

Digital Signage OCTA-Core Board Datasheet

Revision History

Version	Remarks	Date
1.0	Initial Version	2016.01.23
1.1	New Version updating, System optimizing	2016.05.15

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1.Introduction

Digital Signage OCTA Board M7 is based on Allwinner A83T OCTA-CORTEX™-A7 ARCHITECTURE master control chip and PowerVR™SGX544 GPU is integrated in , which is with powerful video processing and decoding capacity and compatible with most of video format .

With Android 4.4 OS , 1G RAM and 8G ROM, M7 can directly drive15-55 inches LCD and support large-size infrared touch screen; With RJ45/Wifi/BT , can adapt to different net environment. Meanwhile, many other functions are integrated in , such as human body infrared sensor ,power on&off by alarm ,Remote power on&off ,watch dog, power STB , etc.

It is the most competitive products on the current OCTA chip processor.

(M7 is compatible perfectly with Dual-core board M2 and Quad-core board M3X on external interface and screw hole site.)

1.1.Specification

Hardware Index	
CPU	Allwinner A83T OCTA-CORE, Cortex-A7
Memory	DDR3 1G(Max.2G optional)
Storage	EMMC FLASH 8 G (Max. 32G optional)
Storage Extension	Up to 32GB SD/TF Card extension
WiFi	Built-in USB Wifi Module or Wifi/BT Module (optional),802.11b/g/n
System	
Operation System	Android 4.4
Language	Simplified Chinese, Traditional Chinese, English, French, German, Italian, Japanese, Korean, Russian, Spanish, Polish, Czech, etc.
Internet Function	

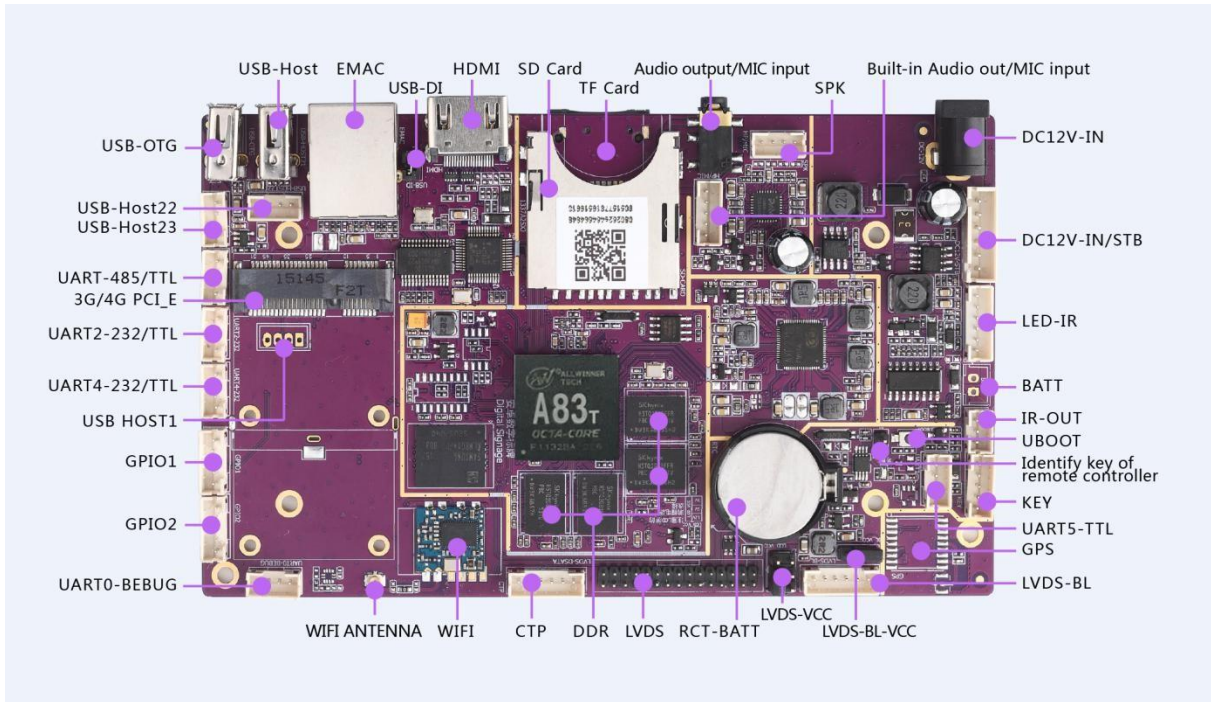
Browser	UC Web, Google, etc
Online Entertainment	Supports online video, TV, movie, music and radio
Office Software	WORD, EXCEL, POWERPOINT, PDF, TXT
Game	Internal 3D speed up, supports 3D game
Expansibility	More 20,000 games in Google market for free downloading
Video Playback	
Format	Supports AVI (H.264、DIVX、DIVX、XVID) , rm, rmvb, MKV (H.264、DIVX、DIVX、XVID) , WMV, MOV, MP4 (.H.264、MPEG、DIVX、XVID) , DAT (VCD) , VOB (DVD) , PMP,MPEG, .MPG, FLV (H.263, H.264) , ASF , TS, TP, 3GP, MPG, etc.
Decoding Resolution	Up to 3840*2160
Video Output	Max.supports HDMI 1080P full HD output
Audio Playback	
Format	Supports MP3,WMA,MP2,OGG,AAC,M4A,MA4,FLAC,APE,3GP,WAV audio playback, supports play list of songs
Record Function	Supports MP3,WMA recording
Additional Function	
Image Browsing	Supports JPG, BMP,PNG and GIF image browsing, image rotators and PicaSlide Lite; Resolution is up to 4096*4096
Text Reading	Supports TXT,PDF,HTML,HTM,CHM,UMD
Basic Interface	
USB2.0 Interface	USB HOST*7(two external and five internal);(compatible with WiFi and 3G module, you can used them as USB HOST while WiFi and 3G not needed)
UART Extension	Four (RS232*2, RS485*1, TTL*3 ,TTL+Flow control *1 ,debug uart*1
DB9 RS232	One external DB9 RS232 interface
LVDS Output	One, supports 50/60Hz LVDS LCD or using interface panel to support RGB LCD
LCD Backlight Interface	One, standard 6pin socket (12V/5V/3V)
Touch Screen Interface	One built-in 6P socket, resistive touch /capacitive touch(optional)
HDMI Output	One HDMI A-type interface
Headphone/Mic	One external headphone audio output and Mic input
Speaker Output	One internal socket, maximum supports 2*10W/8Ω speaker
SD/TF Card	One standard SD/TF card slot(optional)

3G Interface	One standard Mini PCI-E slot
SIM Card	One standard SIM card slot
LAN	RJ45 standard 100 MB interface
IR	IR (can be weld on master board or use with an extension cord)
RTC Real-Time Clock	One clock battery holder
Power Supply	One external socket(core 2.5mm) and an internal 4P socket, DC 12V input
Bi-Color LED	One internal bi-color LED light
Infrared Remote Receiver	One internal infrared remote receiver socket(can be welded on PCB or connected by extension cord according to structure)
Button	One key to upgrade ,one key boot and 5P socket
I/O socket	One internal 6P socket(supports GPIO*5 extension)
Other Functions	
Touch Screen	Supports capacitive /resistive/infrared touch
Other Input Devices	Supports USB keyboard/mouse/IR remote
Voice Function	Supports
Video Function	Supports USB camera
Electrical Specifications	
Power-In	Switching power supply (12V)
Consumption	$\leq 2.5W$, not connecting to speaker/LCD/backlight inverters/USB devices
Working Environment	
Working Temperature	0°C~40°C
Working Humidity	10%~90%, without condensation
Storage Temperature	-40°C~70°C, recommended 5°C~35°C

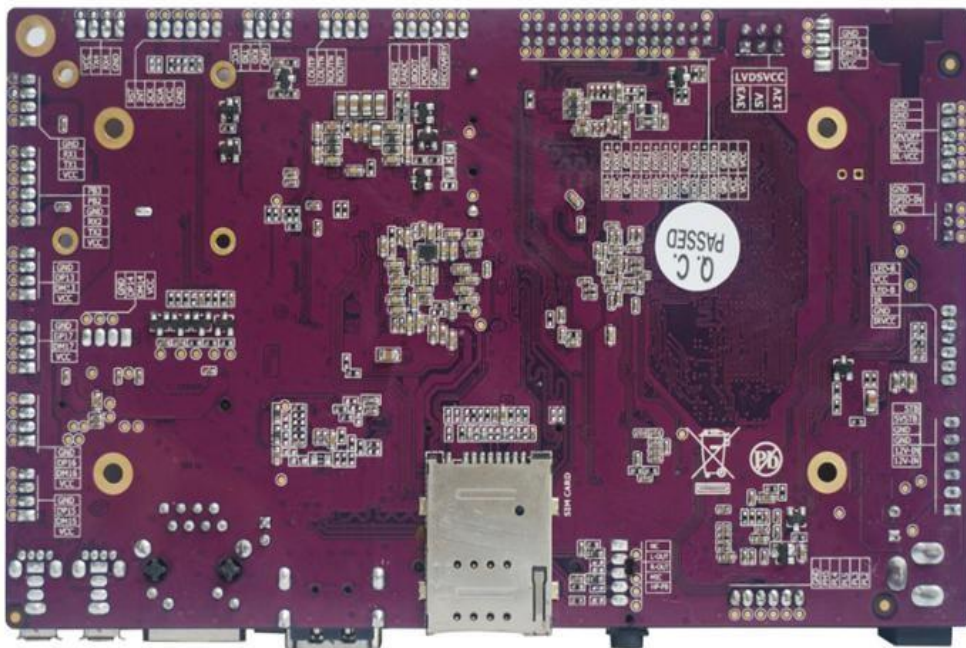
Above is our standard configuration, your special needs can be customized alone after talking with us.

2. Product Appearance

2.1. Front View (picture keep upgrade)



2.2. Back View (picture keep upgrade)



3. Interface Definition

3.1. Built-in Interface Definition

◆ CON12 UART0-TTL Interface (2.0mm Socket)

No.	Definition	Attribute	Description
1	VCC-3.0V	Power Output	3.0V Output
2	UART0_TX	Output	UART0_TX
3	UART0_RX	Input	UART0_RX
4	GND	Earth Wire	Earth wire

◆ CON9 UART-RS485 Interface (2.00mm Socket)

No	Definition	Attribute	Description
1	VCC-3.0V	Power Output	3.0V Output
2	UART4_TX	Output	Data Output
3	UART4_RX	Input	Data Input
4	GND	Earth Wire	Earth Wire

This device can be used with TTL or RS485, but TTL is original mode.

◆ J27 UART-TTL \ UART RS232 Interface (2.00MM Socket)

No	Definition	Attribute	Description
1	VCC-3.0V	Power Output	3.0V Output
2	UART2_TX	Output	Data Output
3	UART2_RX	Input	Data Input
4	GND	Earth Wire	Earth Wire
5	UART2_RTS	Input	Data Flow Control
6	UART2_CTS	Output	Data Flow Control

1. When using internal interface ,this device can be used with TTL or RS232 ,TTL is original mode;
2. When using external DB9 interface ,this device can be used with RS232 , but no flow control function.

◆ CON11 UART-TTL \ UART RS485 Interface (2.00MM Socket)

No	Definition	Attribute	Description
1	VCC-3.0V	Power Output	3.0V Output
2	UART1_TX	Output	Data Output
3	UART1_RX	Input	Data Input

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4	GND	Earth Wire	Earth Wire
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This device can be used with TTL or RS232 ,TTL is original mode.

◆J18 Backlight Inverter Power Input Socket (2.00MM Socket)

No	Definition	Attribute	Description
1	BL_IN	Output	When backlight Power is 12V, it can directly connect external adapter, current is determined by adapter .
2	BL_IN	Output	
3	ON/OFF	Output	Back Light Unit Switching Signal, 5V Electrical Level, High/Low Level (Optional)
4	ADJ	Output	Back Light Unit DIMMING Control
5	GND	Earth Wire	Earth Wire
6	GND	Earth Wire	Earth Wire

This interface max. support 12V Power Output. When you use 24V for the screen backlight ,please directly get power from power strip.

◆CON7 LVDS_LOGIC Power Input Socket(2.54mm pin)

No	Definition	Attribute	Description
1	LVDS_VCC	Output	LVDS_LOGIC Power Output
2	LVDS_VCC	Output	LVDS_LOGIC Power Output
3	LVDS_VCC	Output	LVDS_LOGIC Power Output
4	12V_IN	Input	LVDS_LOGIC Power Input
5	5V_IN	Input	LVDS_LOGIC Power Input
6	3V_IN	Input	LVDS_LOGIC Power Input

When you choose this power, please remember to check the screen's backlight voltage, then choose the right voltage. There is a risk if you do not do like this. (About detail screen voltage, please inquire the screen datasheet.)

◆J24 LVDS Signal Output & RGB Signal Output

No	Definition	Attribute	Description
1	LCDVCC	Power Output	LVD Power Output, +3.3V /+5V/ +12V optional by CON7 (It is important to choose CON7 's voltage.)
2			
3			
4	GND	Earth Wire	Earth Wire
5			
6			

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7	RX00-	Output	Pixel0 Negative Data (Odd) / RGB_R3
8	RX00+	Output	Pixel0 Positive Data (Odd) / RGB_R2
9	RX01-	Output	Pixel1 Negative Data (Odd) / RGB_R5
10	RX01+	Output	Pixel1 Positive Data (Odd) / RGB_R4
11	RX02-	Output	Pixel2 Negative Data (Odd) / RGB_R7
12	RX02+	Output	Pixel2 Positive Data (Odd) / RGB_R6
13	GND	Earth Wire	Earth Wire
14	GND	Earth Wire	Earth Wire
15	RXOC-	Output	Negative Sampling Clock (Odd) / RGB_DE
16	RXOC+	Output	Positive Sampling Clock (Odd) / RGB_CLK
17	RX03-	Output	Pixel3 Negative Data (Odd) / RGB_VSYNC
18	RX03+	Output	Pixel3 Positive Data (Odd) / RGB_HSYNC
19	RXE0-	Output	Pixel0 Negative Data (Even) / RGB_B3
20	RXE0+	Output	Pixel0 Positive Data (Even) / RGB_B2
21	RXE1-	Output	Pixel1 Negative Data (Even) / RGB_B5
22	RXE1+	Output	Pixel1 Positive Data (Even) / RGB_B4
23	RXE2-	Output	Pixel2 Negative Data (Even) / RGB_B7
24	RXE2+	Output	Pixel2 Positive Data (Even) / RGB_B6
25	GND	Earth Wire	Earth Wire
26	GND	Earth Wire	Earth Wire
27	RXEC-	Output	Negative Sampling Clock (Even) / RGB_G3
28	RXEC+	Output	Positive Sampling Clock (Even) / RGB_G2
29	RXE3-	Output	Pixel3 Negative Data (Even) / RGB_G5
30	RXE3+	Output	Pixel3 Positive Data (Even) / RGB_G4
31	RGB-D14	Output	RGB_G6
32	RGB-D15	Output	RGB_G7
33	LCD_PWM	Output	LCD_PWM backlight lightness adjust
34	LCD_ON/OFF	Output	LCD_ON/OFF
35	VCC-5V	Power	VCC-5V Output
36	VCC-5V	Power	VCC-5V Output

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* Can be deployed with VESA or JEIDA LVDS data format. * Can be deployed with EVEN/ODD data exchange.

* This device support LVDS & LCD-RGB, Only use one at one time, and LVDS is original output.

◆ CON13 SPK-OUT Interface

No	Definition	Attribute	Description
1	LOUTP	L Output Positive	LOUTP
2	LOUTN	L Output Negative	LOUTN
3	ROUTN	R Output Negative	ROUTN
4	ROUTP	R Output Positive	ROUTP

This is double speaker connecting. When you use only one speaker , PIN1 & PIN2 is a group , PIN3&PIN4 is the other group. According to order , before starting up , you need to make sure the connection of speaker.

Here , 8R load is ok, you cannot use 4R load speaker .

◆ J26 Internal Headphone Socket Interface (2.54MM Socket)

No	Definition	Attribute	Description
1	NC	NC	NC
2	L-OUT	Output	L-CH
3	R-OUT	Output	R-CH
4	OUT	Input	MIC Input Or CVBS Input
5	GND	Earth Wire	GND

This device is compatible with external headphone seat . When you do not use external headphone seat, can built-in use .(But choose only of these two kinds)

◆ CON15 USB-HOST Interface (2.00MM Socket)

No	Definition	Attribute	Description
1	VCC-5V	Power Output	VCC-5V
2	DM	Data Negative	DM
3	DP	Data Positive	DP
4	GND	Earth Wire	GND

CON15 Socket can be taken as USB HOST ,only when the PCI-E Socket's 3G Module is not in use. When PCI_E Socket's 3G

Module is in use , no need to weld this socket.

◆ CON16 USB-HOST Interface (2.00MM Socket)

No	Definition	Attribute	Description
1	VCC-5V	Power Output	VCC-5V

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2	DM0	Data Negative	DM
3	DP0	Data Positive	DP
4	GND	Earth Wire	GND

CON16 Socket is compatible with J12 ,only be used when the J12 is not in use. Meanwhile, only you Choose J45 as the Host function ,then it can be used as USB Host .In testing , J45 does not connect jumper, can be used as ADB connection.

◆ J45 USB OTG Socket (2.54MM Pin)

No	Definition	Attribute	Description
1	GND	GND	USB function low potential Input (Host Function)
2	OTG-SEL	Output	USB function choosing output

Remark: After connect the jumper,USB0 becomes the USB-HOST Function, when not connect , then it is the USB-DRV function.

◆ CON17 USB-HOST Interface 2.00MM Socket)

No	Definition	Attribute	Description
1	VCC-5V	Power Output	VCC-5V
2	DM	Data negative	DM
3	DP	Data positive	DP
4	GND	Earth Wire	GND

Remark: CON17 Socket is in use when the J20 NOT in use. CON17 is compatible with J20.

◆ CON18 USB-HOST Interface (2.00mm Socket)

No	Definition	Attribute	Description
1	VCC-5V	Power Output	VCC-5V
2	DM	Data Negative	DM
3	DP	Data Positive	DP
4	GND	GND	GND

◆ CON19 USB HOST Interface(2.00mm Socket)

No	Definition	Attribute	Description
1	VCC-5V	Power Output	VCC-5V
2	DM	Data Negative	DM
3	DP	Data Positive	DP
4	GND	GND	GND

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◆ CON 20 USB HOST Interface (2.00 mm Socket)

No	Definition	Attribute	Description
1	VCC-5V	Power Output	VCC-5V
2	DM14	Data Negative	DM
3	DP14	Data Positive	DP
4	GND	GND	GND

Remark: CON20 can be used as USB HOST on condition that WiFi module is not used; CON 10 cannot be welded on board if WiFi module is in use.

◆ CON21 USB-HOST Interface (2.00mm Socket)

No	Definition	Attribute	Description
1	VCC-5V	Power Output	VCC-5V
2	DM	Data Negative	DM
3	DP	Data Positive	DP
4	GND	GND	GND

(Remark: CON20 is compatible with external USB2.0 , can be used when the USB2.0 external socket is not in use.)

◆ J15 Power-DC12V-IN Interface (2.54MM Socket)

No	Definition	Attribute	Description
1	+12V	Power Input	+12V
2	+12V	Power Input	+12V
3	GND	Earth Wire	Earth Wire
4	GND	Earth Wire	Earth Wire
5	5VSTB	Input	STB Power Input
6	STB	Output	STB Signal Output

◆ J23 Bi-LED and IR Interface (2.54MM Socket)

No	Definition	Attribute	Description
1	VCC-3V3	Output	Power 3.3V Output
2	GND	Earth Wire	Earth Wire
3	IR	Input	IR Signal Input
4	LED_ BLUE	Output	LED light negative System Operation Light
5	LED+	Input	LED light positive
6	LED_ RED	Output	LED light negative Power-on Light

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Remark: You can weld a 6PIN Socket to the J23 Socket according to your need . External BI-LED light, the light Must be both Anode type.

◆ **J28 GPIO Socket Interface 1 (2.00mm Socket)**

No	Definition	Attribute	Description
1	GPIO1	Input/Output	GPIO1 Input/Output
2	GPIO2	Input/Output	GPIO2 Input/Output
3	GPIO3	Input/Output	GPIO3 Input/Output
4	GPIO4	Input/Output	GPIO4 Input/Output
5	GPIO5	Input/Output	GPIO5 Input/Output
6	GND	Earth Wire	Earth Wire

◆ **J22 CTP Socket Interface 2 (2.00MM Socket)**

No	Definition	Attribute	Description
1	GND	Earth Wire	Earth Wire
1	VCC_3.0V	Power Output	3.0V Power
2	I2C_SDA	Input/Output	Capacitive LCD I2C_SDA
3	I2C_SCK	Input/Output	Capacitive LCD I2C_SCK
4	TP_INT	Input/Output	Capacitive LCD Interruption
5	TP_WAKEUP	Input/Output	Capacitive LCD Reset

◆ **J21 Key External Socket Interface (2.00MM Socket)**

No	Definition	Attribute	Description
1	RESET	Input	Signal Reset Interface
2	KEY	Input	KEY Extension Port
3	UBOOT	Input	System Upgrade Key
4	POWEN	Input	System Power-on Key
5	GND	Earth Wire	Earth Wire
6	RECOVERY	Input	System Factory Reset

◆ **J46 Human Body Induction Interface (2.00MM Socket)**

No	Definition	Attribute	Description
1	VCC-5V	Input	Human Body Induction Power Output
2	IR-DET	Output	Human Body Induction Signal Output
3	GND	Earth Wire	Earth Wire

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◆ J8 RTC_BATT Interface (1.25mm Socket)

No	Definition	Attribute	Description
1	BATT+	Power Supply	Positive of Battery
2	BATT-	Earth Wire	Negative of Battery

◆ J52 MCU Remote Control Key interface (2.54MM Socket)

No	Definition	Attribute	Description
1	MCU_IR	Input	MCU Remote Control Study Code Point Key
2	GND	Earth Wire	Earth Wire

When using new remote control to start up, can connect this socket, keep pushing the key at least 5 seconds, facing to the receiver.

3.2. External Interface Definition

- ◆ J3 Standard 12V round pin, 6.4MM diameter, with positive inside negative outside
- ◆ J16 Standard headphone and MIC interface definition
- ◆ J14 Standard SD card slot definition
- ◆ J9 Standard TF card slot definition
- ◆ CON1 Standard A type HDMI interface definition
- ◆ J17 Standard 100M RJ45 interface definition(with lamp)
- ◆ J20 Standard USB2.0 larger interface definition
- ◆ J12 Standard USB2.0 larger interface definition
- ◆ J35 Standard MINI USB interface definition(with OTG function)
- ◆ SIM1 Standard SIM Big card slot definition
- ◆ MIE1 Standard PCI_E Module Slot Defintion

Attentions:

1. When assembling , Be power off and Do the static protect work;
2. In testing , pile up situation is not permitted.
3. Board cannot be put on the Metal Desk , to avoid sudden short of the button battery
4. On Start-up situation, please do not touch the components with your hand directly.

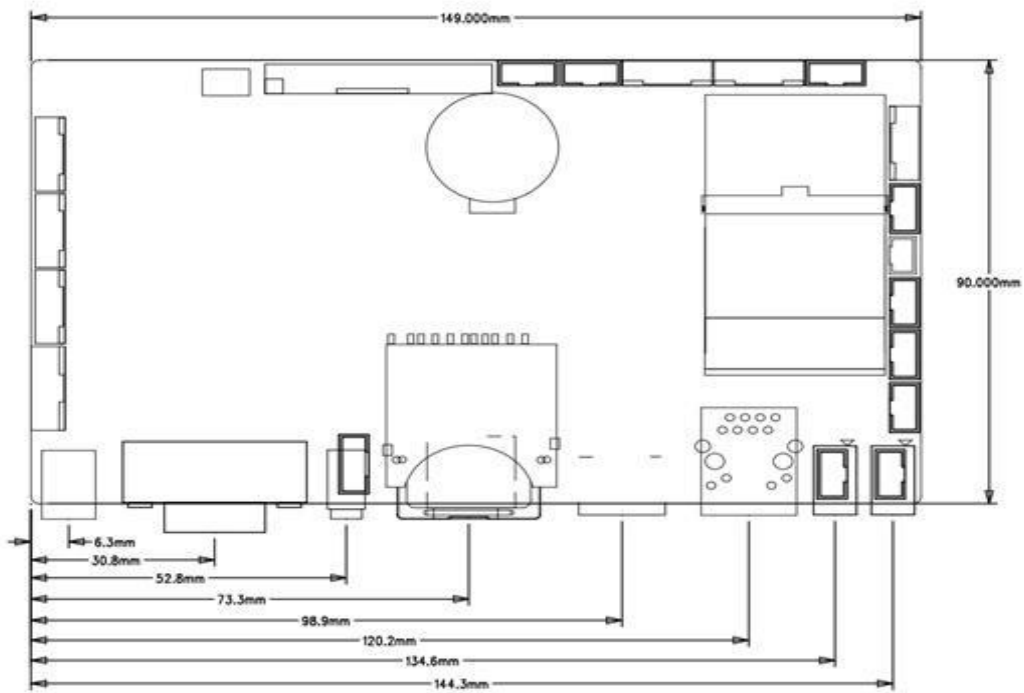
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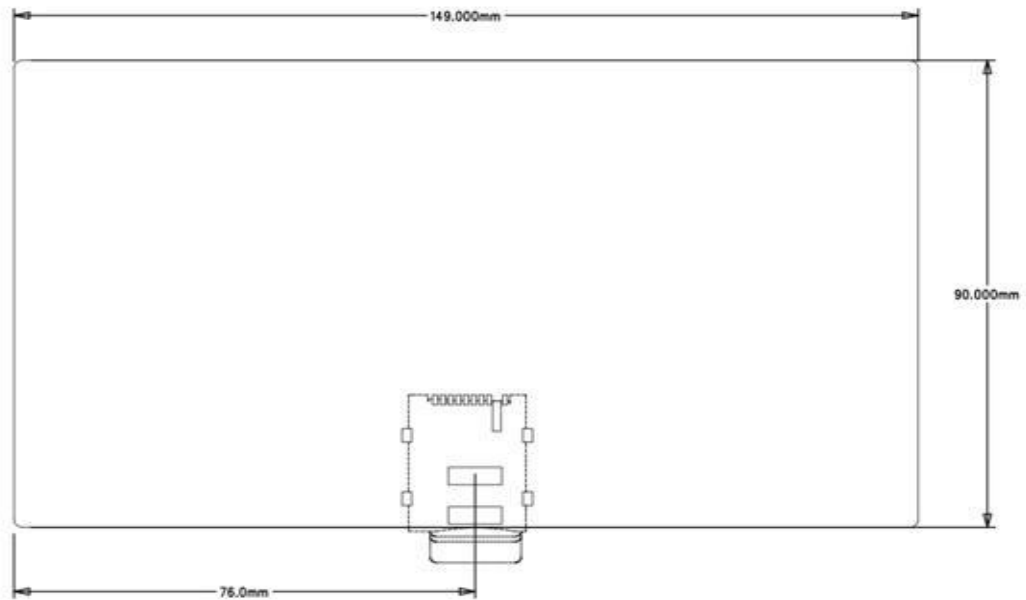
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4. Dimensions and Device Distribution Graph

4.1. Front View



4. 2.Back Veiw

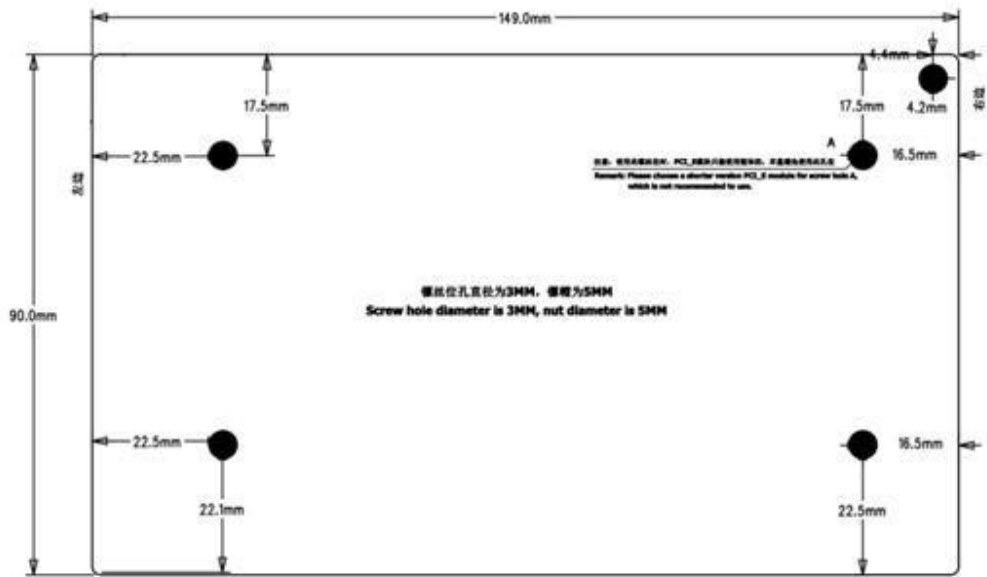


4.3. Dimensions and Screw Distribution Graph

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5. Hardware Support List

(LCD ,CAMERA,3G MODULE)

◆ Infrared LCD

No	Brand
1	Oscar
2	Fltouch
3	CJTouch
4	

◆ Camera

No	Brand
1	All USB Camera free-drive
2	
3	

◆ 3G Module

No	Brand	SIM card Type	Net Type
1	3G USB Module free-drive		
2			
3			

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