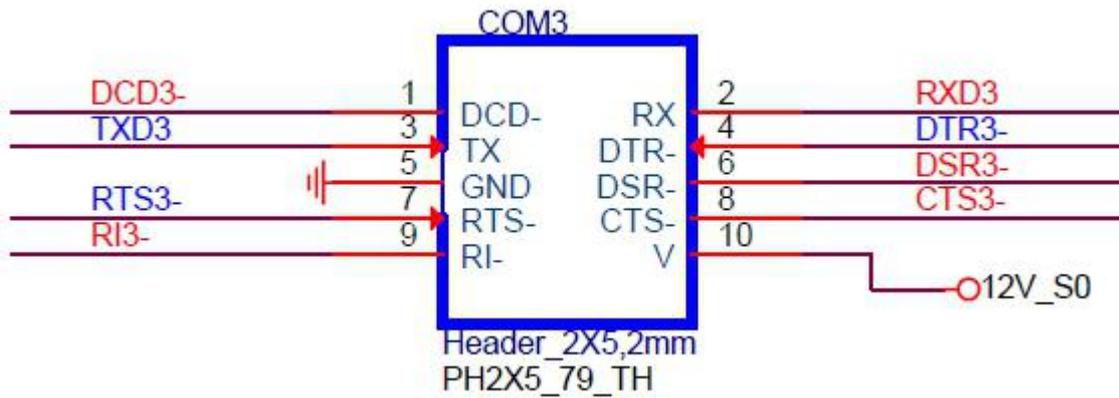


COM1\_SEL1 and COM2\_SEL1 are COM1, COM2 RS232 and RS485 jumper cap selection (need to be set with BIOS), defined as follows, using 2 \* 2 2mm pin header

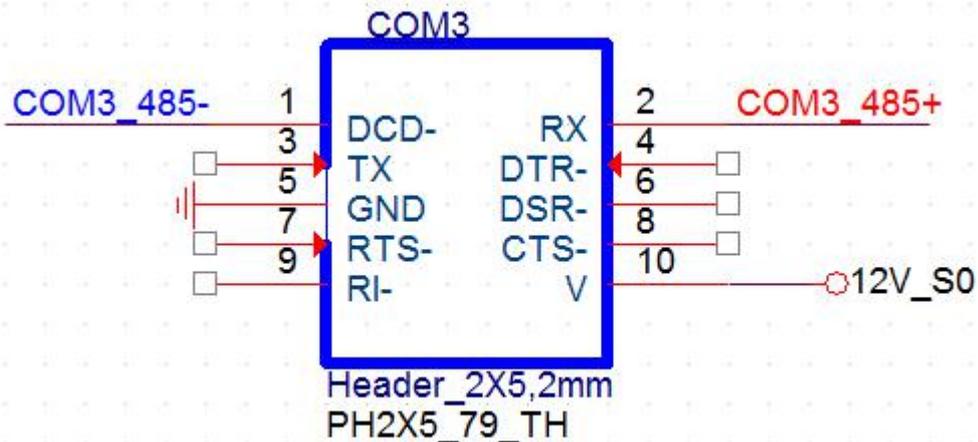


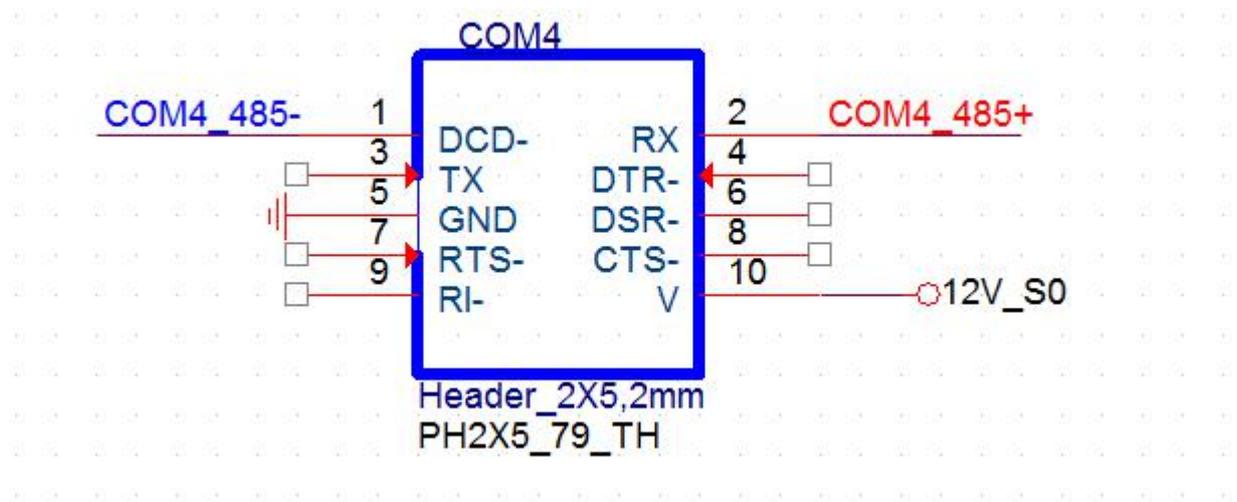
2.14 COM3、COM4 (Can be selected as RS232 or RS485 through hardware and BIOS)

COM3, COM4, using 2x5, 2mm pin header, when RS232, the definition is as follows:



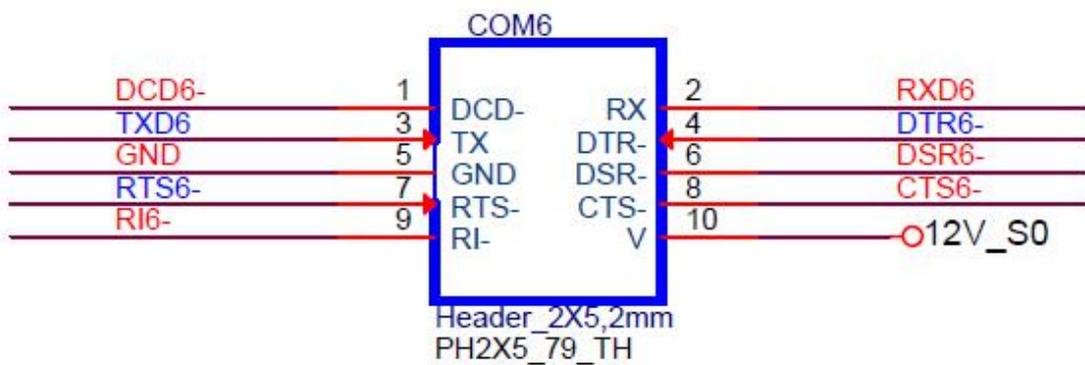
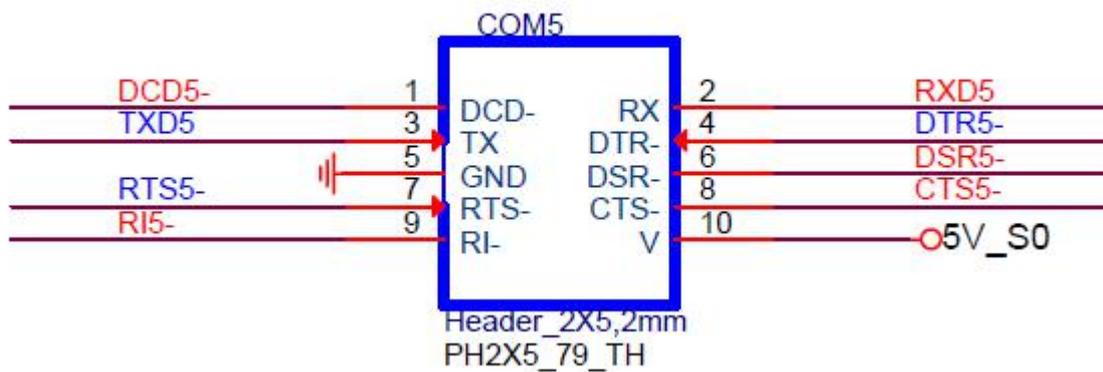
When COM3 and COM4 are RS485, they are defined as follows:





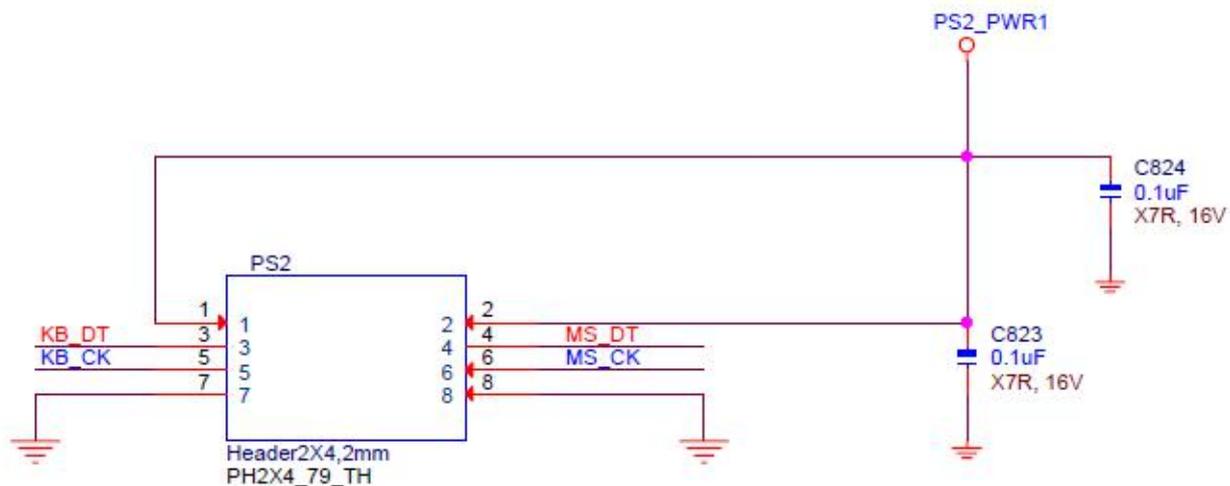
### 2.15 COM5、COM6

RSR232 pin header, adopt 2x5、2mm pin header, Defined as follows:



### 2.16 PS/2

The PS / 2 interface is a 2 × 5 2mm pin header, defined as follows:

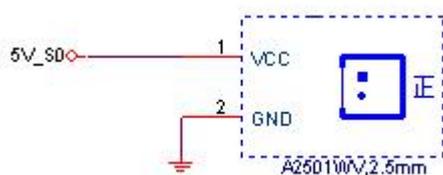


### 2.17 SATA1、SATA2

Standard SATA device interface, support SATA3.0 and below.

### 2.18 SATA\_P2

SATA\_P2 device power interface, using CJT A2501WV-2P device or other compatible devices. The definition is similar to the figure below.



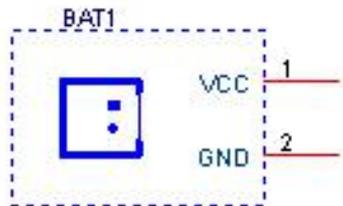
### 2.19 JP3

JP3 is RTC clear jumper, using 1x2, 2mm pin header.

RTC1	function declaration
Close	Clear RTC CMOS
Open	Default setting

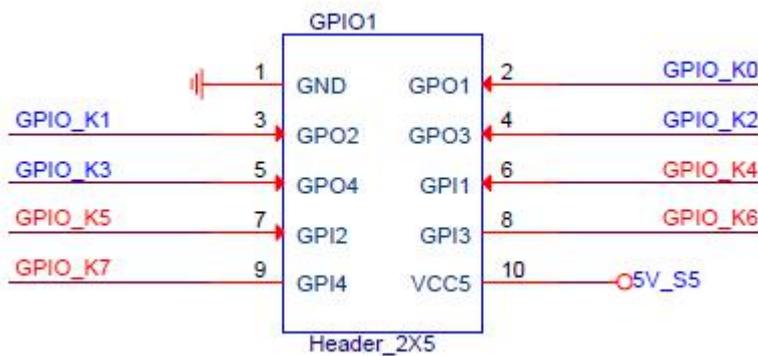
### 2.20 BAT1

Battery interface for easy battery replacement. Use CJT A1251WV-2P type interface or other compatible interface.



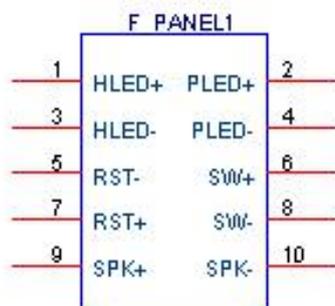
### 2.21 GPIO

The spare GPIO interface uses 2x5, 2mm pin headers, defined as follows. GPIO input and output characteristics can be modified by BIOS. Please contact FAE for the GPIO address entrance.



### 2.22 FP1

Interface for control panel, using 2x5, 2mm pin header, integrated HDD\_LED, PWR\_LED, boot switch, reset switch, SPEAKER function. The pins are defined as follows.



F_PANEL1	Pin definition
1, 3	Hard disk read-write indicator lamp positive, negative signal pin.
2, 4	Main power indicator lamp positive, negative signal pin.
5, 7	Main board reset signal positive, negative signal pin.
6, 8	Main board switch machine signal positive, negative signal pin.
9, 10	Standby buzzer interface.

### 2.23 JP2

Select the jumper for the AT power-on mode. When you select Close, the DC power is turned on and the motherboard is powered on.

PS_ON	Boot mode selection
Close	AT power supply boot mode
Open	ATX power supply boot mode

### 2.24 MPCIE1、

MPCIE1 is a standard Mini-PCIE connector, can be inserted full-length card. Half long card Mini-PCIE card, card must be lengthened fixed.

### 2.25 J1

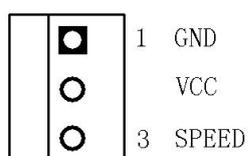
J1 is NGFF (KEY E) card

### 2.26 SIM1

3G/4G is SIM card

### 2.27 CPU\_FAN1、SYS\_FAN1

The FAN interface supports a maximum current of 0.3A, which is defined as follows.



CPU fan interface supports automatic speed adjustment. The maximum voltage of the fan is equal to the input power supply voltage. When the input power supply voltage is high, pay attention to choose the appropriate fan. SYS fans do not support automatic speed adjustment.

### 2.28 JP1 and U10

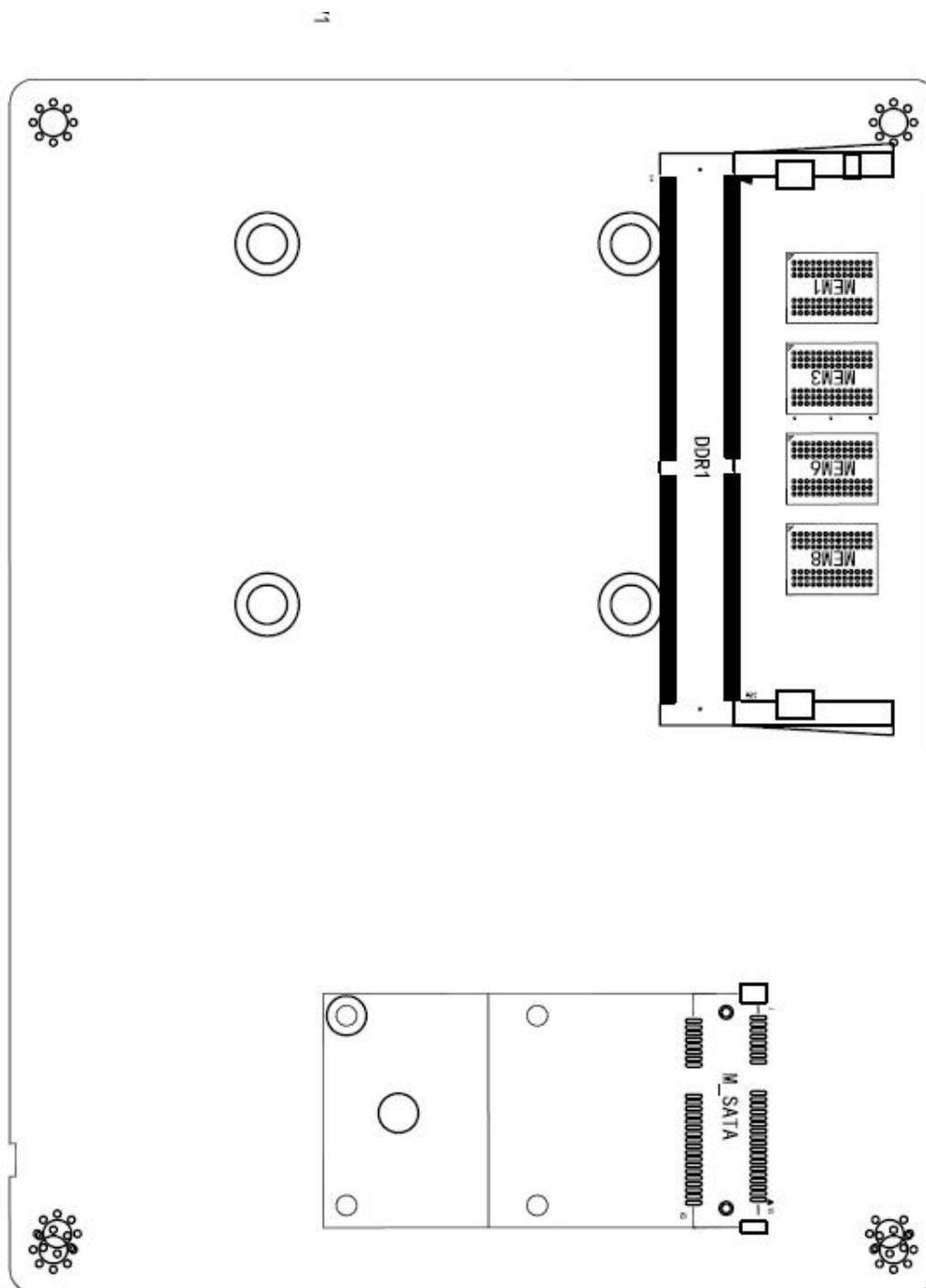
JP1 is used to set the number and number of LVDS channels; U17 stores LVDS screen resolution parameters.

The setting of JP1 must be consistent with the configuration parameter of U18.

JP1	Function setting
1-2	Close means support single channel LVDS screen; Open means support dual channel screen.
3-4	Close support 24-bit screen; Open means 18-bit screen support.

### 3 Back interface layout

The layout of the opposite side of the motherboard is shown in the following figure



#### 3.1 M\_SATA

Support Mini-SATA memory card, due to industry standards are unclear, this board supports some large companies defined by the MINI-SATA card, specific models please consult the company business and technical support personnel.