

GN41Z3A motherboard

(PCB Rev:1.10)

Manual Version 1.10

2020.03.26

1 Introduction

GN41Z3A is our company's standard low-power 3.5" industrial motherboard.

The main features of Intel Gemini Lake single-chip CPU are as follows.

1.1 Main features

1.1.1 CPU onboard, support Intel Gemini Lake single chip CPU.

1.1.2 1 DDR4 SODIMM 260 Socket, maximum support 8GB DDR4 memory, 2133MHz.

1.1.3 Onboard 4GB/8G DDR4 memory (optional).

1.1.4 1 Onboard 32G/64G SSD (capacity optional)

1.1.5 Onboard 2 Intel Gigabit network cards (when the rear USB is 4, there is only one Intel I211AT network card).

1.1.6 Onboard HDA ALC662, providing MIC/LINE-OUT and pin header interface.

1.1.7 Onboard dual-channel power amplifier, each channel supports dual 6W 8 Ω speakers (optional); supports SPDIF digital audio interface.

1.1.8 1 Mini-PCIE socket

1.1.9 One NGFF interface supports WiFi module

1.1.10 1 Mini-SATA card socket (choose one from onboard SSD).

1.1.11 One SATA 3.0 hard disk interface.

1.1.12 2 USB 3.0 ports, 4 USB2.0 ports, 2 I/O ports, 2 pin headers (When USB2 is available, USB1 has no signal to choose one), when it is 2 network cards, 4 Each USB is a pin.

1.1.13 provides 5 RS232 pin headers and 1 RS485/RS422 pin header.

1.1.14 1 PS/2 interface (row pin, can be connected to keyboard and mouse)

1.1.15 Support HDMI output and 4K display output.

1.1.16 Support RGB CRT output.

1.1.17 Supports dual-channel 24-bit LVDS output and EDP1.3, 4Lanes (4096*2304) output (only one can be selected).

1.1.18 Support touch screen (4wire 5wire 8wire)

1.1.19 Two 3-Pin FAN interfaces.

1.1.20 provides 8 GPIOs for users to choose

1.1.21 1 quick button switch with indicator light

1.1.22 1 reset button

1.1.23 1 hard disk indicator and 1 power indicator

1.1.24 Support 255 watchdog.

1.2 Power

Support wide voltage 9-36V power supply.

Support automatic power-on function after power-on, jumper selection

1.3 Size

154.8 x 117.4 mm

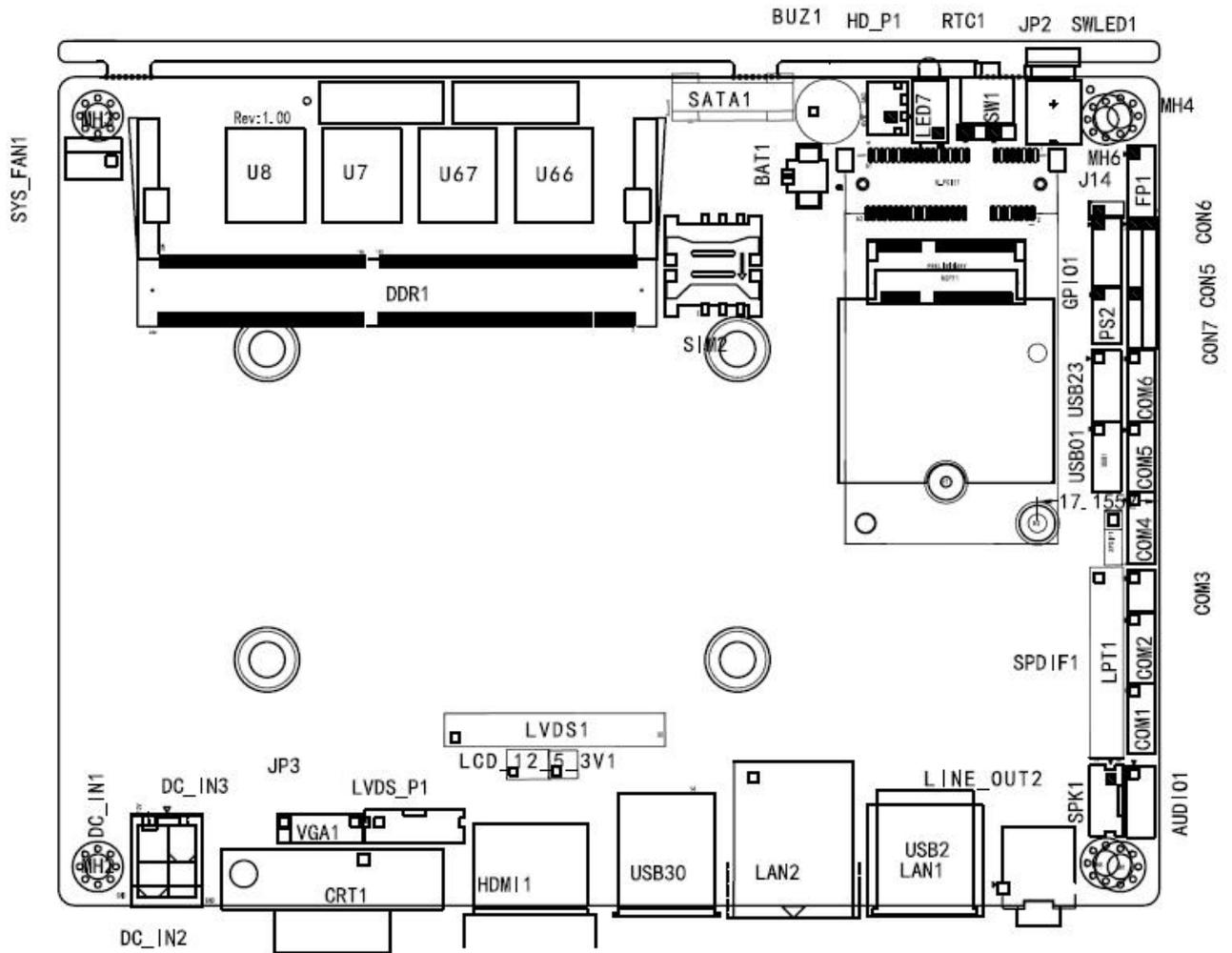
1.4 working environment

Motherboard working temperature: $-20^{\circ}\text{C} \sim +60^{\circ}\text{C}$

Mainboard storage temperature: $-40^{\circ}\text{C} \sim +85^{\circ}\text{C}$

2 GN41Z3A front interface layout

The layout of the TOP layer is shown below.



Note: Pin 1 is square.

2.1 DC_IN1 and DC_IN2

The same is the main board input power interface. Only one interface can be selected during production.

DC_IN1 is a standard DC-JACK port, and DC_IN2 is a DT-126RP-02P type Terminal Blocks interface. Pay special attention to the positive and negative poles of the power supply.

Note: When assembling, testing, and using, the equipment and cables must be installed before powering on.

2.2 CRT1 and VGA1

CRT1 is a standard CRT display output interface.

VGA1 is a 2x5, 2mm pin header, the two cannot be connected at the same time.



2.3 HDMI1

HDMI1 standard HDMI output interface

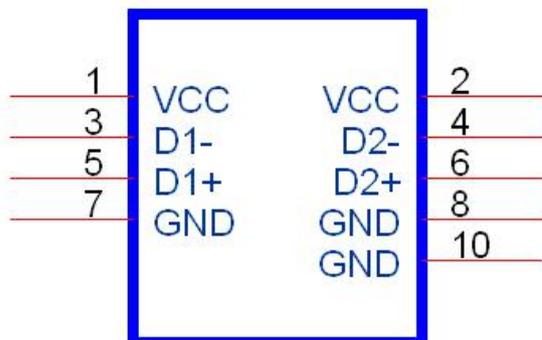
2.4 USB30, USB2

USB30 is 2 standard USB3.0 interfaces, can support 2 USB3.0 devices, and is compatible with USB 1.0/1.1/2.0 devices.

USB2 is 2 standard USB2.0 interfaces

2.5 USB1, USB3 (When USB2 is available, USB1 has no signal to choose one)

USB1, USB3 are 2x5, 2mm pin headers, support USB 1.0/1.1/2.0 devices, defined as follows:



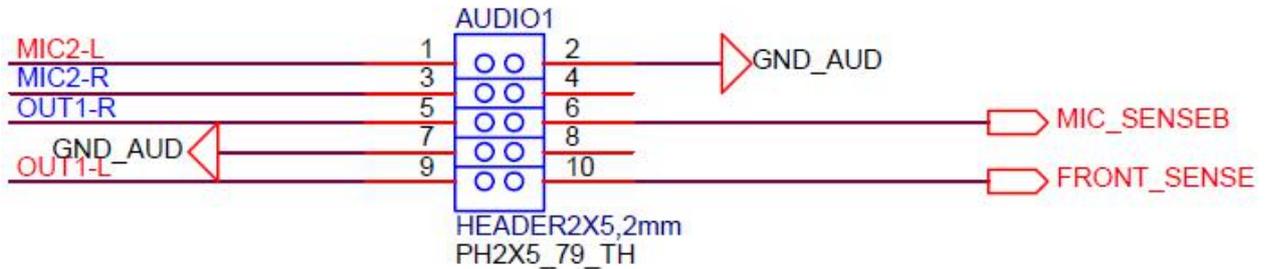
2.6 LAN1, LAN2 (When the I/O interface is 4 USB, there is only 1 Intel I211AT)

10/100/1000 M LAN standard RJ45 interface, all are Intel I211AT Gigabit network cards

2.7 LINE_OUT2 and AUDIO1

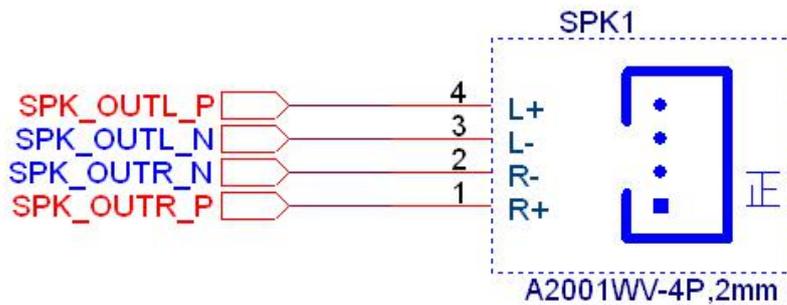
LINE_OUT2 is an audio output interface, using a universal connector.

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



2.8 Audio power amplifier output interface SPK1 (optional)

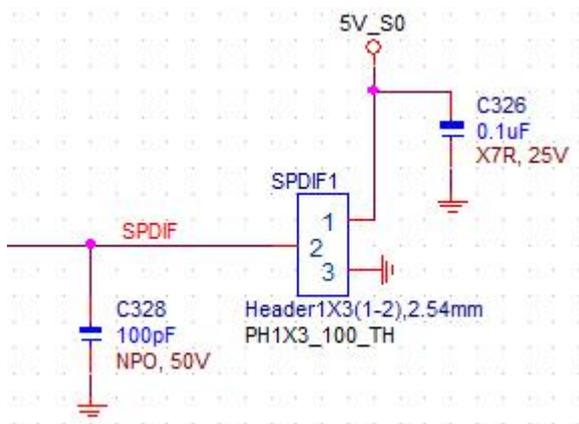
The definition is as shown in the figure below. The dual-channel amplifier supports 6W/8Ω speakers per channel.



Note: The front panel AUDIO1 has the highest priority. If 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.

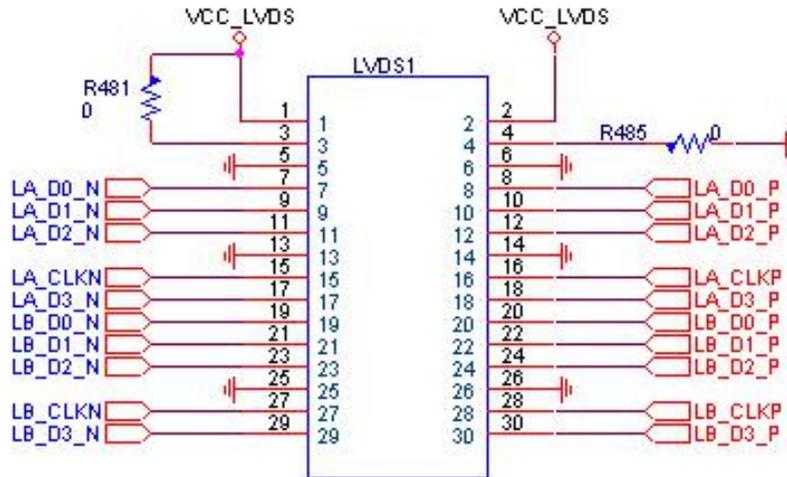
2.9 SPDIF1

Use 1x3, 2.54mm pin header, defined as follows

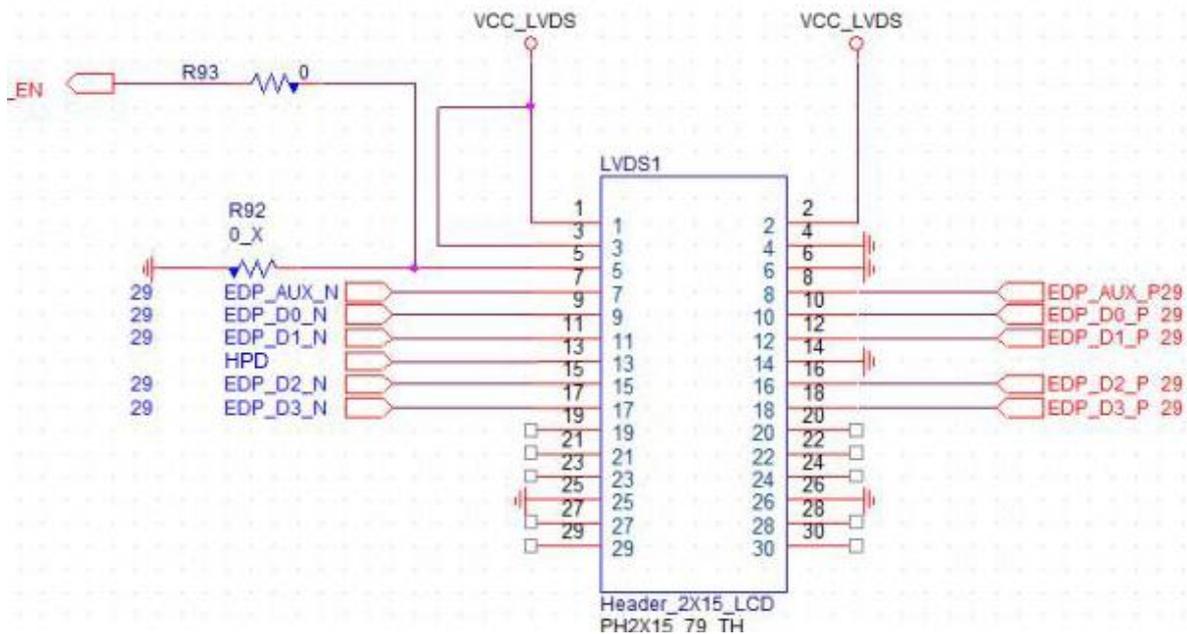


2.10 LVDS1 and EDP (only one can choose one)

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



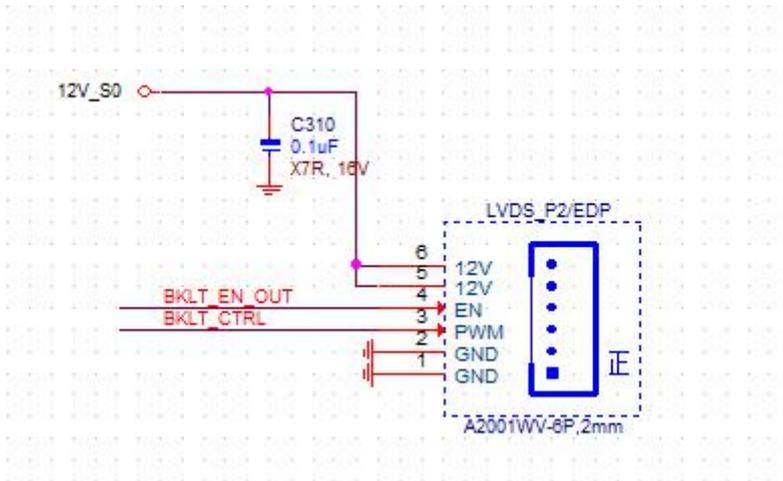
2.11 LCD_3V_5V 和 LCD_12V

LVDS1 and EDP power supply VCC power supply selection.

options	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

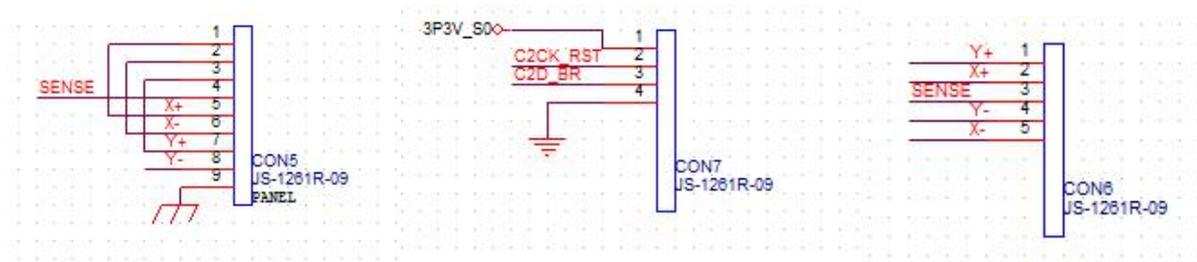
2.12 LVDS_P1 and EDP

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



LVDS_P	LVDS_P pin definition
1	Ground
2	Ground
3	Backlight brightness control
4	Backlight on
5	12V
6	12V

2.13 CON5 ,CON6,CON7

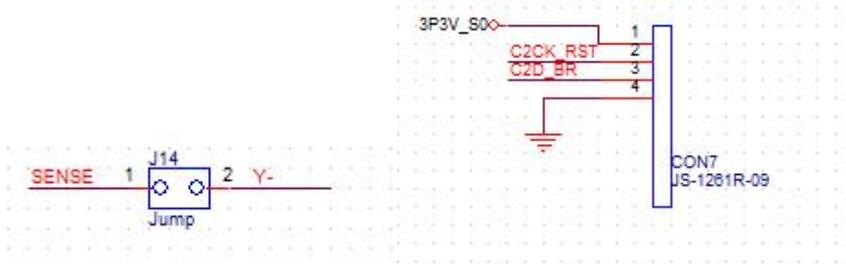


Touch screen interface definition			
	CON5	CON6	
	8-Wire	4-Wire	5-Wire
PIN1	Right sense	Right	LR(X)
PIN2	Left Sense	Left	LL(L)

主板接口简要说明书

PIN3	Bottom Sense	Bottom	Sense (S)
PIN4	TOP Sense	TOP	UR (H)
PIN5	Right Excite	GND	UL (Y)
PIN6	Left Excite	N/A	GND
PIN7	Bottom Excite	N/A	N/A
PIN8	Top Excite	N/A	N/A
PIN9	GND	N/A	N/A

2.14 J14, CON7

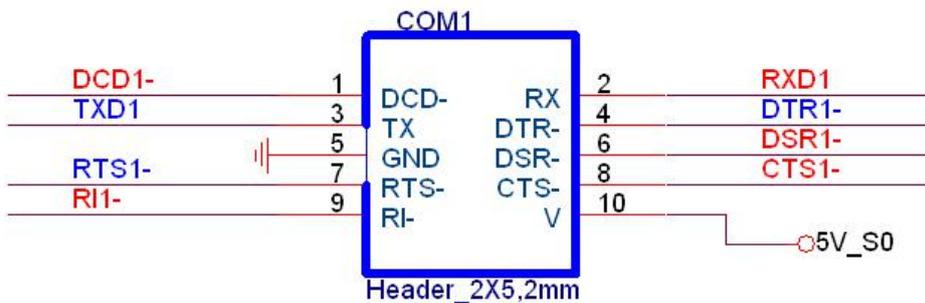


J14 Short: 5Wire Open: 4,8Wire

CON7 can be connected to the touch screen chip information device

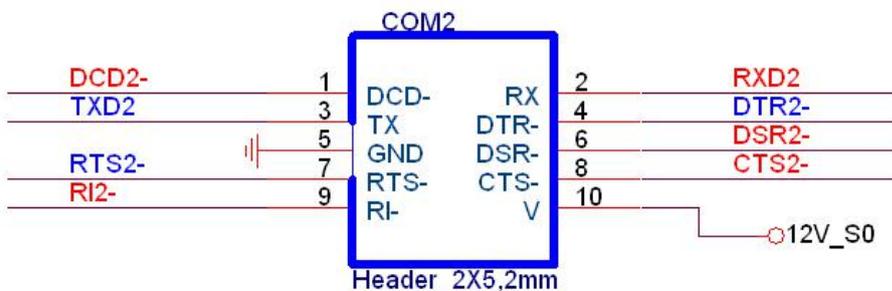
2.15 COM1、COM4、COM5

RSR232 pin header interface, using 2x5, 2mm pin header, Pin10 is 5V power supply。



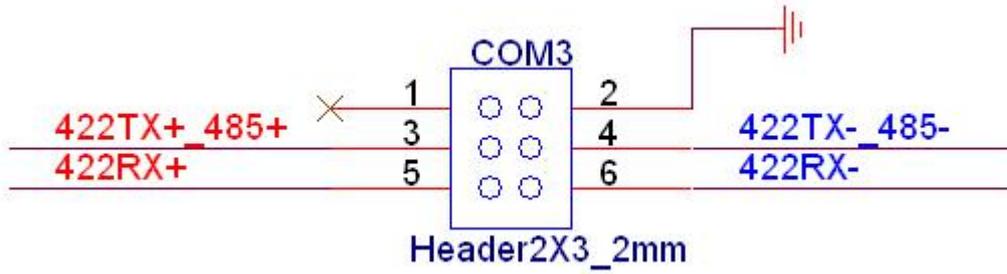
2.16 COM2、COM6

RSR232 pin header interface, using 2x5, 2mm pin header, Pin10 is 12V power supply.



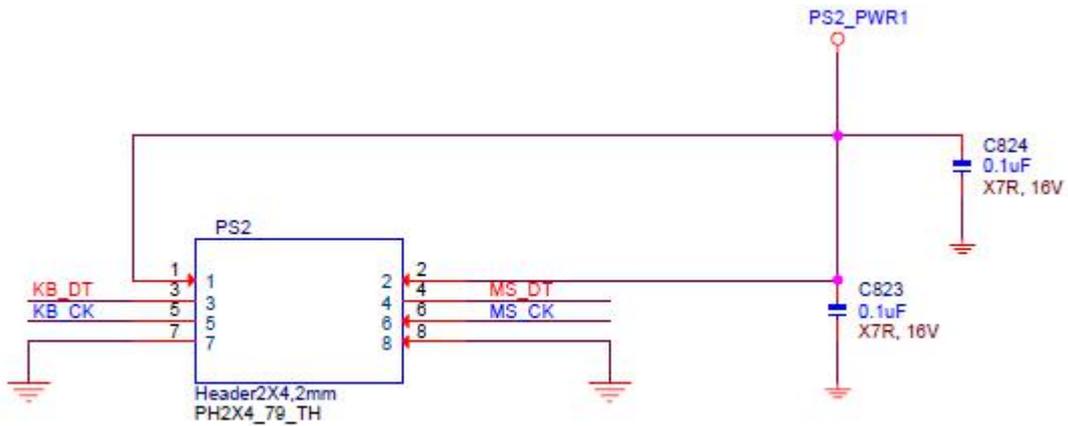
2.17 COM3

RS485/R422 can choose a common interface, using 2x3, 2mm pin header, you must choose the working type of COM3 according to the setting of COM3 in CMOS. The definition is as follows.



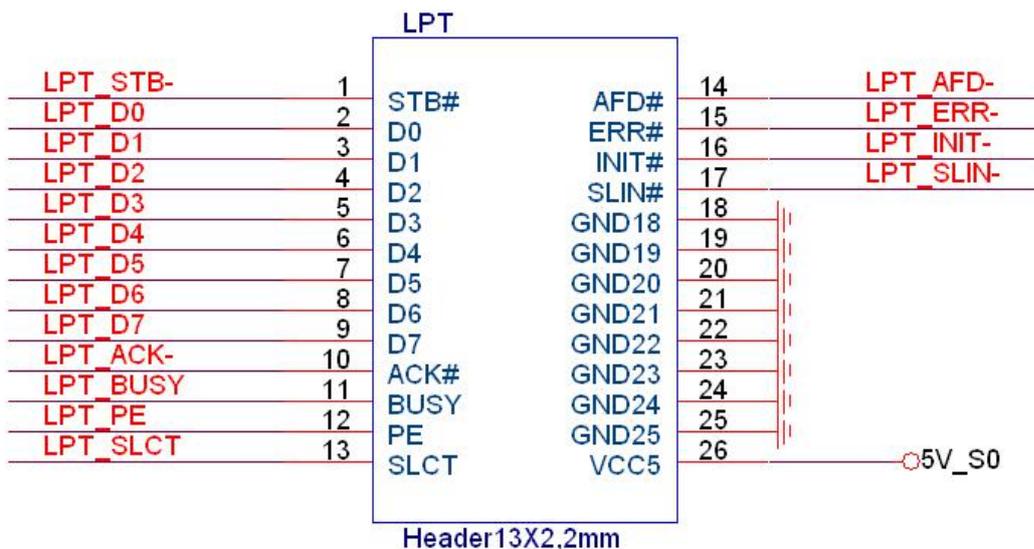
2.18 PS/2

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



2.19 LPT

Use 13X2 pin header, 2mm, defined as follows

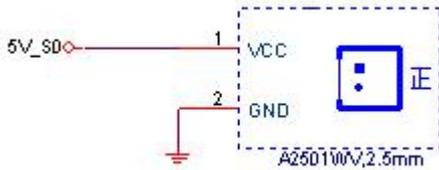


2.20 SATA1

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

2.21 HD_P1、HD_P2

Two SATA device power interfaces, using CJT's A2501WV-2P device or other compatible devices. The definition is similar to the figure below.



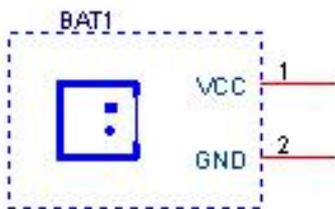
2.22 RTC1

RTC1 is the RTC clear jumper, using 1x2, 2mm header.

RTC1	Function Description
Close	Clear RTC CMOS
Open	Default setting

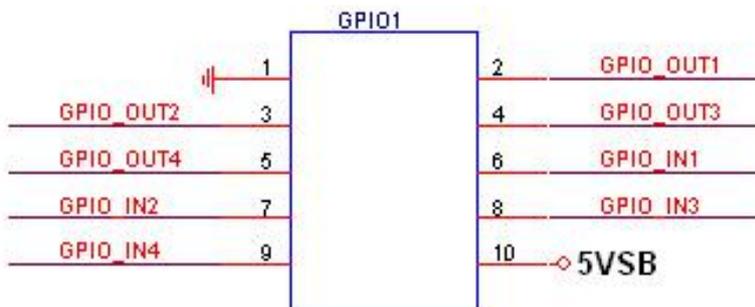
2.22 BAT1

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



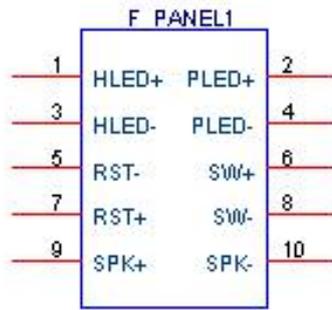
2.23 GPIO1

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.



2.24 FP1

Interface for control panel, using 2x5, 2mm pin header, integrated HDD_LED, PWR_LED, boot switch, reset switch, SPEAKER function. Pin definition is as follows.



F_PANEL1	Pin definition
1, 3	Hard disk read-write indicator positive and negative signal pins.
2, 4	The positive and negative signal pins of the main power indicator.
5, 7	Positive and negative signal pins of the reset signal of the motherboard.
6, 8	The positive and negative signal pins of the motherboard switch signal.
9, 10	Spare buzzer interface.

2.25 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 on mode
Open	ATX power on mode

2.26 MPCIE1

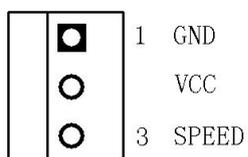
MPCIE1 is a standard Mini-PCIE card holder that can be inserted into a full-length card.

2.27 SIM1

3G/4G SIM card holder.

2.28 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, please pay attention to choose the appropriate fan. SYS fans do not support automatic speed adjustment.

2.29 DDR4 and onboard memory

DDR4 is an external DDR4 memory socket. The standard DDR4 SODIMM204 memory socket supports a maximum of 8GB of memory (1066/1333/1600MHz).

Onboard DDR4 memory is available in 4GB/8GB.

When using external memory and onboard memory at the same time, use the same chip

and capacity as much as possible, otherwise it may be unstable.

2.30 JP1

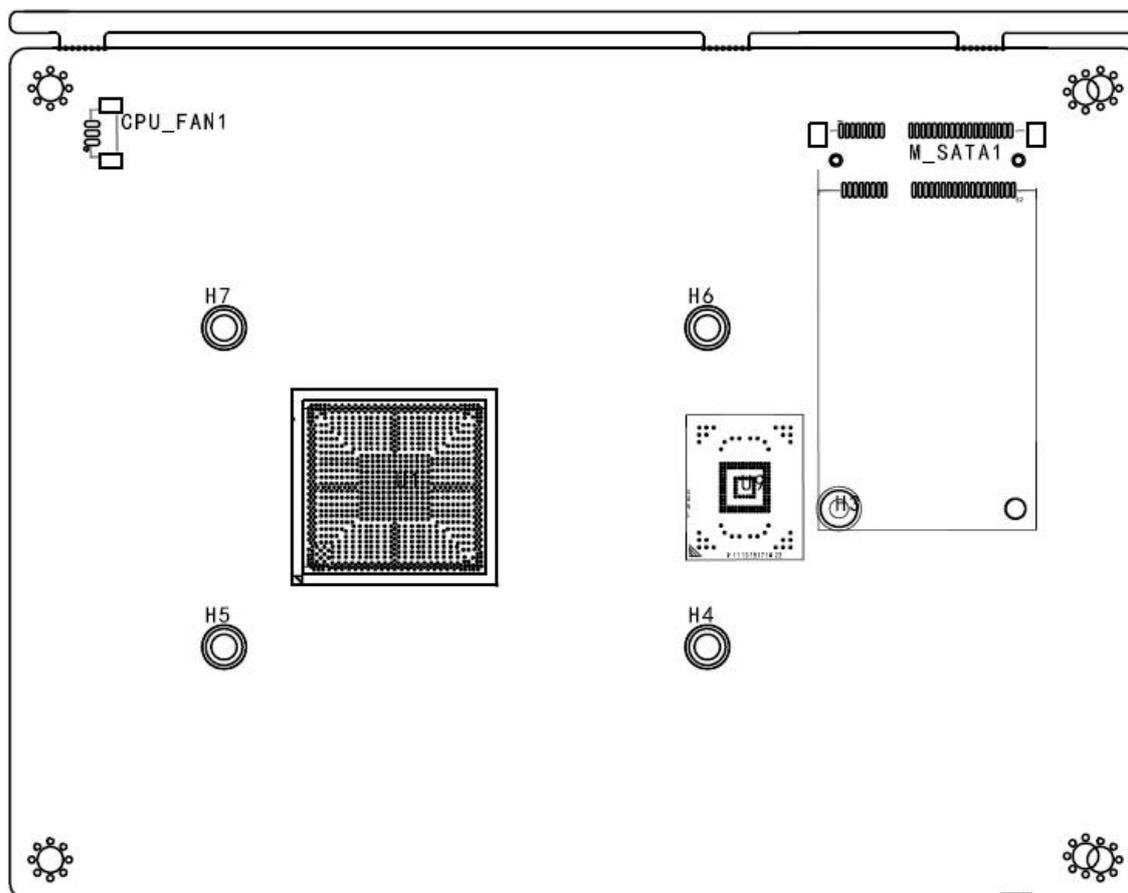
JP1 is used to set the number and number of LVDS channels;

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

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

3 Rear interface layout

The reverse layout of the motherboard is shown in the figure below



3.1 M_SATA

Support Mini-SATA memory card. Because the industry standard is not clear, this board supports the MINI-SATA card defined by some large companies. For specific models, please consult our company's business and support staff.