
ALL-DS831

Digital Signage Specification

Doc. Modification History

Version	Description	Date
V1.0	create	2015-8-4
V1.1	complete	2015-9-14
V1.2	modify	2015-9-28

Catalog

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Chapter 1. Product Description

1.1 General Description

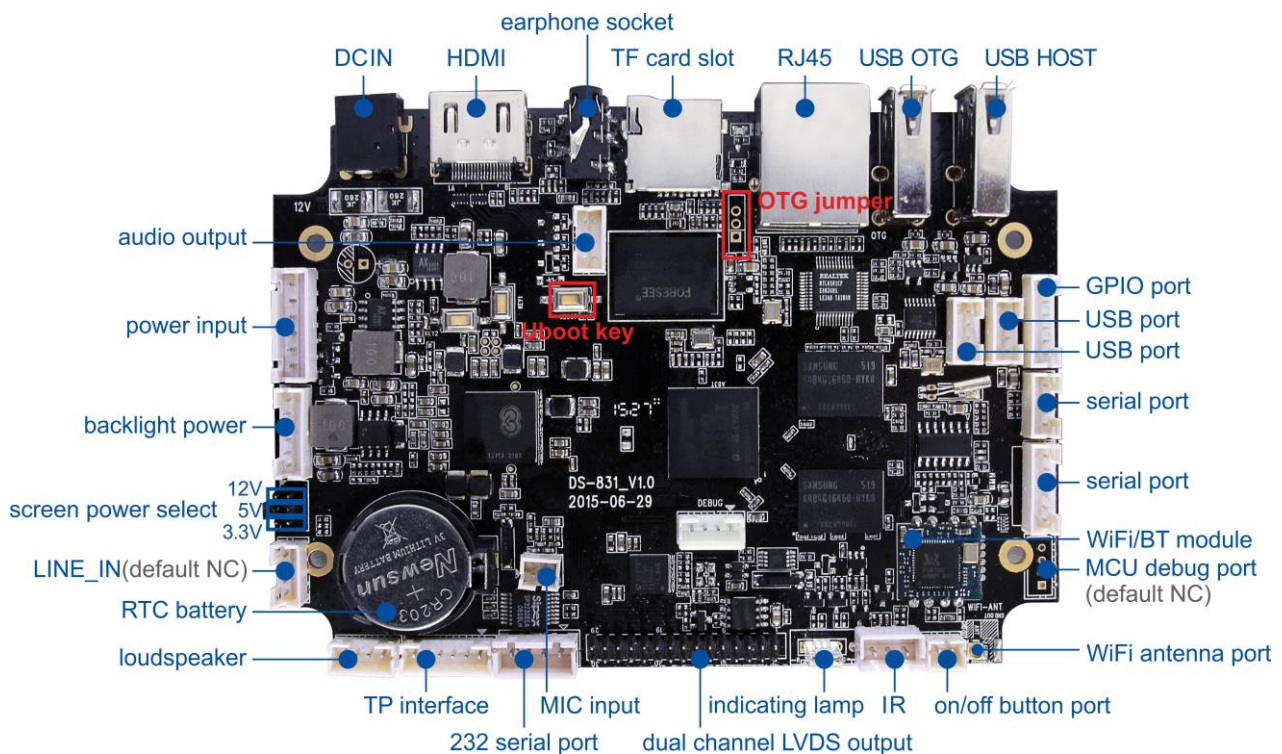
DS-831 control board integrates multimedia decode,LCD driver,Ethernet,HDMI,WIFI,bluetooth in one,supporting most current fashionable video and image format decode,supporting HDMI video output,dual eight bits LVDS driver,able to drive various TFT LCD screen,greatly simplifying whole player system design,very suitable for HD network player box,video advertising player and frame advertising player.

1.2 Features

- ◆ High Integration. Integrate USB/LVDS/Ethernet/HDMI/WIFI/bluetooth in one,simplifying whole player design.TF card can be inserted.
 - ◆ Ample Extensible Interfaces. Four USB ports(two pin ports,two standard USB ports),three extensible serial ports(2 channels of 232 serial ports,1 channel TTL serial port or 1 channel 232 serial ports,2 channels of TTL serial ports),GPIO/ADC port,able to satisfy various peripherals in the market.
 - ◆ High Definition. Support Max. 1080P decode and various LVDS signal LCD screen.
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- ◆ Full Function. Support landscape and portrait screen play,multi-screen,scroll caption,timing switch,USB data input function etc.
- ◆ Easy Management.Humanized play list maker software,easy for advertising management and control.Play log,easy to know playing situation.

1.3 Appearance and Interface Sketch



Chapter 2. Basic Function List

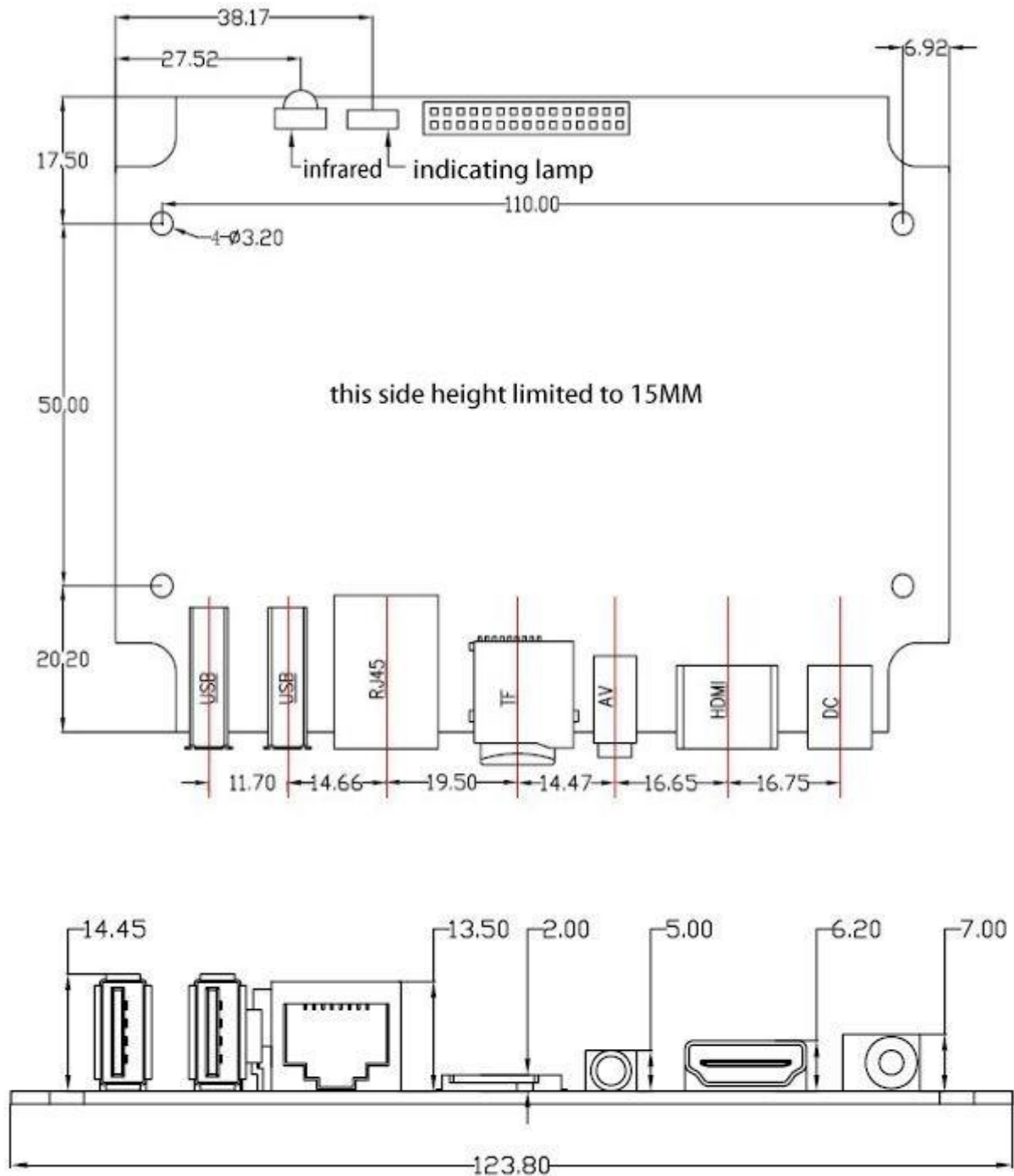
Main Hardware Index	
CPU	A83T , octa core , main frequency 2GHz
Internal Memory	1/2G(optional)
Built-in Memory	EMMC 4/8/16/32G(optional)
Built-in ROM	2KB EEPROM
Decode Definition	support Max. 1080P
Operating System	Android 4.X above
Play Mode	support loop,timing,inter-cut and various play mod
Network Support	Ethernet,support WiFi/bluetooth 4.0,wireless peripheral extension
Video Play	support wmv,avi,flv,rm,rmvb,mpeg,ts,mp4 etc.
Image Format	support BMP,JPEG,PNG,GIF
USB2.0 Port	2 USB HOST,2 USB sockets
Serial Port	3 serial port sockets(defaulting include one 232 serial port)
GPS	external GPS (optional)

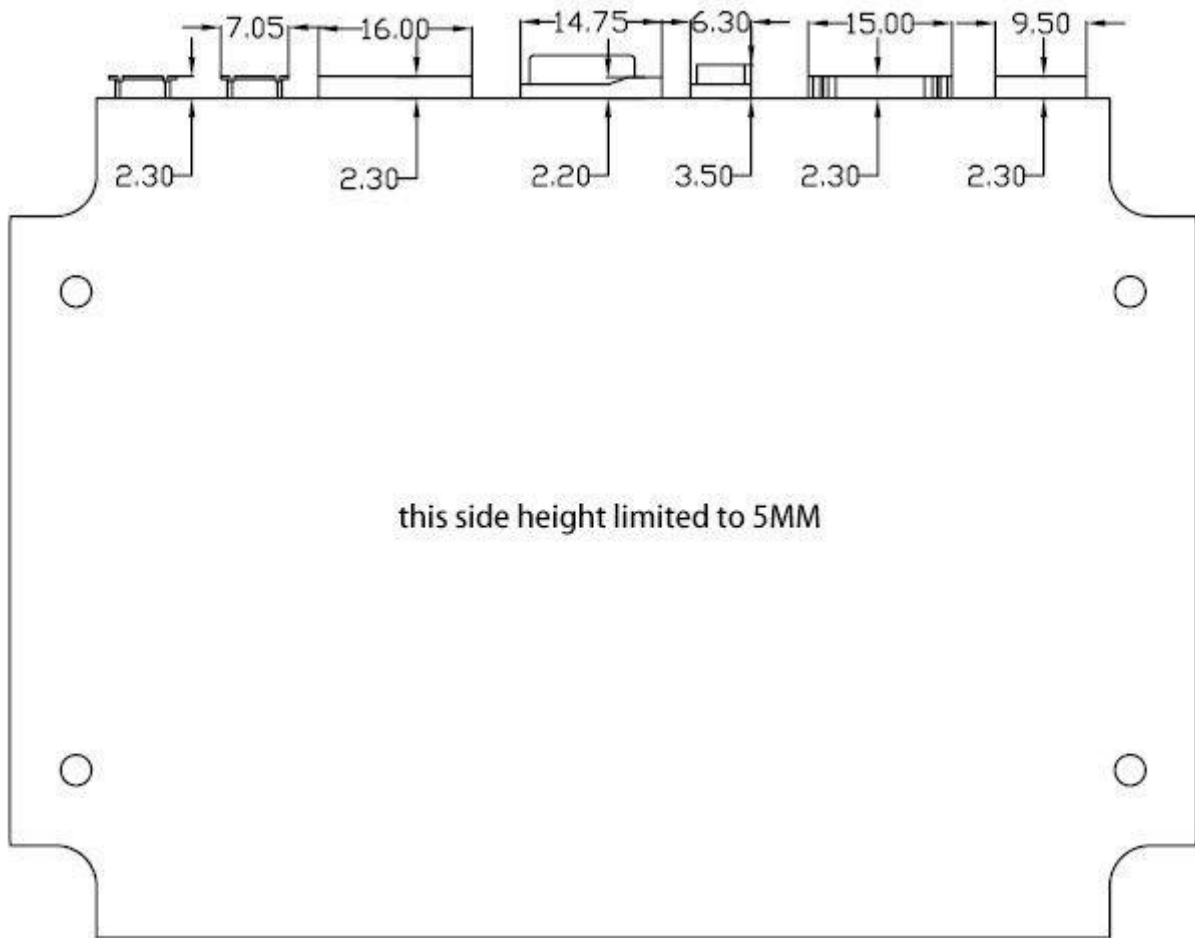
WIFI、 BT	built-in WIFI , BT4.0 (optional)
Ethernet	one , 10M/100M self-adaptive Ethernet
SD Card	TF (Micro SD) card
LVDS Output	1 single/dual channel,able to drive 50/60Hz LCD screen
HDMI Output	one,support 1080P output
Audio and Video Output	support left and right channel output,built-in double 4R/20W,8R/10W power amplifier
RTC Real Time Clock	support
Timing Switch	support
System Upgrade	support local SD,USB upgrade

Chapter 3. PCB Measurement and Interface

Layout

3.1 PCB Measurement Figure





PCB : 6 layers

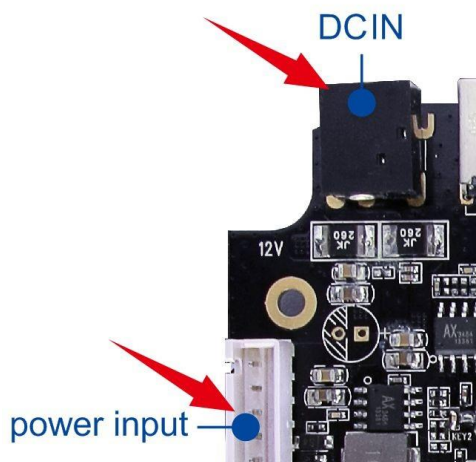
Measurement : 87.7*123.8mm, thickness 1.6mm

Screw Hole Specification : ϕ 3.2mm x 4

3.2 Interface Parameter Definition

◆Power Input Interface

Adopt 12V DC power supply, only allow to supply board system with power from DC socket and power socket. Power adapter socket DC IN is D6.0, d2.0. When with no peripheral and empty load, 12V DC power needs to support Min. 600mA current.



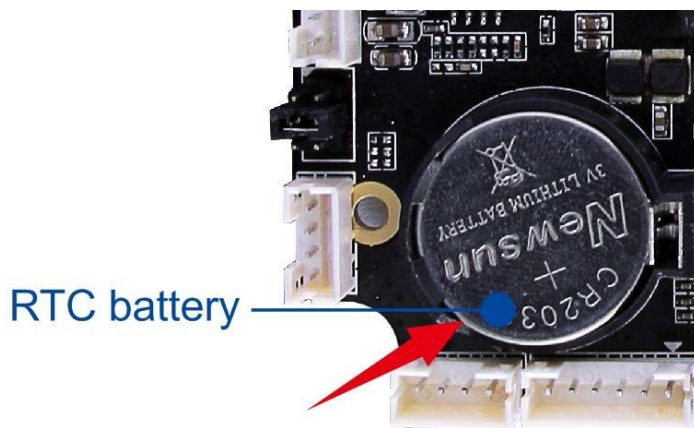
Power socket interfaces definition are as follows,able to supply power with power board.Socket is 6PIN 2.54 space.

No.	Definition	Property	Description
1	VCC	input	12V input
2	VCC	input	12V input
3	GND	grounded	grounded
4	GND	grounded	grounded
5	VCC-5V	input	standby 5V input
6	STB	output	standby signal output

Standby 5V input and standby signal output is used for power board standby.If need lower power consumption standby,connect standby 5V input and standby signal output with 5V STB and PS_ON of power board respectively.(Different power board suppliers may have different descriptions of above two signals.Please refer to the fact.)If need no low power consumption standby,leave the two pins empty.

BAT1 RTC Battery Interface

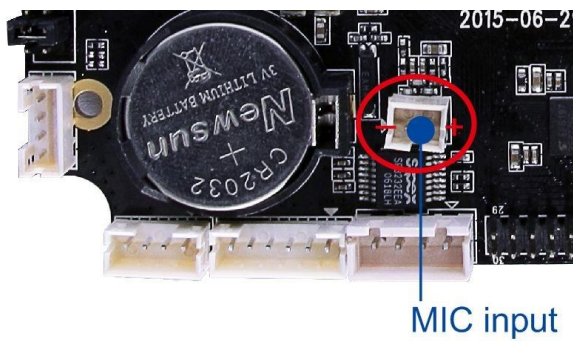
Standard 2032 Interface,used for supplying system clock with power when power off.



No.	Definition	Property	Description
1	RTC	input	3V input
2	GND	grounded	grounded

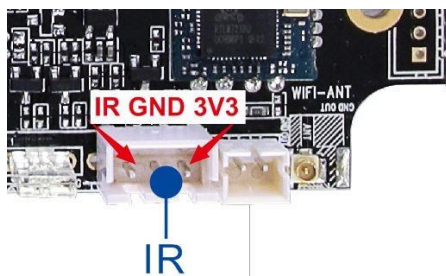
◆ MIC Interface

Please notice MIC anode and cathode connection, no reverse connection.



No.	Definition	Property	Description
1	MIC-	input	MIC-
2	MIC+	input	MIC+

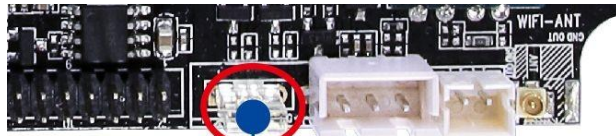
◆ Remote Control Receive Port



No.	Definition	Property	Description
1	IR	input	remote control signal input
2	GND	grounded	grounded
3	VCC	power	3.3V output

◆ 工作 indicating lamp

Defaulting support sharing positive red and blue double LED lamp.

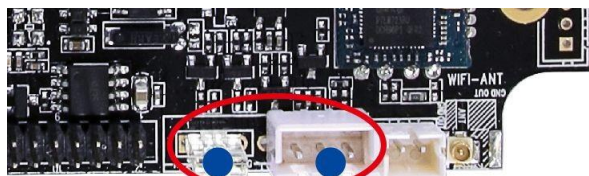


indicating lamp

No.	Definition	Property	Description
1	LED_B	blue lamp	working indicating lamp
2	VCC	power	3.3V output
3	LED_R	red lamp	standby indicating lamp

◆ LED/IR Interface

The position is shared by remote control receive socket and indicating lamp.(solider with 7 pin socket optional)

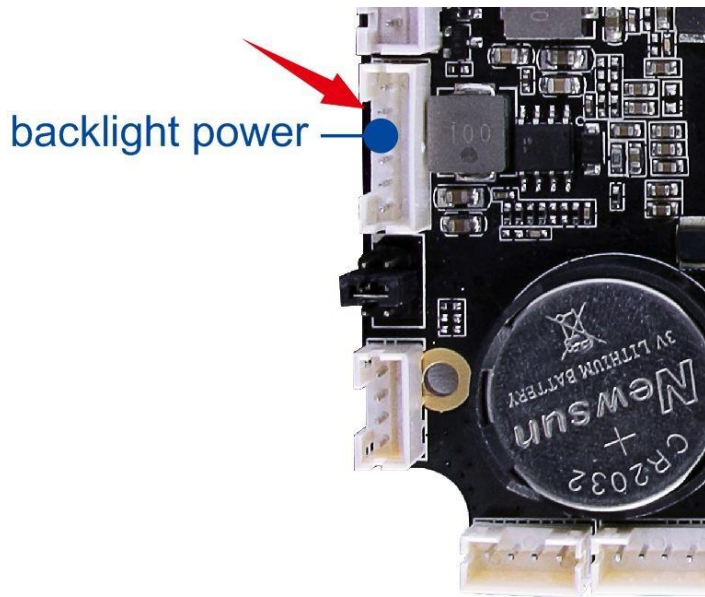


indicating lamp IR

No.	Definition	Property	Description
1	LED_B	output	working indicating lamp
2	VCC	power	3.3V output
3	LED_R	output	standby indicating lamp
4	ADC	ADC input	ADC press key input
5	IR	input	remote control signal input
6	GND	grounded	grounded
7	3.3V	power	3.3V output

◆ Backlight Control Interface

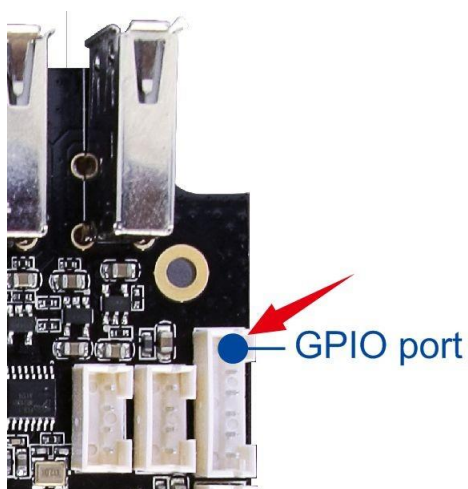
For LVDS screen backlight control.12V power supply current is not more than 1.5A.When use screens of 19 inch above or screen backlight power is more than 20W,please supply the backlight power from other power board,avoiding system instability.Backlight enable voltage is 5V,if it is other voltage,please add IO electrical level to transform circuit.The 12 V power can be only used as backlight power output,and can't be used as power input to supply the system.



No.	Definition	Property	Description
1	VCC	power	12V output
2	VCC	power	12V output
3	BL-EN	output	backlight enable control
4	BL-ADJ	output	backlight brightness control
5	GND	grounded	grounded
6	GND	grounded	grounded

◆ I/O Control Interface

For provide peripherals with input/output for controlling signal. Electrical level is 3.3V, ADC signal can be used for press key control.



No.	Definition	Property	Description
1	VCC	power	3.3V output
2	I/O	input	GPIO-1

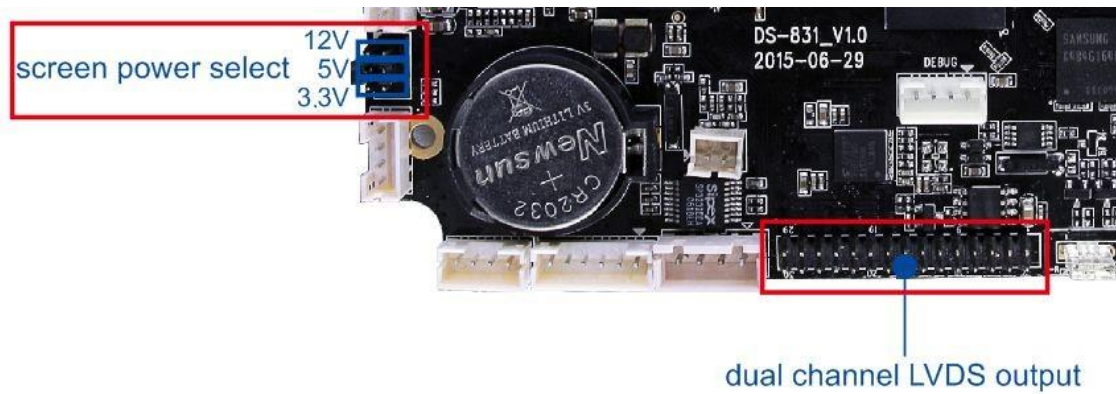
3	I/O	input	GPIO-2
4	I/O	output	GPIO-3
5	ADC	input/output	ADC signal
6	GND	grounded	grounded

◆ LVDS Interface

Universal LVDS interface definition, support single/dual, six/eight bits 1080P LVDS screen. Screen voltage can be selected by following jumpers, can select to support optional 3.3V/5V/12V screen power supply.

For avoiding burnout of board and screen, please notice following items:

1. Please refer to screen specification sheet to confirm screen power supply voltage are correct or not, related board power can meet Max. working current of screen or not.
2. Please use multimeter to confirm the power selected by jumper hat is correct or not.



No.	Definition	Property	Description
1	PVCC	power output	LCD power output , +3.3v/+5V/ +12V optional
2			
3			
4	GND	grounded	grounded
5			
6			
7	0-VN0	output	Pixel0 Negative Data (Odd)
8	0-VP0	output	Pixel0 Positive Data (Odd)
9	0-VN1	output	Pixel1 Negative Data (Odd)
10	0-VP1	output	Pixel1 Positive Data (Odd)
11	0-VN2	output	Pixel2 Negative Data (Odd)
12	0-VP2	output	Pixel2 Positive Data (Odd)
13	GND	grounded	grounded
14	GND	grounded	grounded
15	0-VNC	output	Negative Sampling Clock (Odd)

16	0-VPC	output	Positive Sampling Clock (Odd)
17	0-VN3	output	Pixel3 Negative Data (Odd)
18	0-VP3	output	Pixel3 Positive Data (Odd)
19	1-VN0	output	Pixel0 Negative Data (Even)
20	1-VP0	output	Pixel0 Positive Data (Even)
21	1-VN1	output	Pixel1 Negative Data (Even)
22	1-VP1	output	Pixel1 Positive Data (Even)
23	1-VN2	output	Pixel2 Negative Data (Even)
24	1-VP2	output	Pixel2 Positive Data (Even)
25	GND	grounded	grounded
26	GND	grounded	grounded
27	1-VNC	output	Negative Sampling Clock (Even)
28	1-VPC	output	Positive Sampling Clock (Even)
29	1-VN3	output	Pixel3 Negative Data (Even)
30	1-VP3	output	Pixel3 Positive Data (Even)

◆ TTL Double-line Serial Port Socket Port*1

The board elicits two groups of normal double-line serial port,able to support universal serial port devices in the market.Electrical level of serial port is 0V to 3.3V.If the electrical level of butt-joint serial port is higher than 3.3V,there should be buffer circuit or electrical transform circuit,or it will burnout the main control and device.

Notice:

1.TTL serial port voltage matches or not,it can't connect with MAX232,485 device directly. 2.TX,

RX connection is correct or not.



No.	Definition	Property	Description
1	GND	grounded	grounded
2	UART- RX	input	RX
3	UART- TX	output	TX

4	VCC	power	3.3V output
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◆ **TTL Four-line Serial Port Socket Port*1**

The board also elicits a group of normal four-line serial port,able to support universal serial port device.Electrical port of serial port is 0V to 3.3V.If the electrical level of butt-joint serial port is higher than 3.3V,there should be buffer circuit or electrical level transform circuit,or it will burnout main control and device.

Notice:

1.TTL serial port voltage matches or not,it can't connect with MAX232,485 device directly. 2.TX,

RX connection is correct or not.



No.	Definition	Property	Description
1	UART-RTS	Input/output	RTS
2	UART-CTS	input/output	CTS
3	GND	grounded	grounded
4	UART-RX	input	RX
5	UART-TX	output	TX
6	VCC	power	3.3V output

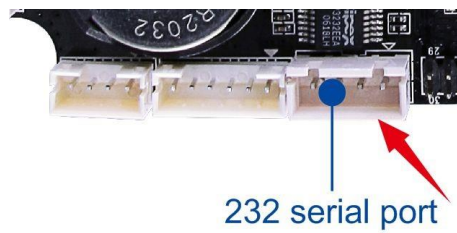
◆ **232 Double-line Serial Port Socket Port*1**

The board supports output a group of normal double-line 232 serial port,able to support universal serial port device in the market.Electrical level of serial port is standard 232 electrical level.

Notice:

1. Electrical level matches or not. It can't connect with TTL electrical level, 485 electrical level serial port device.

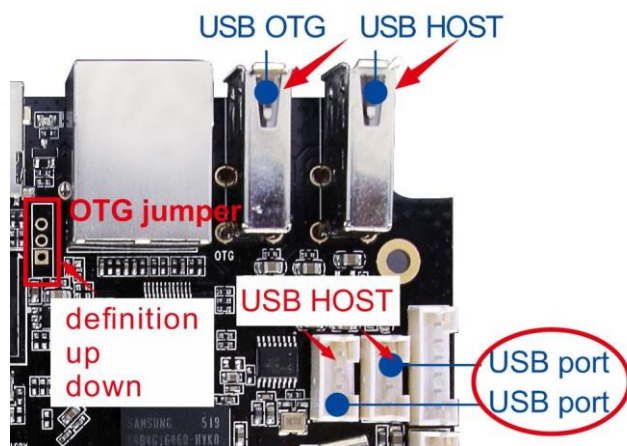
2. TX, RX connection is correct or not.



No.	Definition	Property	Description
1	GND	grounded	grounded
2	232-RX	input	board 232 electrical level RX (PC output)
3	232-TX	output	board 232 electrical level TX (PC input)
4	VCC-5V	power	5V output

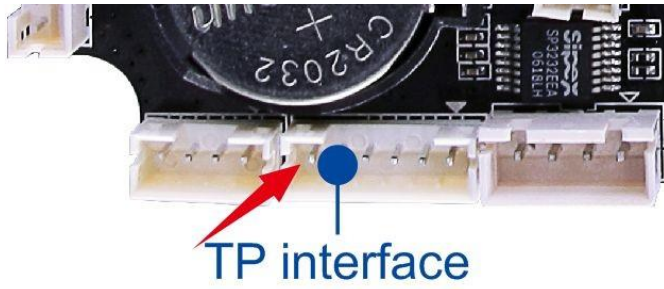
◆ USB

The board has two USB standard ports, 2 built-in USB sockets for extended peripherals, defaulting to HOST. Power supply current is not more than 500mA. The USB OTG socket among which, could select Host/Device by the jumper position in the following figure.



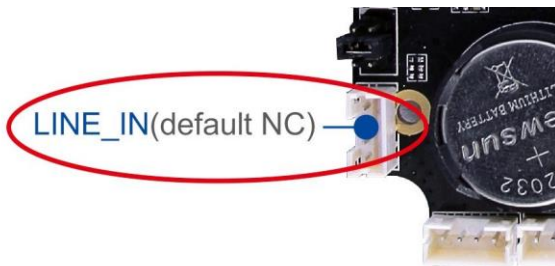
No.	Definition	Property	Description
1	VCC	power	5V output
2	DM	input/output	DM
3	DP	input/output	DP
4	GND	grounded	grounded

◆ Touch Screen Interface



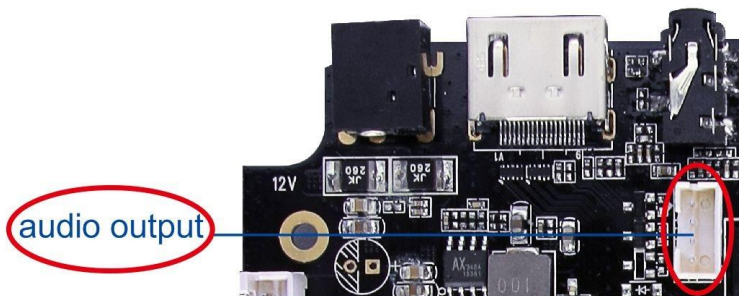
No.	Definition	Property	Description
1	VCC	power	3.3V output
2	SCK	input/output	I2C clock
3	SDA	input/output	I2C data
4	INT	input/output	interrupt
5	RST	input/output	reset
6	GND	grounded	grounded

◆ **LINE_IN Interface (default non-welding)**



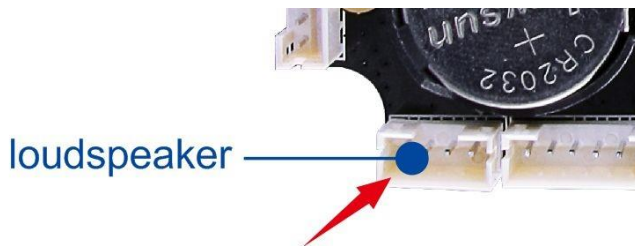
No.	Definition	Property	Description
1	LIN	input	left channel audio input
2	RIN	input	right channel audio input
3	GND	grounded	grounded
4	NC	N/A	unused

◆ **Audio Port 1(need external power amplifier)**



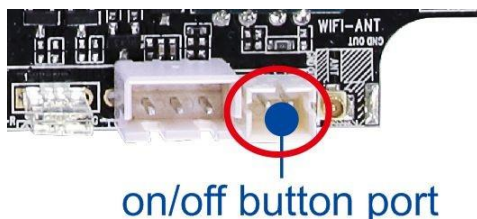
No.	Definition	Property	Description
1	AL	output	audio output left
2	HS-MIC	input	inspect earphone insertion
3	GND	grounded	grounded
4	AR	output	audio output right

◆ **Audio Port 2(able to drive loudspeaker directly)**



No.	Definition	Property	Description
1	OUTP-R	output	audio output right+
2	OUTN-R	output	audio output right-
3	OUTN-L	output	audio output left-
4	OUTP-L	output	audio output left+

◆ **Power On/Off Press Key Interface**



No.	Definition	Property	Description
1	PWR-ON	input	externally connect one pin of touch-button
2	GND	grounded	externally connect one pin of touch-button

◆ **Other Standard Port and Function:**

Memory Port	TF card	data memory,support Max. 32G
	USB	HOST port,support data memory,data input,USB mouse key,camera,touch screen etc.
Ethernet Port	RJ45 port	support 100M wired network
HDMI Port	standard port	support HDMI data output,support Max. 1080P
Earphone Port	standard port	3.5mm standard port

Chapter 4. Electric Performance

Item		Min.	Typical	Max.
Power voltage	voltage	--	12V	--
	ripple wave	--	--	50mV
Power voltage	current	3A		
Power current(HDMI output,no other peripherals)	working current	--	300mA	500mA
	standby current	--	17mA	20mA
	USB power supply current	--	--	500mA
Power Current(LVDS)	3.3V working current		400 mA	500 mA
	5V working current		550 mA	1A
	12V working current		580 mA	1A
	USB power supply current	--	--	500mA
Total Output	current	3.3V		800mA
Environment	relative humidity	--	--	80%

	working temperature	-20°C	--	70°C
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Note 1: When connect with LVDS screen,notice is needed to select correct backlight work voltage 3.3V, 5V, 12V. Users can' t apply it to peripherals whose current is beyond related maximum.

Note 2: When connect with LVDS screen,the working current and standby currents of whole board depend on the connected screen.Above form is not listed one by one.

Chapter 5. Notice During Assembling and Application

During assembling and application,please notice following(and not limited to) points of issue.

1. Naked board and peripheral short out.
 2. During assembling and fixing,avoiding naked board distortion caused by fixing.
 3. When assembling with LVDS screen,notice screen voltage,current is proper or not.Notice first Pin direction of screen socket.
 4. When assembling with LVDS screen,notice screen backlight voltage,current is proper or not.When screen backlight power is beyond 20W,whether use other power board to supply power or not.
 5. When assembling with peripherals(USB,IO. etc.),notice electrical level and
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current output of peripheral IO.

6. When assembling with serial ports, notice serial ports electrical level match (TTL, 232 or 485) of connected device, TX and RX connection is correct or not.

7. Input power is connected to power input port or not. According to general peripheral assessment, input power voltage, current meet the requirements or not. Avoid for the convenient, connect with power supply to input power from backlight socket.