

Embedded Computer User Manual



Safety maintenance:

Please maintain your system properly to make sure its service life and reduce the damage risk.

- It should avoid the humidity and extreme temperature when being used.
- Avoid prolonged exposure of the unit to direct sunlight or strong ultraviolet light.
- Do not drop the unit or let it be in any place with severe shock / vibration.
- Please avoid the collision as the LCD screen is very easy to be scratched. Do not use any sharp object to touch the screen.
- To clean the outside fuselage, please turn off the power, unplug the power cord, scrub / wipe with slightly damp soft cloth. When cleaning the screen, please wipe with the lint free soft cloth.
- Never attempt to disassemble or repair the machine, otherwise the unit may be damaged.
- Do not place your unit or accessories together with other flammable liquids, gases, or other explosive materials, to avoid danger.
- Please unplug the power plug and remove the built-in battery if long-term no-use, or thunder weather.

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1. Product Description

1.1 Brief Introduction

- 7"16:10 capacitive touch screen, 1280×800 physical resolution;
- NXP i.MX 6DualLite 800MHz, 1G RAM, 8G ROM;
- Android 5.1.1 OS;
- RS232/GPIO/CAN/LAN/USB2.0/HDMI interfaces;
- Micro SD (TF) card storage, SIM card slot.

1.2 Optional Functions

- 3G/4G (built-in);
- Wi-Fi 802.11 b/g/n & Bluetooth 4.0 (built-in);
- POE (built-in);
- RS485/RS422.

1.3. Basic Parameters

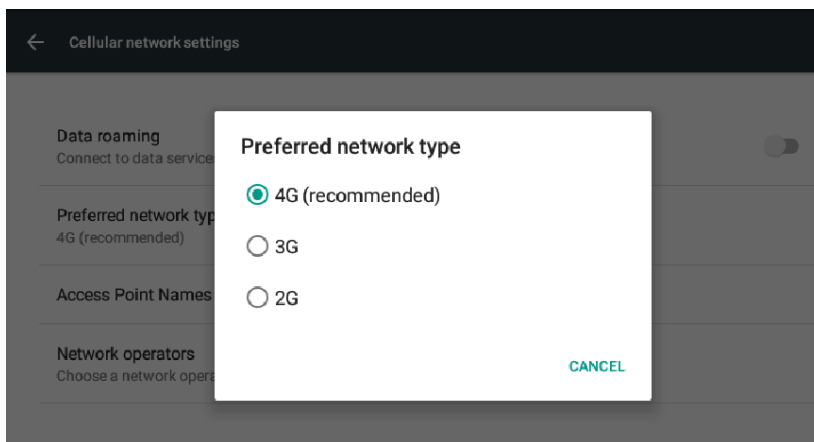
Configuration	Parameters	
Display	7"	
Touch Panel	Capacitive	
Physical Resolution	1280×800	
Brightness	400cd/m ²	
Contrast	800:1	
Viewing Angle	160°/160° (H/V)	
System Hardware	CPU: NXP i.MX 6DualLite 800MHz ARM cortex-A9 processor ROM: 8GB FLASH RAM: 1GB LPDDR3 GPU: 3D Vivante GC880 35Mtri/s 266Mpxl/s Open GL ES 2.0 OS: Android 5.1.1 / Linux Debian 8.0	
Interfaces	SIM card	1.8V/2.95V, SIM

	TF card	1.8V/2.95V, up to 64G
	USB	USB host 2.0×2 USB Device 2.0 (OTG)×1
	CAN	CAN2.0b×2
	GPIO	Input×4, Output×6 (See section "3. Extended Cable Definition" for details.)
	HDMI output	HDMI 1.4
	LAN	100M×2 (Note: If one LAN port for Intranet, the other LAN port for Internet; Both of them need to be customized under Android OS. Only LAN port1 is available when the both LAN ports are using simultaneously under Android OS.)
	Serial Port	RS232×4 or RS232×3, RS485×1 or RS232×2, RS485×1, RS422×1
Optional Function	Ear Jack	1
	Wi-Fi	802.11a/b/g/n 2.4GHZ
	Bluetooth	Bluetooth 4.0 2402MHz~2480MHz
	3G/4G	(See section 1.4 for details)
Multimedia	POE	25W
	Audio	MP3/AAC/AAC+/WAV/FLAC/APE/ AMR/MP4/MOV/F4V...
	Video	Encode: 1080p30 H.264 BP/Dual 720p encoding Decode: 1080p30 + D1
Input Voltage	DC 9~36V	
Power Consumption	Overall ≤ 10W Standby ≤ 4W	
Working Temperature	-20°C~60°C	
Storage Temperature	-30°C~70°C	
Dimension (LWD)	206×144×30.9mm	
Weight	790g	

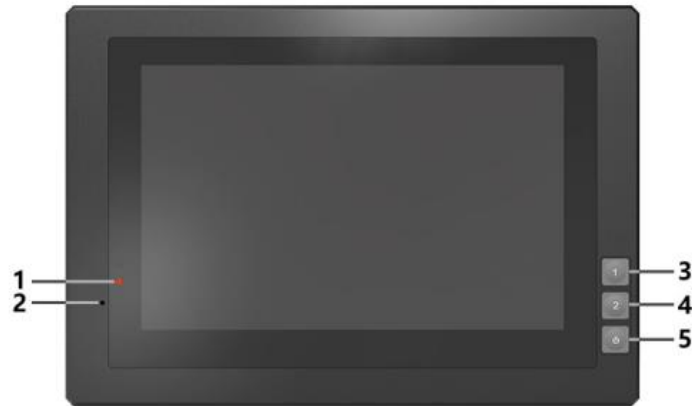
1.4. 3G / 4G Support Parameter & Switch

Band (Different versions support different bands)	Version 1: China/India/Southeast Asia	FDD LTE: Band 1 / Band 3 / Band 8 TDD LTE: Band 38 / Band 39 / Band 40 / Band 41 DC-HSPA+ / HSPA+ / HSPA / UMTS: Band1 / Band 5 / Band 8 / Band 9 TD-SCDMA: Band 34 / Band 39 GSM/GPRS/EDGE: 1800 / 900
	Version 2: EMEA/South America	FDD LTE: Band 1 / Band 2 / Band 3 / Band 4 / Band 5 / Band 7/ Band 8 / Band 20 WCDMA / HSDPA / HSUPA / HSPA+: Band 1 / Band 2 / Band 5 / Band 8 GSM / GPRS / EDGE: 850 / 900 / 1800 / 1900
	Version 3: North America	LTE: FDD Band 2 / Band 4 / Band 5 / Band 12 / Band 13 / Band 17 WCDMA / HSDPA / HSUPA / HSPA+: Band2 / Band 4 / Band 5
Data Transmission	LTE	LTE-FDD Max 150Mbps(DL)/Max 50Mbps(UL) LTE-FDD Max 130Mbps(DL)/Max 35Mbps(UL)
	DC-HSPA+	Max 42 Mbps(DL)/Max 5.76Mbps(UL)
	WCDMA	Max 384Kbps(DL)/Max 384Kbps(UL)
	TD-SCDMA	Max 4.2 Mbps(DL)/Max 2.2Mbps(UL)
	EDGE	Max 236.8Kbps(DL)/Max 236.8Kbps(UL)
	GPRS	Max 85.6Kbps(DL)/Max 85.6Kbps(UL)

3G/4G Switch: Settings->More->Cellular networks->Preferred network type; Default as 3G, activate 4G manually if module supports.



2. Structure Function Explanation

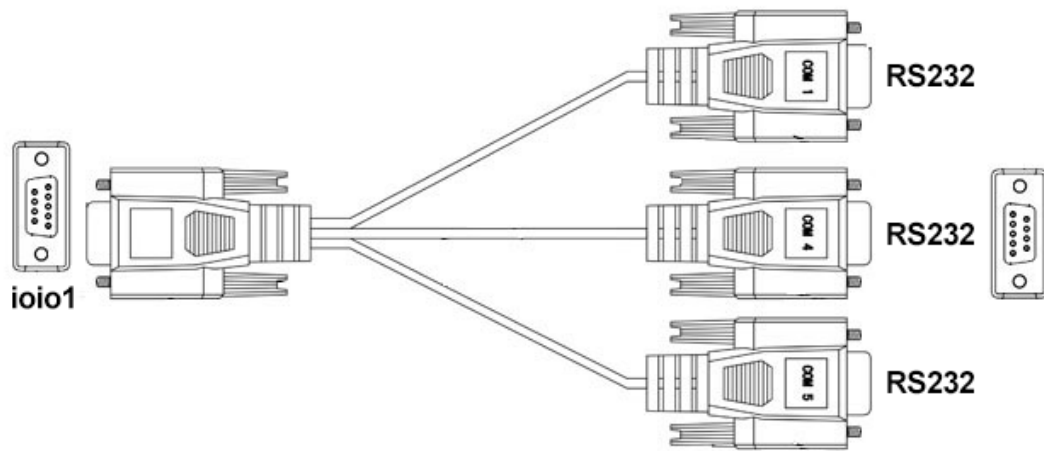


1. Power indicator.
2. Reset & burn button.
3. User-definable button 1 (F1).
4. User-definable button 2 (F2).
5. Power on/off button.

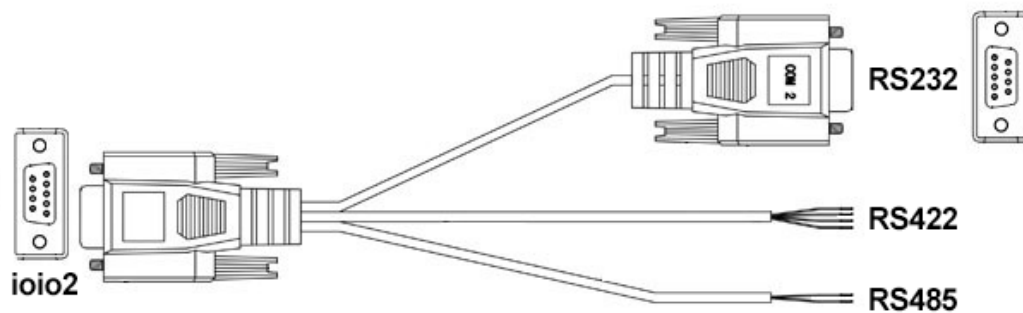


1. SIM card slot.
2. USB device.
3. Micro SD (TF) card slot.
4. IOIO 1: (RS232 standard interface, connecting with DB9 standard cable to convert to 3×RS232 ports).
- IOIO 2: (RS232 standard interface, connecting with DB9 optional cable to convert to 1×RS232, 1×RS422 and 1×RS485 ports).
5. CAN/GPIO (For extended cable definition, please refer to "3 Extended Cable Definition").
6. HDMI output.
7. USB Hostx2.
8. 100M LAN.
9. 100M LAN, POE function for optional.
10. Ear jack.
11. Power interface.

3. Extended Cable Definition

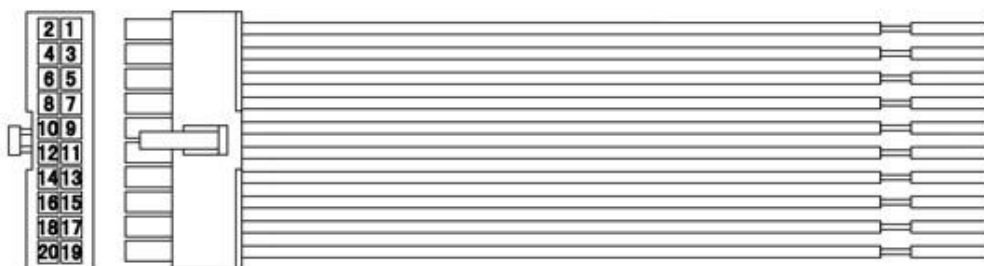


DB9 standard cable



DB9 optional cable

Item			Definition
Com 1 RS232			/dev/ttymxc0;
Com 2 RS232			/dev/ttymxc1;
Com 4 RS232			/dev/ttymxc3;
COM 5 RS232			/dev/ttymxc4;
RS422	Red A	white Z	/dev/ttymxc3;
	Black B	Green Y	
RS485	Red Positive pole		/dev/ttymxc4;
	Black Negative pole		
Note: RS232 and RS422 are alternative for COM4. RS232 and RS485 are alternative for COM5. It should match with standard cable when using IOIO 1; Otherwise there is a risk of short circuit.			



CAN/GPIO

Item	Definition									
GPIO	GPIO Input	2			4		6		8	
		GPIO57			GPIO 82		GPIO87		GPIO92	
		Yellow			Yellow		Yellow		Yellow	
	GPIO Output	10	12	1		3		5		7
		GPIO 93	GPIO191	GPIO 9		GPIO171		GPIO174		GPIO175
		Blue	Blue	Blue		Blue		Blue		Blue
	GPIO GND	13								
		Black								
CAN	CAN 1/2	18	20		17			19		
		CAN1-L	CAN1-H		CAN2-L			CAN2-H		
		Green	Red		Green			Red		

3-1 Serial Port

Serial port marking with COM1, COM2, COM4 and COM5

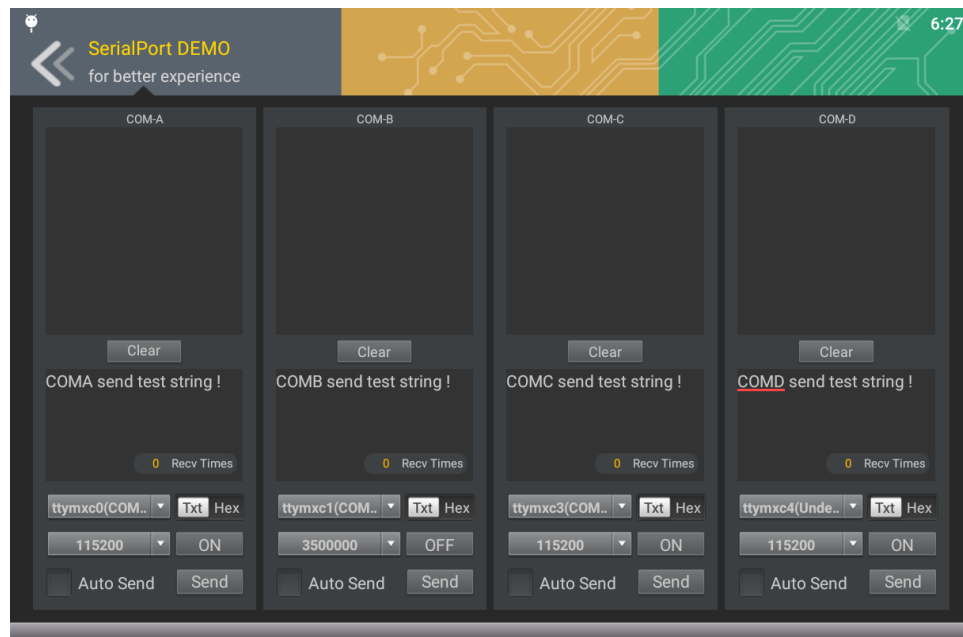
Correspondence between RS232 tail line ports and device nodes

COM1=/dev/ttymx0

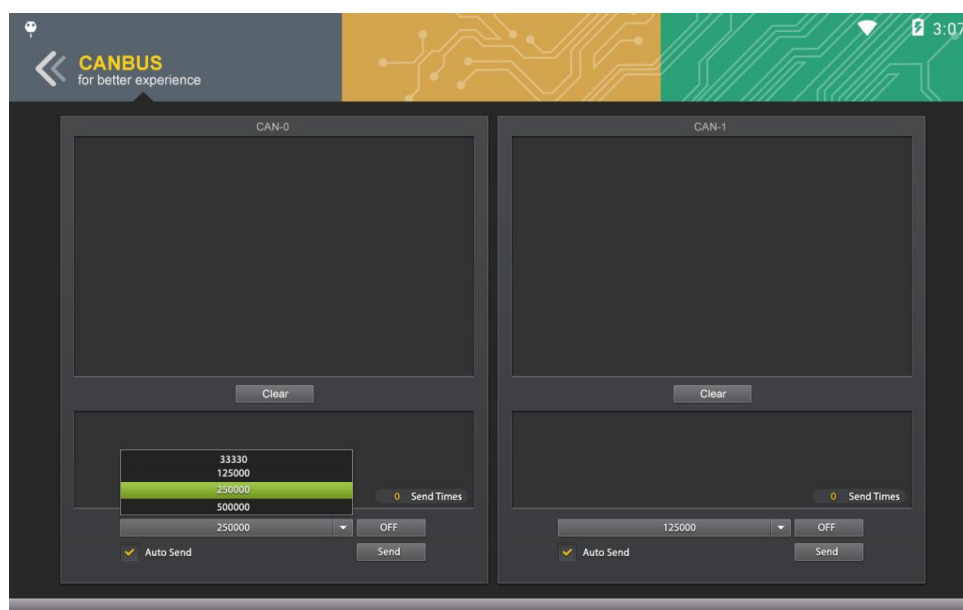
COM2=/dev/ttymx1

COM4=/dev/ttymx3

COM5=/dev/ttymx4



3-2 CAN BUS Interface



adb command:

Set the bitrate (baud rate) before all operations

Example: Set the bitrate of the can0 interface to 125kbps:

```
# ip link set can0 up type can bitrate 125000
```

Quick test

Once the driver is installed and the bitrate is set, the CAN interface has to be started like a standard net interface:

```
# ifconfig can0 up
```

and can be stopped like that:

```
# ifconfig can0 down
```

The socketCAN version can be retrieved this way:

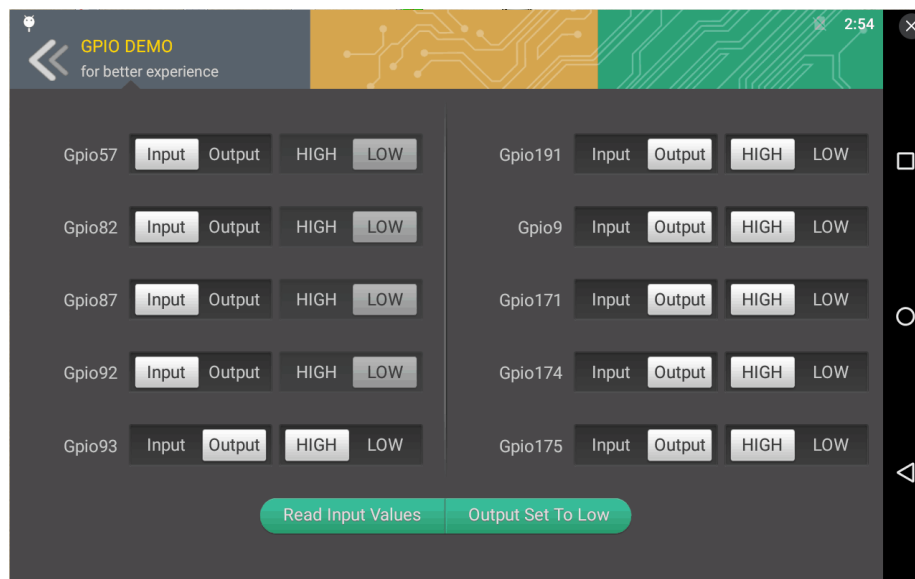
```
# cat /proc/net/can/version
```

The socketCAN statistics can be retrieved this way:

```
# cat /proc/net/can/stats
```

3-3 GPIO Interface

1、 GPIO interface as shown below,



1. The File System Path of the Corresponding GPIO Device Node's Folder

The path of GPIO57 node's folder is **/sys/class/gpio/gpio57/**

The path of GPIO82 node's folder is **/sys/class/gpio/gpio82/**

The path of GPIO87 node's folder is **/sys/class/gpio/gpio87/**

The path of GPIO92 node's folder is **/sys/class/gpio/gpio92/**

The path of GPIO93 node's folder is **/sys/class/gpio/gpio93/**

The path of GPIO191 node's folder is **/sys/class/gpio/gpio191/**

The path of GPIO9 node's folder is **/sys/class/gpio/gpio9/**

The path of GPIO171 node's folder is **/sys/class/gpio/gpio171/**

The path of GPIO174 node's folder is **/sys/class/gpio/gpio174/**

The path of GPIO175 node's folder is **/sys/class/gpio/gpio175/**

2. How to Read or Set Value of Gpio Port

Read: Read the value directly from the device node's folder, function is as follows, please refer to the attached demo for detail usage.

Public String *gpioReadStateOne*: (String state)

Data read: 0---->The gpio input is high level

1---->The gpio input is low level

Set: Write directly in the value under the device node's folder, function is as follows, please refer to the attached demo for detail usage (Input pin can't be set).

Public boolean *gpioSetStateOne*: (String name, int state)

Value set: 0----> Set the gpio output as high level

1----> Set the gpio output as low level

3. Note

The setting of GPIO port should match with the hardware, be sure not to change the input/output status of GPIO nodes freely. The standard GPIO of device is 4 inputs and 6 outputs, namely, Gpio57, Gpio82, Gpio87 and Gpio92 are input pins, Gpio93, Gpio191, Gpio9, Gpio171, Gpio174 and Gpio175 are output pins.

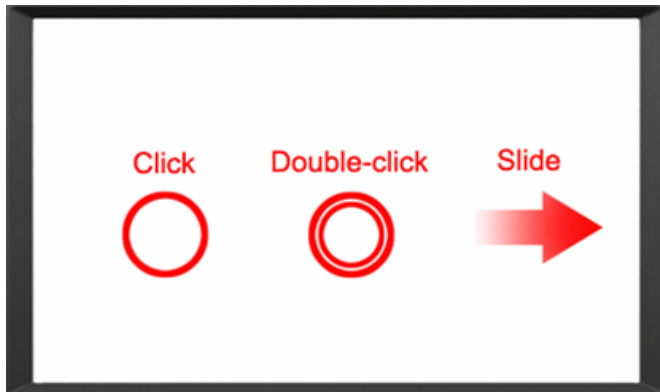
4. Memory Card Instructions

- The memory card and the card slot on the device are precision electronic components. Please align to the position accurately when inserting the memory card into the card slot to avoid of damage. Please slightly push the upper edge of the card to loosen it when removing the memory card, then pull it out.
- It is normal when the memory card getting hot after long time working.
- The data stored on the memory card may be damaged if the card is not used correctly, even the power is cut off or the card is pulled out when reading data.
- Please store the memory card in packing box or bag if not used for a long time.
- Do NOT insert the memory card by force to avoid of damage.

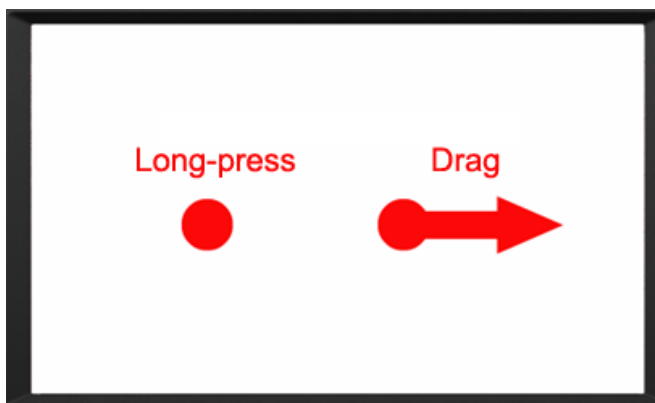
5. Operation Guide

5-1 Basic Operation

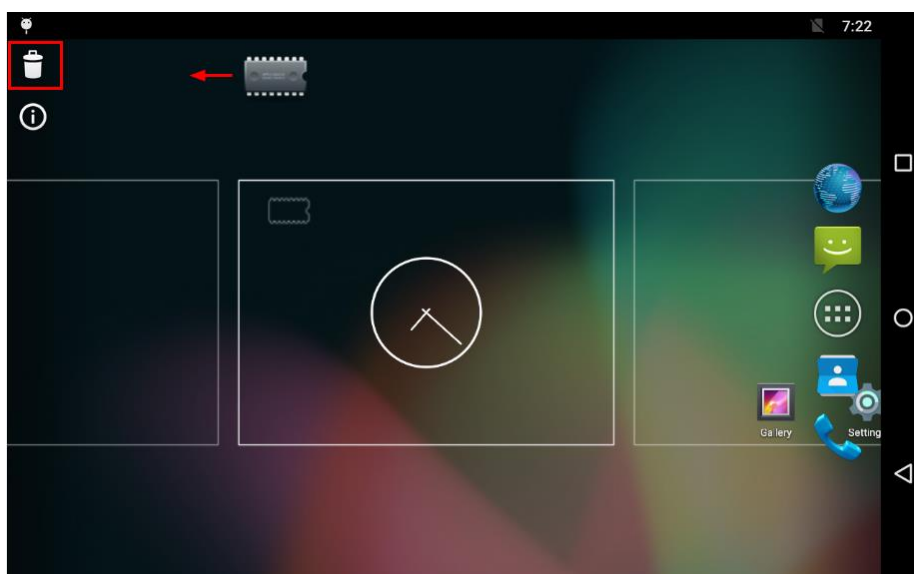
- 5-1-1 Click, Double-click and Slide




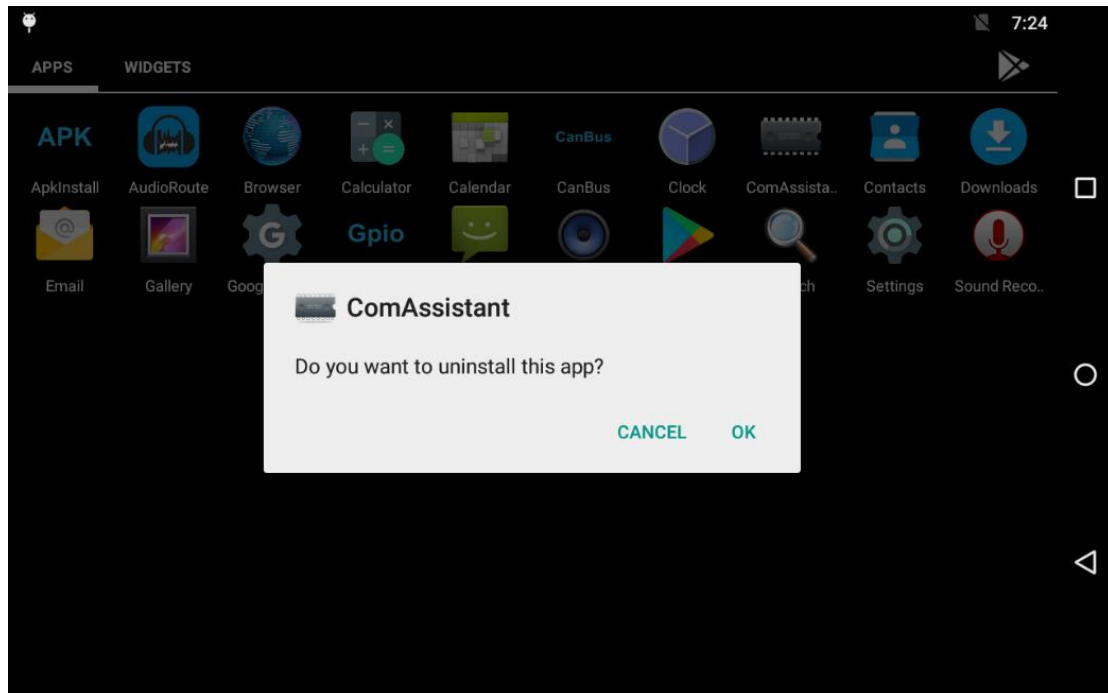
- 5-1-2 Long-press and Drag



- 5-1-3 Delete












Long-press the application icon, and drag it to the recycle bin  on the top left corner of screen, then press OK to uninstall this app.

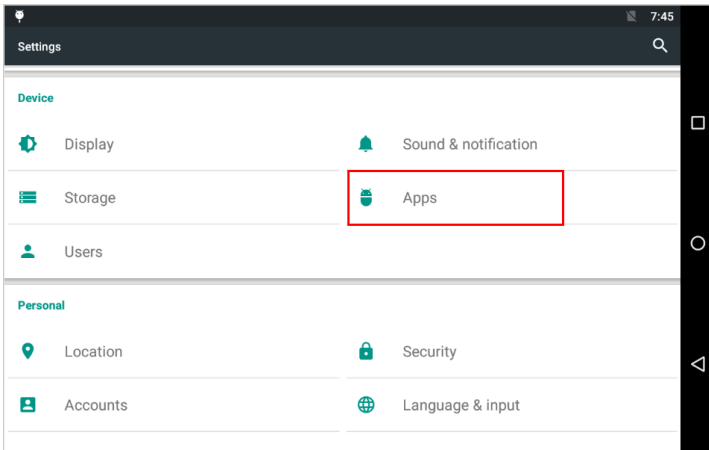


5-2 Icon Bar

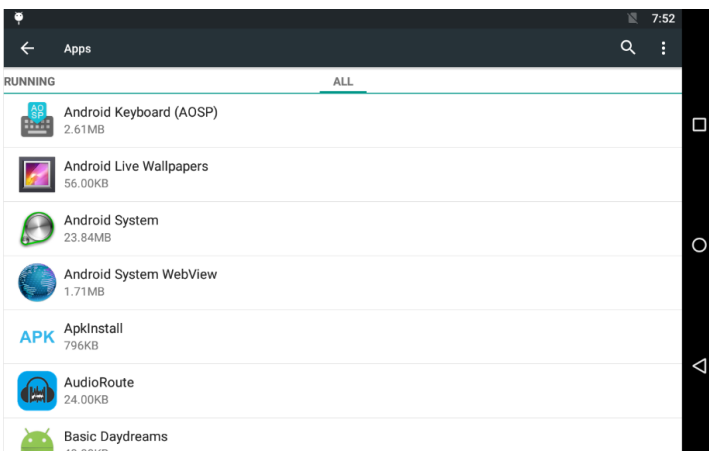
Icon bar shown on the top left corner of screen, as well as the notice bar; Slide the top bar down to launch the notice bar.

Icon	Name	Description
	Wi-Fi	Wi-Fi signal connection and status
	SIM card	No SIM card
	Mobile Network	Network available but not surf the Internet via 2G/3G/4G
		Signal connection and status
	Time	Current time
	WI-F Hotspot	Wi-Fi Hotspot available
	Bluetooth	Bluetooth available
	Location	GPS positioning
	Flight Mode	Flight mode status

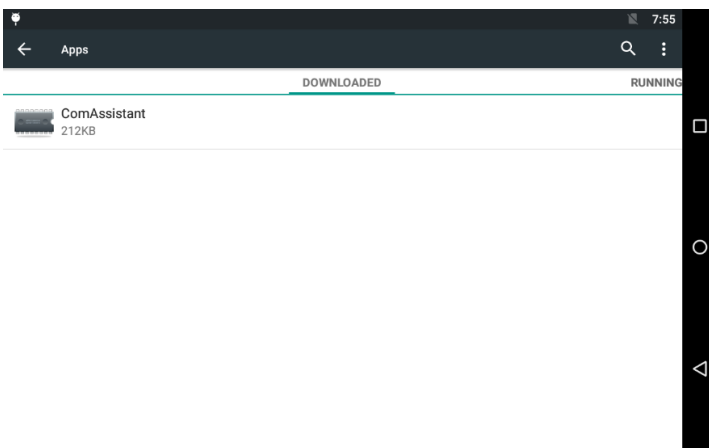
5-3 Menu Setting



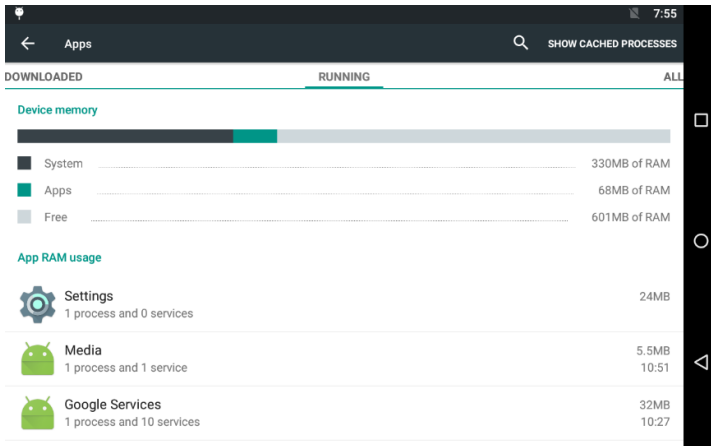
1. Click "Apps" under Settings menu to enter application management.



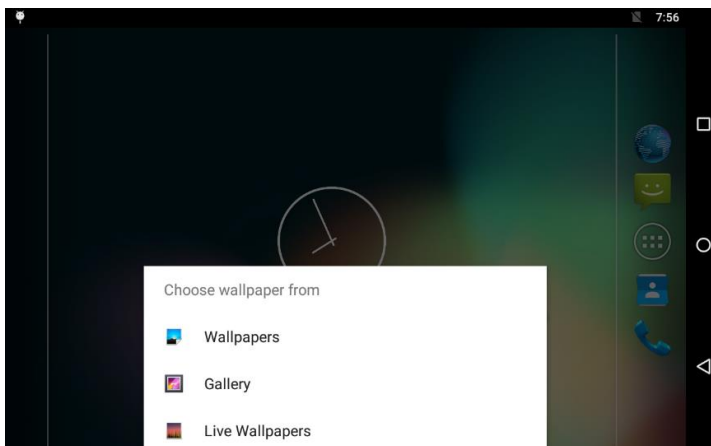
1-1. Right slide to "ALL": to view and manage all applications.



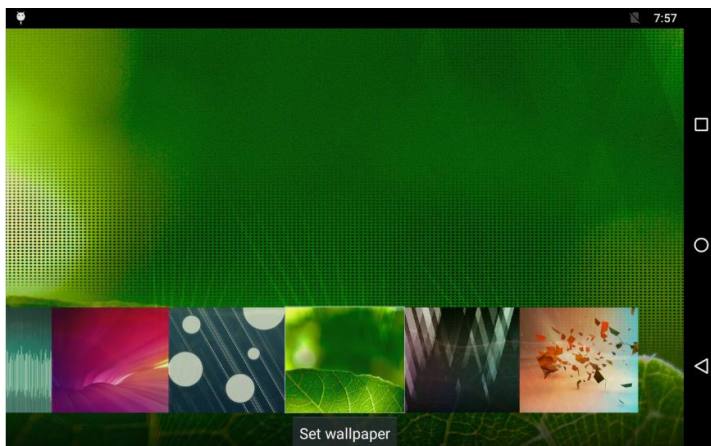
2. Left slide to "DOWNLOADED": to view and manage the downloaded applications.



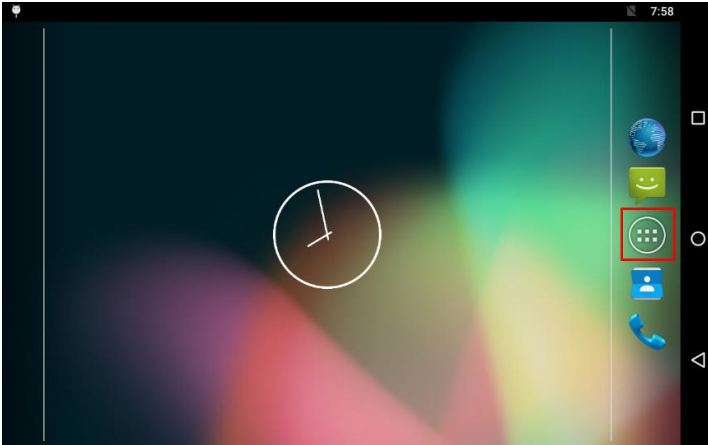
2-1. Right slide to “RUNNING”: to view and manage the running applications.



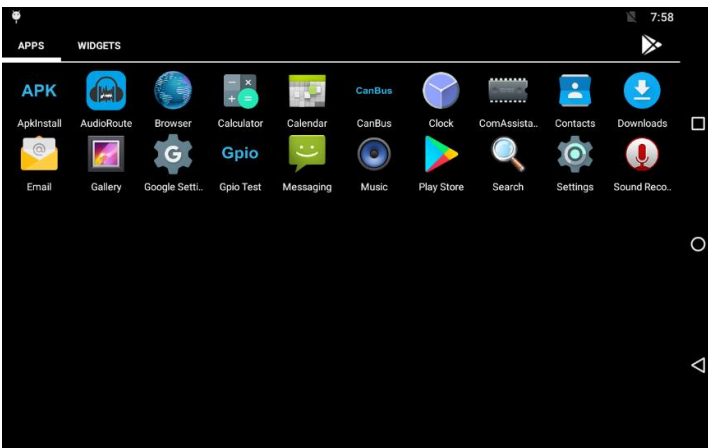
3. Long-press on the desktop to pop-up "Wallpapers", click to enter.



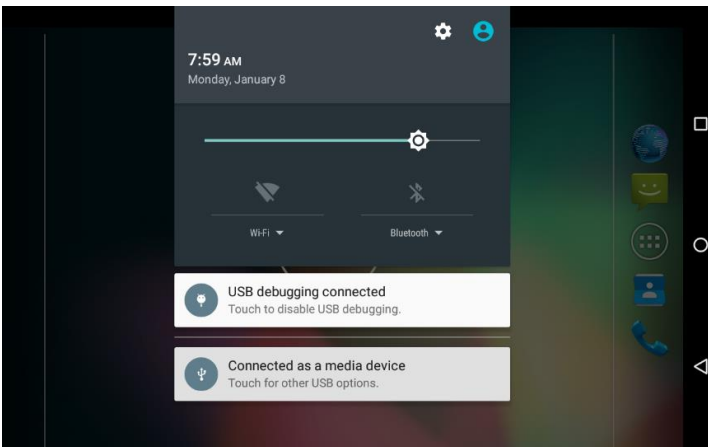
3-1. Choose favorite wallpaper



4. Click icon  to enter Apps list.

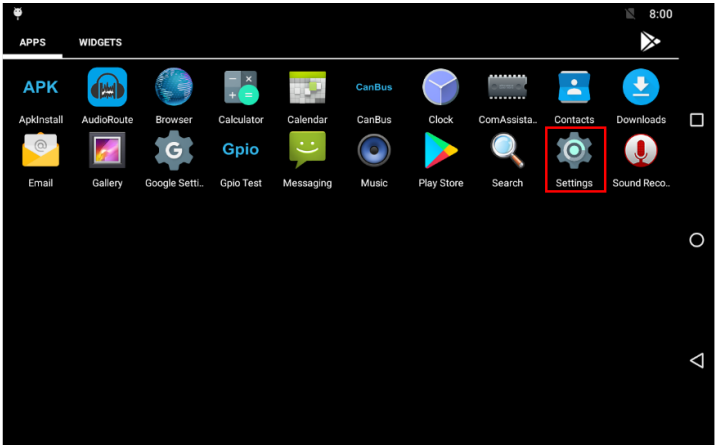


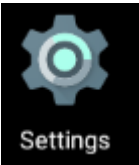
4-1. Apps will be displayed in the apps list after installed. Click corresponding icon to enter.

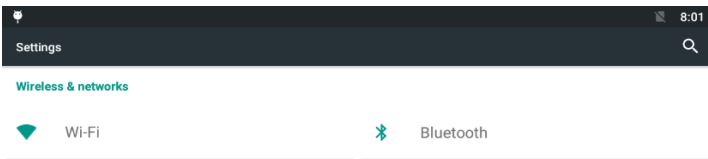


5. Drop down from the top of the screen to enter notification bar.

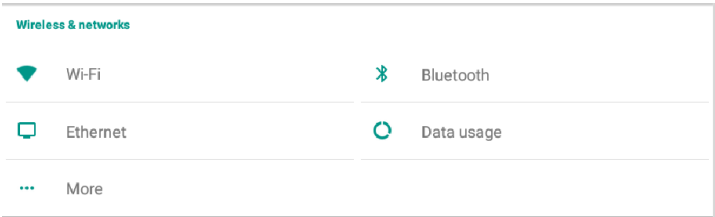
5-1. The notification bar shows system, running and error notice.



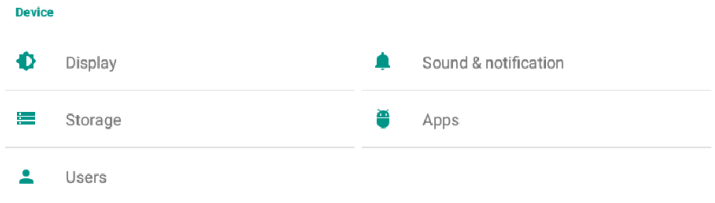
6. Click  to launch setting in the apps list.



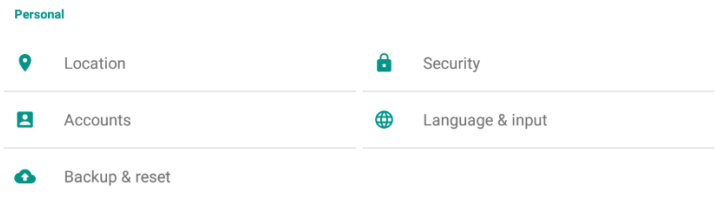
6-1. Setting according to users' needs. Click search icon to search function options on the upper right corner of screen.



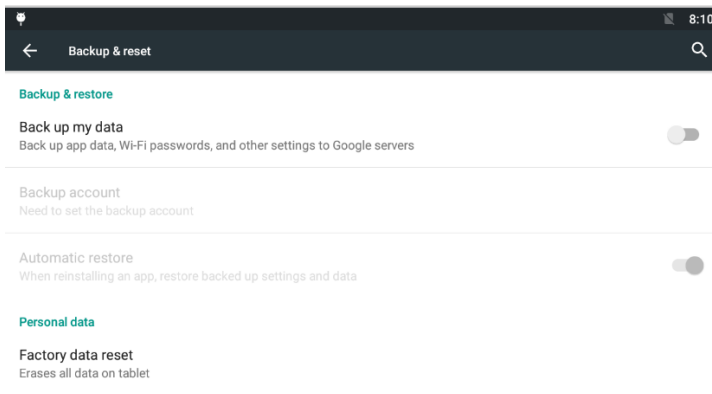
6-1-1. To set Wi-Fi, Bluetooth, Ethernet and other functions in "Wireless & networks" category.



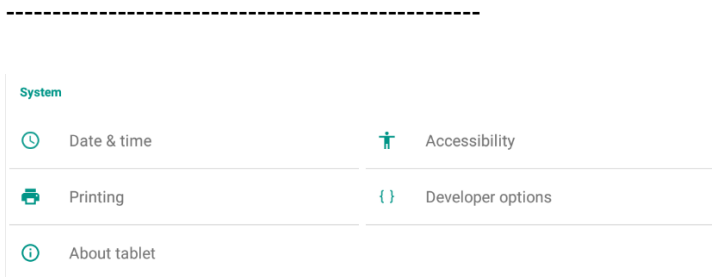
6-1-2. To view and set brightness, sleep time, font, rotation, sound¬ification, TF card, USB flash disk and other functions in "Device" option.



6-1-3. To manage location, screen lock, password, account, language, input and other functions in "Personal" category.

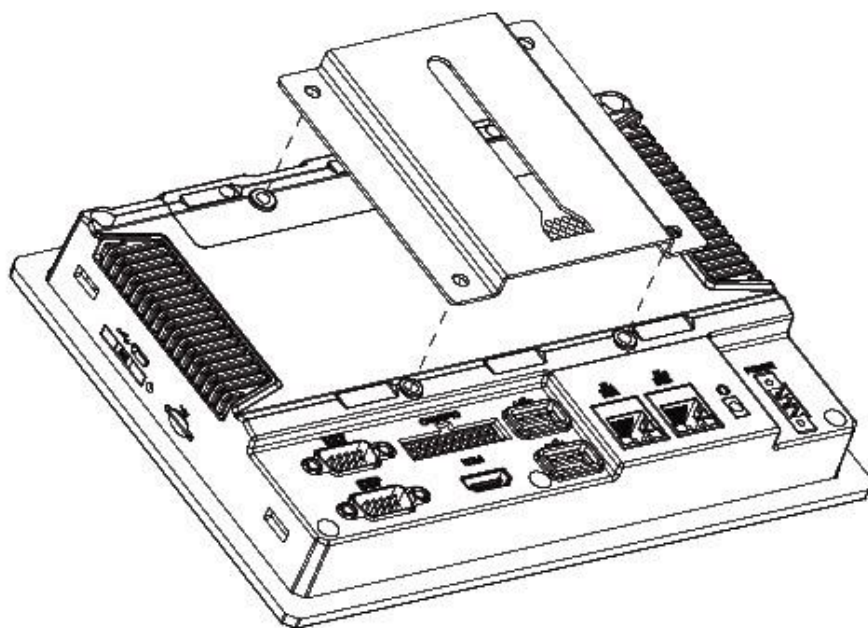


6-1-4. When unrecovered problems occurred, try to click "Backup & reset" and "Factory data reset", then follow the instructions. Device will delete settings and applications after restart, and restore to factory defaults. (Please backup all important files before reset. Otherwise files will be deleted automatically and restore to factory defaults.)

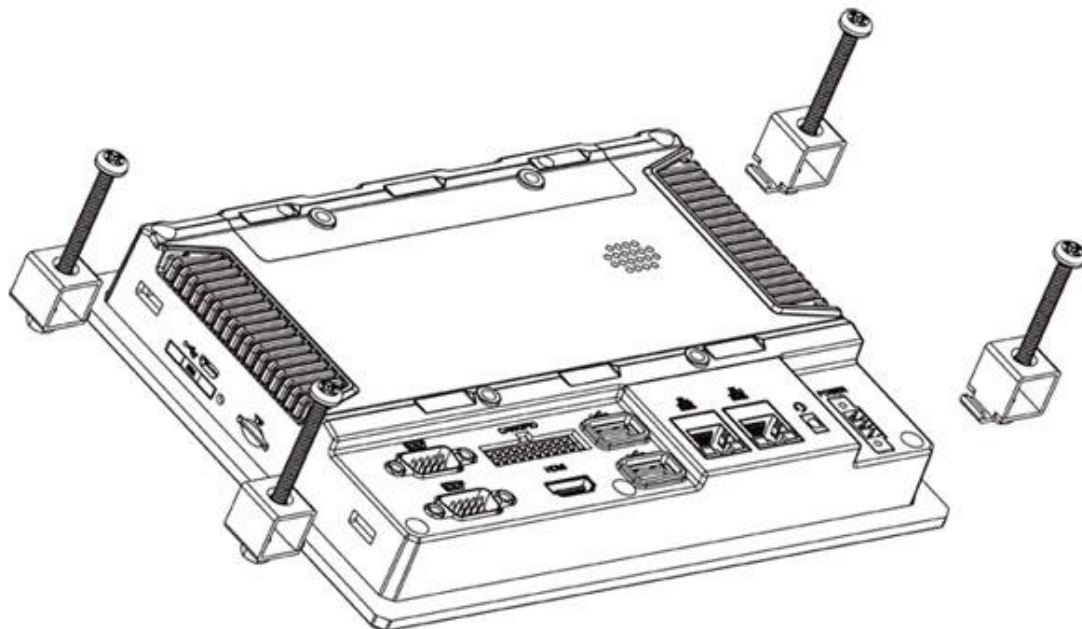


7. To set date & time and accessibility in "System" category. To view system version, SIM card status and other information in "About tablet".

6. Mounting Methods



VESA 75mm rail slot



Embedded mount

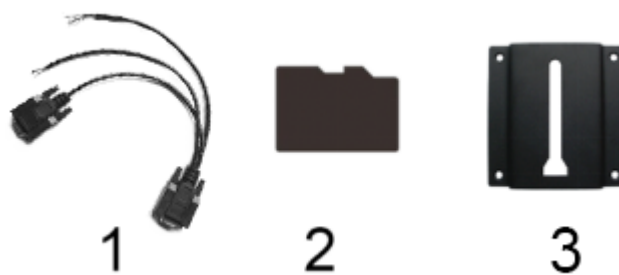
7. Accessories

Standard accessories:



1. DC 12V adapter	1 piece
2. CAN/GPIO cable	1 piece
3. DB9 cable(RS232x3)	1 piece
4. Mini USB cable	1 piece
5. CD drive	1 piece
6. Fixed screw	4 pieces
7. User Manual	1 copy

Optional accessories:



1. DB9 cable (RS232x1, RS485, RS422)	1 piece
2. Micro SD card	1 piece
3. 75mm VESA rail slot	1 piece

8. Trouble Shootings

.Power Problem

Cannot boot up

1. Wrong cable connection
 - a) Connect Extended cable with device first, and connect the AC end of DC adapter with DC input port of Extended cable, then the other end of DC adapter connect with power plug socket.
- 2.Bad connection
 - a) Check every connection and socket of power source.

.Screen Problem

1. No picture on screen.
2. The application reaction time is too long and cannot be activated when clicked.
3. The image appears delay or still when switching.

Please restart your system if the device has any problem as described above.

4. Incorrect responding to the touch click on screen
 - a) Please calibrate the touch screen.
5. Display screen is misty
 - a) Please check whether the display screen surface has dust filth or not. Please simply wipe with clean and soft cloth.

Note: Due to constant effort to improve products and product features, specifications may change without notice.