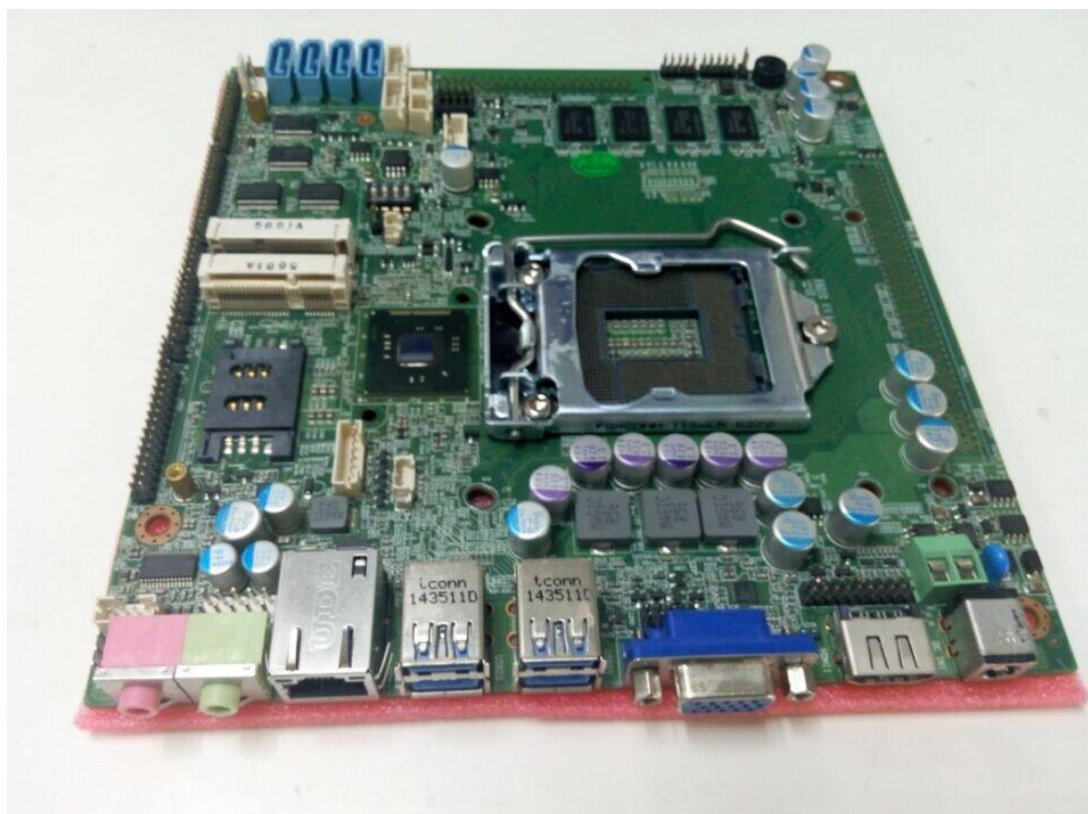


# TOPH81 **Motherboard**

(PCB Rev:1.00)

**Manual Version 1.00**

**2015.11.26**



## 1 Introduction

TOPH81 motherboard is low power consumption 17x17 industrial motherboard. Adopt Intel® H81 or HM86 chipsets, support Intel 4<sup>th</sup> i3-i5-i7 CPU.

### 1.1 Main Features

- 1.1.1 Support LGA1150 processor, Intel 4<sup>th</sup> i3-i5-i7 CPU (optional)
- 1.1.2 Onboard 2GB/4GB DDR3L(optional) Extra 1\*DDR3 SODIMM 204 Socket(optional), maximum up to 8GB DDR3 memory, 1066/1333/1600MHz.
- 1.1.3 Onboard 1\*Gigabit Ethernet, support PXE and Wakeup on LAN.
- 1.1.4 Onboard HDA ALC662, provide MIC-IN/LINE-OUT and expansion header.
- 1.1.5 Onboard dual channel audio power amplifier. Support 6W/8Ω horn for each channel.(optional), support 3-pin SPDIF.
- 1.1.6 2\*Mini-PCIE socket(short card)
- 1.1.7 1\*Mini-SATA socket(SATA 3.0)
- 1.1.8 4\*SATA 3Gb/s connector.(2\*SATA 3.0, H81 chipset only support 2\*SATA(1\*SATA 3.0))
- 1.1.9 4\*USB 3.0 ports and 4\*USB 2.0 ports.
- 1.1.10 1\*PCIE 16X port
- 1.1.11 Provide 4\*RS232 pin header, 2\*RS485/RS422 pin header.
- 1.1.12 Support HDMI output.
- 1.1.13 Support RGB & CRT output.
- 1.1.14 Support dual channel 24bit LVDS output.
- 1.1.15 Provide 2\*3-Pin FAN connectors.
- 1.1.16 Provide 8bit\*GPIO.
- 1.1.17 Support OPS expansion header.
- 1.1.18 Support 225 watch dog

### 1.2 Power Supply

Single input DC power, DC12V (+/-5%) .  
(If don't use 12V for the HDD, +/-10%) .  
Support AT/ATX starting mode.  
(If board with OPS, support OPS power first.)

### 1.3 Size

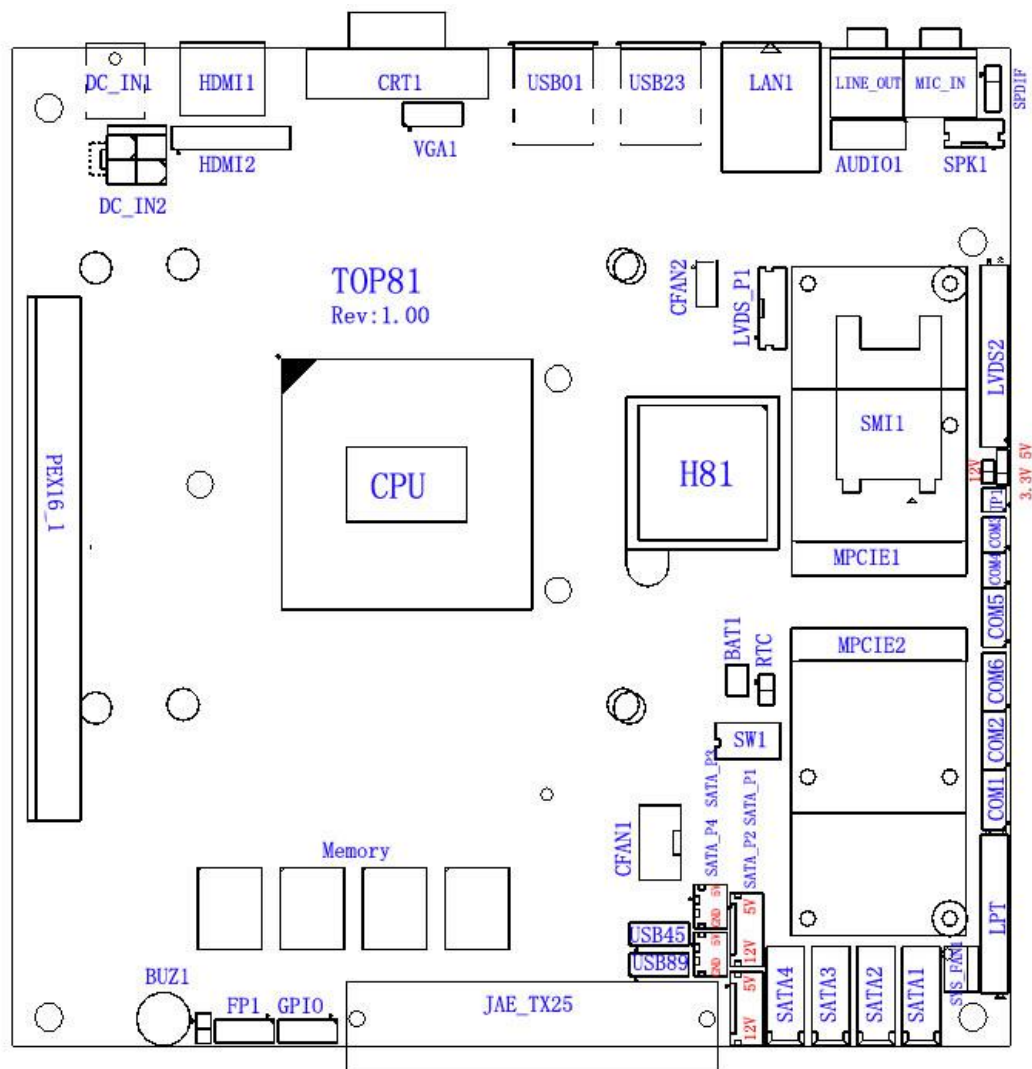
170 x 170 mm Mini\_ITX

### 1.4 Working Environment

Working Temp: -20°C ~ +60°C (-4°F ~ 140°F)  
Storage Temp: -40°C ~ +85°C (-40°F ~ 185°F)

## 2 TOPH81 Front side interfaces layout

TOP floor layout as below:



**Remark:** Interfaces in the above picture, **Pin 1** are in square shape.

## 2.1 DC\_IN1 & DC\_IN2

Motherboard input power connectors, DC\_IN1 adopt DC-JACK interface, Center is Power supply.

DC\_IN2 adopt ATX\_12V interface, Definition as below:



DC\_IN2 is DT-126RP-02P Terminal Blocks interface. Please pay attention to the Positive/Negative electrode of power.

(please input the power, after devices, cables all installed.)

## 2.2 CRT1 & VGA1

CRT1 is a standard CRT monitor output interface.

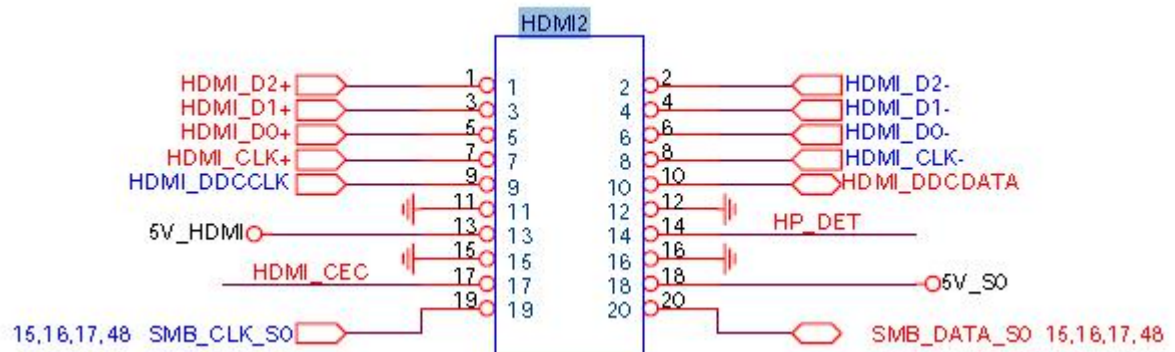
VGA1 is 2×5, 2.0mm expansion header, can not use at the same time.



## 2.3 HDMI1 & HDMI2

HDMI1 is standard HDMI output interface.

HDMI2 is 2x10, 2.0mm expansion header, Definition as below:

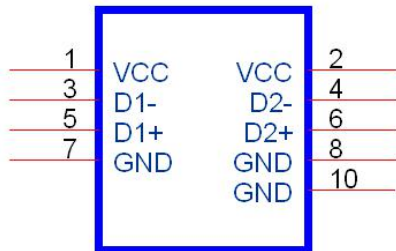


## 2.4 USB01 & USB23

All are USB3.0 standard interfaces, It can be compatible with USB1.0/1.1/2.0 device.

## 2.5 USB45 & USB89

All are 2x5、2.0mm expansion headers.Support USB2.0. Can be compatible with USB1.0 device.  
Definition as below:



### 2.6 LAN1

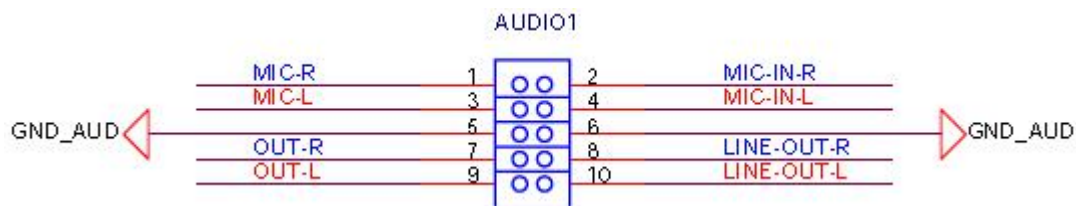
10/100/1000 M LAN is standard RJ45 port,chipset is Realtek RTL8111E.  
Support Wake On Lan and PXE diskless booting.

### 2.7 MIC\_IN、LINE\_OUT and AUDIO1

MIC\_IN is Microphone input port,adopt general connector.

LINE\_OUT is audio output port,adopt general connector.

AUDIO 1 is 2x5,2.54mm expansion header,definition as below:

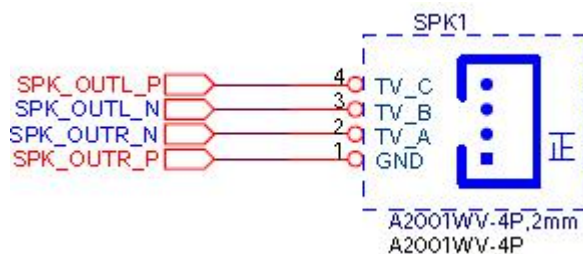


Remark 1:If not connect with the AUDIO Device in the front panel,have to catch Jumper 1-2、3-4、7-8、9-10.

Remark 2: 1、3、5、7、9 pins the output signal for front pane,2、4、6、8、10 pins are return signal.

### 2.8 Audio power amplifier output interface SPK1 (optional)

Dual channel power amplifier,support 6W/8Ω horn for each channel.Definition as below:



Attention: The front panel AUDIO1 has priority.MIC\_IN、LINE\_OUT can not work,if the front panel AUDIO1 connected.The SPK1 can not output,if the LINE\_OUT connected.

## 2.9 SPDIF (optional)

Adopt 1×3,2.54mm expansion header,interface optional.

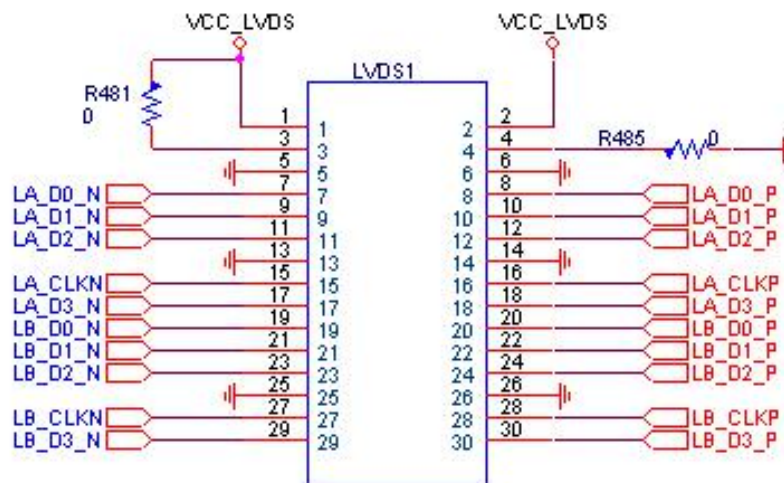
Pin1----5V;

Pin2----SPDIF;

Pin3----GND。

## 2.10 LVDS1

24bit dual CH LVDS interface,adopt 2×15,2.0mm pin header,definition as below:



VCC\_LVDS is the power for screen,LCD\_3V\_5V or LCD\_12V ,choose through the jumper.

## 2.11 LCD\_3V\_5V & LCD\_12V

LVDS1 power:VCC\_LVDS power selection:

selection mode	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

LVDS screen back light interface,adopt CJT A2001WR-6P-1connector or other compatible connector.Definition as below:

LVDS_P	LVDS_P definition
1	Ground
2	Ground
3	Back light luminance control
4	Back light-ON
5	12V



6	12V
---	-----

## 2.13 JP and U72

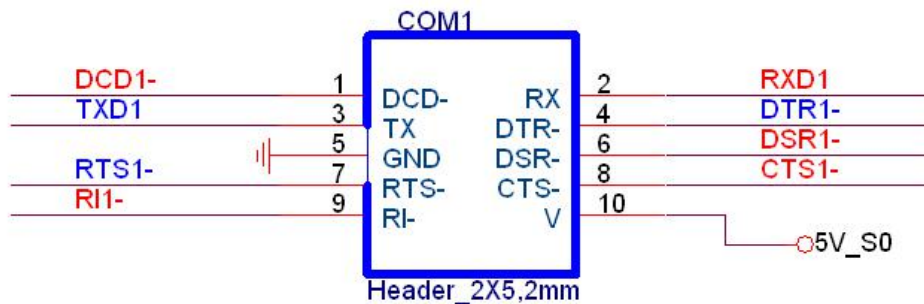
JP1 use for setting LVDS channel and bits,U72 use for Storage LVDS screen resolution data.

JP1 and U72 setting specification data need to the same.

JP1	function setting
1-2	Close support singel channel LVDS screen; Open support dual channel LVDS screen
3-4	Close support 24 bit screen; Open support 18 bit screen。

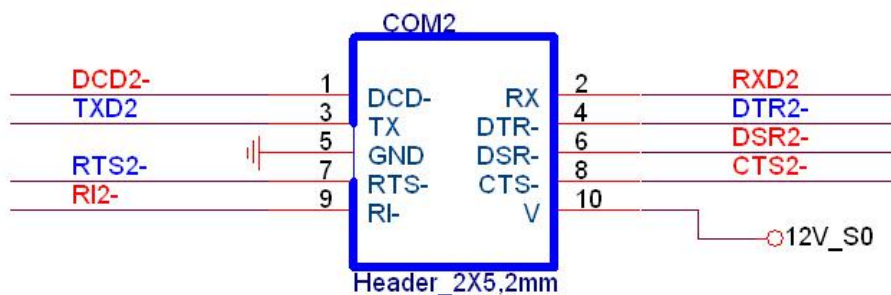
## 2.14 COM1、COM5

RSR232 pin header,adopt 2×5,2.0mm pin, Pin10 power is 5V.



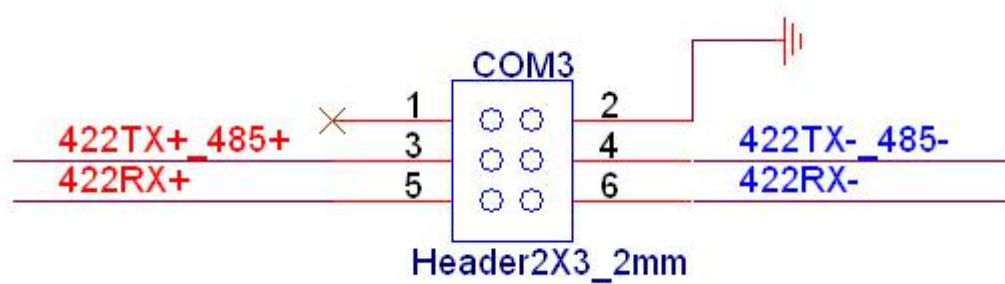
## 2.15 COM2、COM6

RSR232 pin header,adopt 2×5,2.0mm pin, Pin10 power is 12V.



## 2.16 COM3、COM4

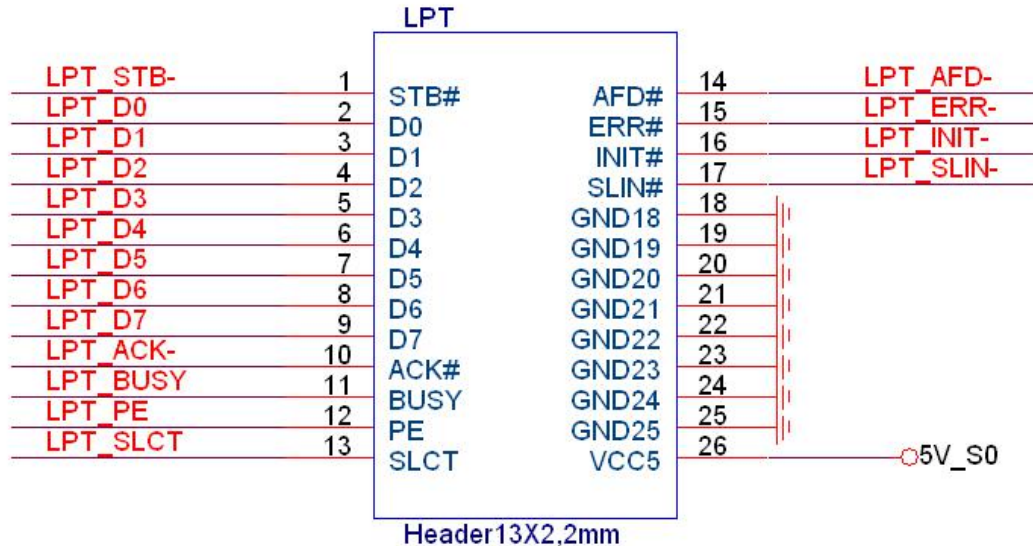
RS485/R422 can use the same interface,adopt 2×3,2.0mm pin header,must comply with the setting and selecting type of work in CMOS.Definition as below:





## 2.17 Parallel Port LPT

Adopt 13×2,2mm pin header.Definition as below:



## 2.18 SATA1、SATA2

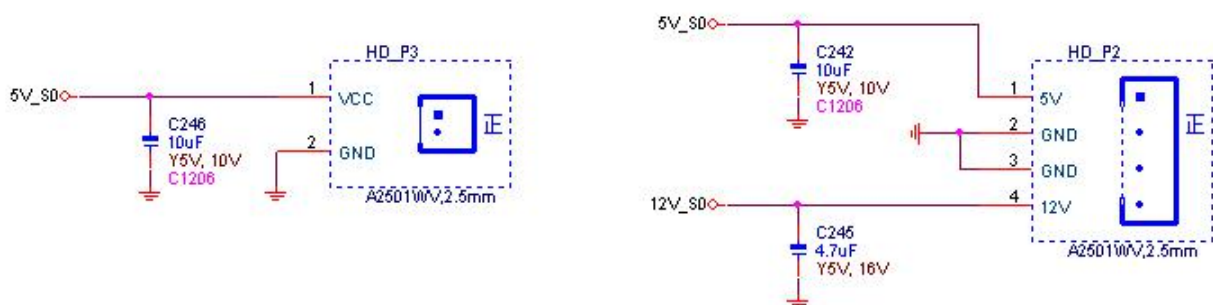
Standard SATA device port,Support SATA3.0/2.0 ( When adopt H81chipsets,Only SATA1 Support SATA3.0).

## 2.19 SATA3、SATA4 (Optional)

Standard SATA device port,Support SATA2.0. ( When adopt H81chipests,SATA and SATA4 can not use )

## 2.20 SATA\_P1~4

4\*SATA power interface, Adopt CJT A2501WV-4P or A2501WV-2P device or other compatible devices,definition as below:



Remark:SATA\_P1 and SATA\_P2 with 2 more pin than SATA\_P3 and SATA\_P4,bring in 12V power for the hard disk of commercial computer.The 12V is coming from DC power.If there is a big voltage deviation with the DC power,please do not choose a hard disk with voltage 12V/5V.

## 2.21 RTC1

RTC1 is RTC clear jumper line, adopt 1×2, 2.54mm pin, definition as below:

RTC1	Function introduction
Close	Clear RTC CMOS
Open	default setting

## 2.22 SW1:

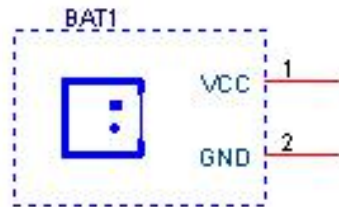
OPS serial port and COM2 choose Power on/off

When use OPS serial port, SW1 Two site connect, Middle two group disconnect.

When use COM2 port, SW1 Two site disconnect, Middle two group connect.

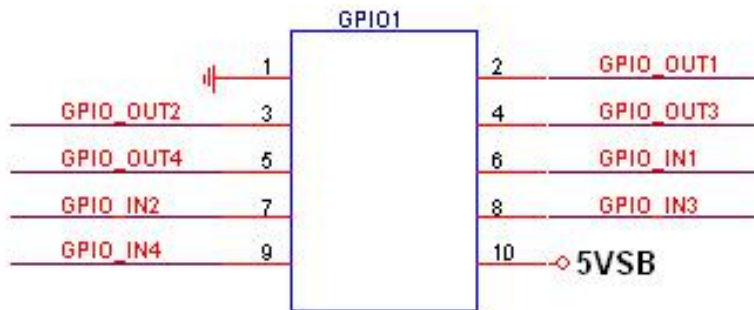
## 2.22 BAT1

Battery interface,for battery changing.Adopt CJT A1251WV-2P connector or other compatible connector.



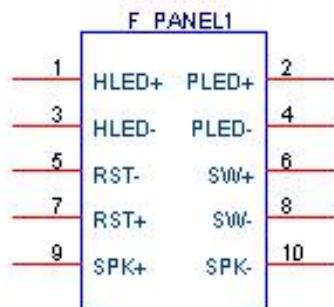
## 2.23 GPIO1

Spare GPIO interface,adopt 2×5,2.0mm pin,definition as below:



## 2.24 FP1

Control panel interfaces,adopt 2×5,2mm pin,integrated HDD\_LED、PWR\_LED、on/off、reset switch、SPEAKER function.Pin definition as below:。



F_PANEL1	Pin Definition
1, 3	Hard disk access lamp positive and negative signal pins.
2, 4	Main power indicator light positive and negative signal pins.
5, 7	Mainboard reset positive and negative signal pins.
6, 8	Mainboard on/off positive and negative signal pins.
9, 10	Spare buzzer connector.

### 2.25 PS\_ON

AT starting mode jumper line. When you choose "Close", the DC power plug, then the board electrify at the same time.

PS_ON	Starting Mode Selection
Close	AT power starting mode
Open	ATX power starting mode

### 2.26 MPCIE1、MPCIE2

MPCIE1 is standard Mini-PCIE socket, suit for full-size card. The half-size card Mini-PCIE card, must be fixed with a extended card.

### 2.27 SIM1

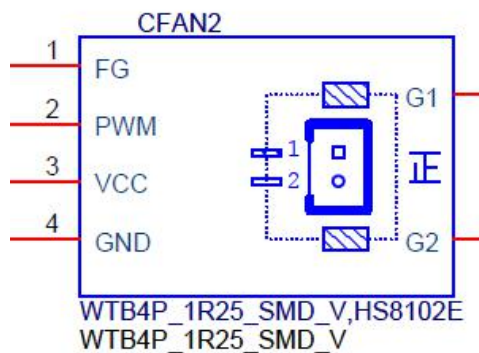
3G card SIM card slot

### 2.28 CPU\_FAN1、SYS\_FAN1

FAN interface support maximum current 0.3A, definition as below:

1	GND
2	VCC
3	SPEED

CFAN1 and CFAN2 port definition as below:



CPU fan connector, rotational speed adjust automatically. The maximum voltage is the power input voltage. Please choose a suitable fan, when the input voltage is higher. SYS fan does not support adjust automatically.

### 2.29 DDR3L and Onboard DDR3L RAM

DDR3L is out put DDR3L RAM slot, Standard DDR3L SODIMM204 RAM Slot, Max support 8GB RAM (1066/1333/1600MHz).

Onboard DDR3L RAM, 2GB/4GB(Optional)

When out put RAM and Onboard ram use the same, Pls choose the same chipset and volume RAM, If



not maybe not stable.

### 2.30 JAE\_TX25(Optional)

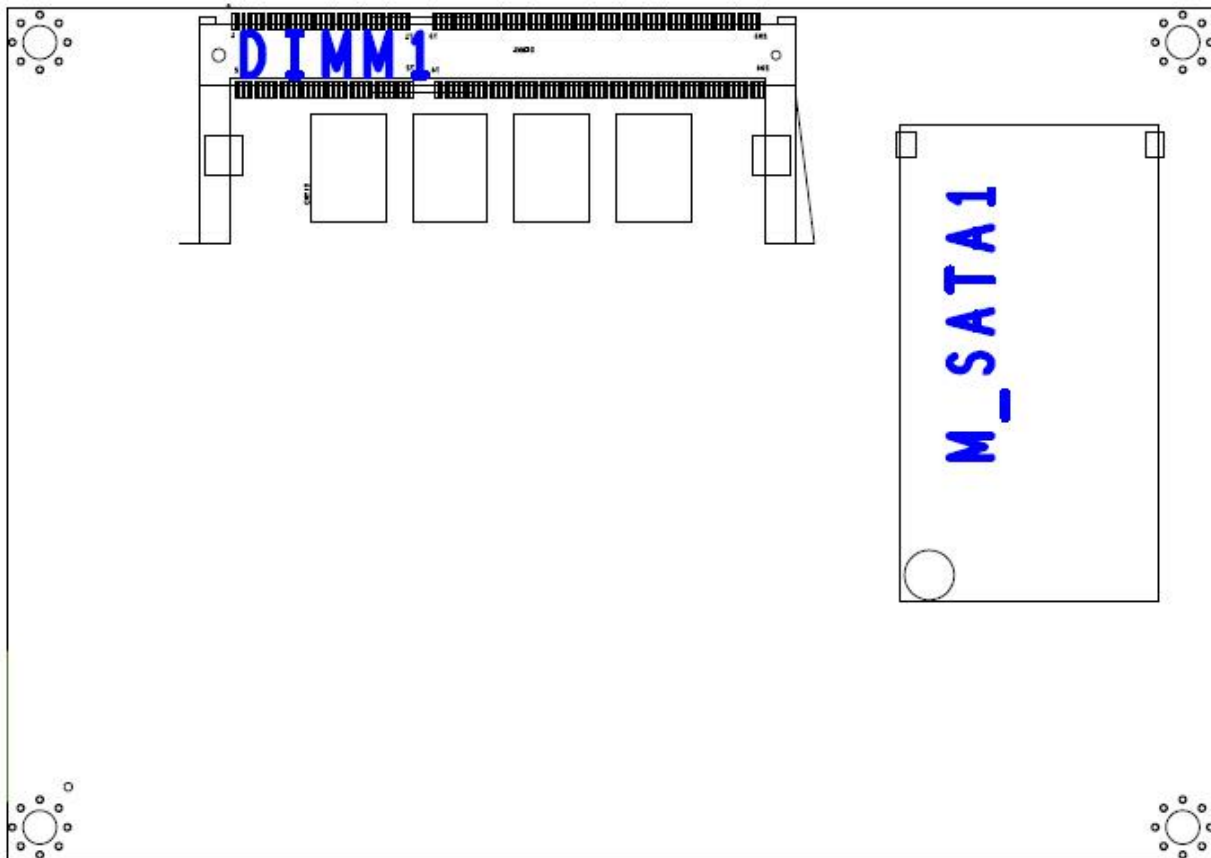
OPS port, Adopt TX25-80P-LT-H1E Port Pls refereec OPS specification,According to our company FAE recommandation choose OPS extension board.

If choose OPS with power(12V+/-10%) provid to boar, DC\_IN1~3 port do not need to connect power supply.

When OPS board offer power as normal, The motherboard will automatic switchover POS supply. Will not conflict with DC\_IN1~3 supply.

### 3 Rear Side Interface Layout

Mainboard rear side layout as below:



#### 3.1 M\_SATA

Support Mini-SATA SSD. This motherboard supports most of the large company's Mini-SATA card. For detailed information, please contact with our salesman and technician.