

F4932 Industrial Computer User Manual	Document Version	Page
	V2.0.0	
	Product Name: F4932	Total: 27

# F4932 Industrial Personal Computer User Manual

this user manual is suitable for the following model:

Model	Product Type
F4932	Industrial Computer



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## Files Revised Record




Date	Version	Remark	Author
2017.7.12	V1.0.0	Initial Version	Harven
2017.9.23	V2.0.0	Change of company address	Faine

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## Product appearance



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# Chapter 1 Brief Introduction

## 1.1 General

IPC (Industrial Personal Computer, IPC), also called Industrial Control Computer. It is a general term for equipment that use the bus structure to detect and control the production process, electromechanical and process equipment. IPC has the important computer attributes and features, such as computer CPU, hard disk, memory, peripherals and interfaces, also has an operating system, control network and protocol, computing ability and friendly human-machine interface. Industrial products and technologies of the industrial control industry are very special, they belong to the intermediate products, which provide the reliable, embedded and intelligent industrial computer for other industries.

F4932 use ARM-based processor, combined with the Android operation system, brings a brand-new solution to the device manufacturers which require video and image processing. F4932 integrates a Freescale's Cortex-A9 architecture processor i.MX6, supports the Android operating system. It brings a lower power consumption and less heat generated solution to the device manufacturers which rely on traditional X86 computing architecture platform, especially to the media advertising playback device manufactures.

F4932 is an ARM IPC with 3G/4G data transferring function, supports 3G/4G dial-up internet access. It supports firewall, VPN, QoS, port mapping, DDNS, system log storage, remote management function, and allow customers to do secondary open development. It supports BS architecture media publishing system graphics processing, 2D/3D accelerator OpenVG 1.1 for 2D, OpenGL ES 2.0 for 3D video encoding and decoding, H.264 HP, MPEG4 ASP, MPEG2 MP image processing BMP, JPG, PNG, GIF. It has a temperature sensor to measure the IPC internal working temperature and provides API. The IPC supports USB infrared touchscreen, USB camera, USB mouse, HDMI, 1 Ethernet port, supports 3G/4G network, supports WIFI, 4 USB, 3 channels RS232/RS485, supports Solid state drive, support for Micro SD external expansion interface, support for OTG interface.

F4932 supports DC 5-36V wide-voltage inputs and wide temperature characteristics. It designed for industrial applications, offers variety APIs, allows device manufacturers to read hardware information to achieve further development.

## 1.2 Features and Benefits

### Design for Industrial Application

- High-performance industrial component
- Freescale Cortex™-A9 i.MX6 processor
- Professional power supply design, with undervoltage, overvoltage, overcurrent, Reverse polarity, short circuit, surge protection function
- Wide power range: DC 5~36V
- Wide temperature range:(-35℃~75℃)
- 4-core S-terminal power connector, stable and does not fall off
- Metal casing, good heat dissipation, impact resistance
- Fanless design
- TF, SIM card with the anti-theft design
- Built-in Android, LINUX (optional) Operating System

### Stability and Reliability

- WDT protection, ensure system stability
- Auto recovery mechanism, including online detect, auto redial when offline to make sure device always online
- SSD storage (optional), High-speed data read and write to ensure security and stability
- Ethernet port: 1.5KV magnetic isolation
- RS232/RS485/RS422 port with 15KV ESD protection
- SIM/UIM port with 15KV ESD protection
- Antenna port with lightning protection(optional)

### Standard and Convenience

- Entering work state automatically when powered
- Support 10/100/1000 Mbps Ethernet
- Provide multiple standard USB2.0 interfaces
- Provide multiple RS232 / RS485 interface DB9
- Provide audio input/output interface

### Powerful functions

- Support 1080P video codec and 3D acceleration
- Local storage support SSD (optional), TF card (optional)
- Android open environment, can be self-develop and install applications



- Support HDMI, LVDS (optional), can connect to an external display device such as a touchscreen
- Support 802.11 b / g / n WIFI network, and provide a variety type of encryption, support Client/AP
- Provide rich external interfaces to meet customer application requirements
- Supports 3g / 4g dial-up Internet access
- Support APN/dial VPDN private network
- Support intelligent online and offline reconnection, abnormal recovery functions
- Support PPTP, L2TP, IPSEC, GRE, OPEN VPN and other VPN functions
- Provide PWR, NET, WIFI LED light indicators, more convenient for use and maintenance
- Support NTP, built-in RTC, support scheduled restart and powered on or off functions
- Support equipment management platform for remote status monitoring, configuration, updates and other functions
- Support multiple LAN/ WAN access methods, including static IP, DHCP,3G/4G
- Support dual link backup between 3G/4G and LAN/WAN (optional)

## 1.3 Product Specification

### Cellular Specification

Item	Content
Cellular Module	Industrial cellular module (Single SIM, dual SIM or no SIM)
Standard and Band	TDD-LTE/FDD-LTE/EVDO/WCDMA/TD-SCDMA/CDMA1X/GPRS/EDGE Optional single mode, multimode or full Netcom
Bandwidth	FDD LTE(Download speed:100Mbps, upload speed:50Mbps) TDD LTE((Download speed:68Mbps, upload speed:17Mbps) EVDO ((Download speed:3.1Mbps, upload speed:1.8Mbps) WCDMA((Download speed:42Mbps, upload speed:5.76Mbps)
TX power	<24dBm
RX sensitivity	<-109dBm

### WIFI Specification

Item	Content
Standard	IEEE802.11b/g/n, 2.4G
Bandwidth	IEEE802.11b: 11Mbps (max) IEEE802.11g: 54Mbps (max) IEEE802.11n: 150Mbps (max)
Security	Support WEP、WPA、WPA2 such as a variety of encryption

TX power	15dBm (maximum)
RX sensitivity	<-70dBm@54Mbps

### Hardware System

Item	Content
CPU	Freescale Cortex™-A9 i.MX 6
FLASH	8GB eMMC
DDR3	2GB
SSD	128GB (optional, extensible 2TB)
TF	32GB (optional)

### Software System

Item	Content
Operation System	Android 4.4.2
Application	Compatible with Android system rich application software, support BS architecture media publishing system

### Interface

Item	Content
Ethernet interface	A 10/100/1000Mbps ethernet (RJ45 socket), self-adaption MDI/MDIX, built-in 1.5KV electromagnetic isolation protection
Serial	Three RS232/RS485 serial, built-in 15KV ESD protection, serial arguments as follow: Data site: 8 bit (optional 5、6、7 site) Stop site: 1、1.5 (optional)、2 site Check: no check, even parity, odd parity check、SPACE (optional) and MARK check (optional) Serial rate: 2400 ~ 115200bits/s
Lights	Have: "PWR"、"NET"、"WIFI" indicator light
SIM/UIM	Standard drawer type user card interface, support 1.8V/3V SIM/UIM card, built-in 15KV ESD protection
Lights	Have: "PWR"、"NET"、"WIFI" indicator light
SIM/UIM	Standard drawer type user card interface, support 1.8V/3V SIM/UIM card, built-in 15KV ESD protection
USB Interface	Four standard USB2.0 interface, one standard USB2.0 OTG interface
TF interface	Standard spring type TF card interface, support any TF card
Audio interface	One Speak interface, one Mic interface
Display	HDMI: support 1920x1080, 1366x768, 1280x720, 1024x768 etc

Interfaces	
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**Power**

Item	Content
Standard power	DC 12V/1.5A
Power range	DC 5~36V

**Physical Characters**

Item	Content
Shell	Metal case, shock resistant design
Dimensions (mm)	170mm × 150mm × 27mm (not including antenna and other installation parts)
Weight	About 0.7Kg (not including antenna, packaging and other installation parts)

**Other Specifications**

Item	Content
Operating temperature	-35~+75°C
Storage temperature	-40~+85°C
Operating humidity	95%(unfreezing)

## Chapter 2 Installation Introduction

### 2.1 Overview

F4932 must be installed correctly before they achieve the designed features, the device must be installed by the guidance of a qualified engineer who recognized by the Company.

- *Warning:*  
*Please do not install the device while powered on.*

### 2.2 Encasement List

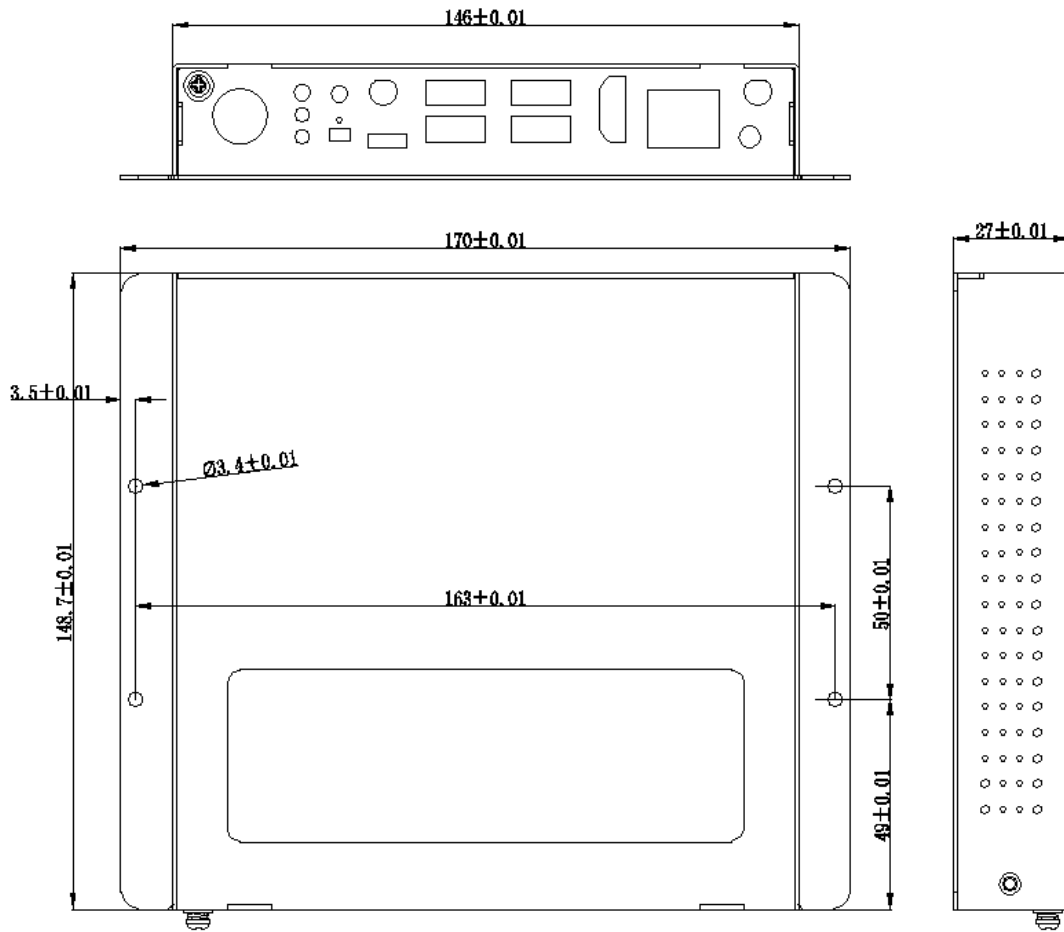
To transport safety, you will need a reasonable packaging. After you unpack the device, please keep the packaging materials for future transport needs.

**It includes the following components:**

- ✧ 1 Host Device (Packaging according to the order)
- ✧ 1 User's guide CD
- ✧ Wireless cellular antenna (SMA male head)
- ✧ 1 WIFI antenna (SMA female head)(Optional)
- ✧ 1 Power cable
- ✧ Product certification
- ✧ Warranty Card

### 2.3 Installation and Cable Connection

**Dimension (unit: mm)**



Note: The screw size for install the industrial computer is M3.

# Chapter 3 Hardware Functions

## 3.1 External Interface

### 3.1.1 Front View.



### 3.1.2 Rear View



## 3.2 The I/O Interface of Front Panel

### 3.2.1 Audio Port(Speak-out & Mic-in)

F4932 MB-F-IPC100 uses SCTL5000XNAA3 audio controller chip. It uses a 4-wire 3.5mm audio interface and supports both audio output (Speak-out) and microphone input interface (MIC-in) at the same time.



### 3.2.2 LED Lights

From the bottom to the top is the system power indicator light PWR, NET indicator light NET, WIFI working indicator light WIFI.



### 3.2.3 Serial (COM2-COM4)

Provide 3 DB9 serial ports



COM2-COM4 Pin definitions:

Pin	Signal Name	Signal Description
1	NC	
2	TXD	Transfer data
3	RXD	Receive data
4	NC	
5	GND	GND
6	RS485-A	Data +
7	RTS	Request toSend
8	CTS	Allowed to send
9	RS485-B	Data -

### 3.2.4 USB Interface

F4932 provides 4 standard USB2.0 interface, 1 OTG interface, support plug and play.



USB Pin definitions:

Pin	Signal Name
1.5	5V
2.6	D-
3.7	D+
4.8	GND

### 3.2.5 Ethernet Interface (LAN)

F4932 provides

提供 1 \* 10/100 / 1000Mbps Fast Ethernet ports, LAN / WAN, the yellow LED light LILED and the green LED light ACTLED is the light on both sides of the Ethernet interface to indicate the LAN activation status.



RJ45 LAN LED status description:

ACTION LED (Yellow)	Function	LINK LED (Green)	Function
On	Transferring data	Flash	Effective connection
Off	No transferring	Off	Invalid or no connection

### 3.2.6 Display Interface (HDMI)

F4932 provide 1 high-definition HDMI display interface, 1 dual-channel LVDS Interface (optional).





### 3.2.7 Power Interface

DC-input, 5-36 VDC, the power interface is a 4-pin S-terminal interface. When the power is connected, the machine will power on automatically, and it can be set whether the power is self-starting or not.



## 3.3 Internal interface specifications

**Please read this manual carefully before connect to an external connector, in order to avoid any damage to the motherboard!!!**

### 3.3.1 SSD Interface (mSATA、J29)

F4932 provides a mSATA (mini PCI-e) interface

#### m SATA interface definition:

Pin	Signal Name
4.9.15.18.21.26.34.35.37.40.43.50	GND
23	RX+
25	RX-
27.29	GND
31	TX-
33	TX+
2.24.39.41.52	VCC3V3
1.3.5.6.7.8.10.11.12.13.14.16.17.	NC

19.20.28.30.32.36.38.42.45.46 .47.48.49.50.51	
44	LED

### 3.3.2 Display Interface (LVDS、J6)

LCD socket interface pin definitions:

Signal Name	Pin	Pin	Signal Name
VCC3V3/5V/12V	1	2	VCC3V3/5V/12V
VCC3V3/5V/12V	3	4	GND
GND	5	6	GND
LVDS0_TX0_0M	7	8	LVDS0_TX0_0P
LVDS0_TX1_1M	9	10	LVDS0_TX1_1P
LVDS0_TX2_2M	11	12	LVDS0_TX2_2P
GND	13	14	GND
LVDS0_CLKN	15	16	LVDS0_CLKP
LVDS0_TX3_3M	17	18	LVDS0_TX3_3P
LVDS1_TX0_0M	19	20	LVDS1_TX0_0P
LVDS1_TX1_1M	21	22	LVDS1_TX1_1P
LVDS1_TX2_2M	23	24	LVDS1_TX2_2P
GND	25	26	GND
LVDS1_CLKN	27	28	LVDS1_CLKP
LVDS1_TX3_3M	29	30	LVDS1_TX3_3P
	31	32	
	33	34	
	35	36	

### 3.3.3 Micro SD Card Slot

F4932 supports external Micro SD card slot, maximum 32G.



### 3.3.4 SIM Card Slot

F4932 provides a SIM Card slot, supports 3G/4G.



## Chapter 4 Software Functions

### 4.1 Android System

#### 4.1.1 Display Interface

Support LVDS and HDMI single output

Support LVDS and HDMI duplicate output

The LVDS interface driver can be customized by the actual needs of customers

#### 4.1.2 USB

4\*USB interface, Support USB disk, USB mouse/keyboard, USB camera, USB touch screen etc..

USB disk auto mount directory: /mnt/media\_rw/udisk/, can be read/write on PC directly by the OTG cable.

#### 4.1.3 COM

COM device node: /dev/ttymx1~/dev/ttymx6(COM2~COM4)

#### 4.1.4 TF Card

TF card auto mount directory: /mnt/media\_rw/extsd/, can be read/write on PC directly by the OTG cable.

#### 4.1.5 Hard Disk

Hard disk automount directory: /mnt/media\_rw/sata, can be read/write on PC directly by the OTG cable.

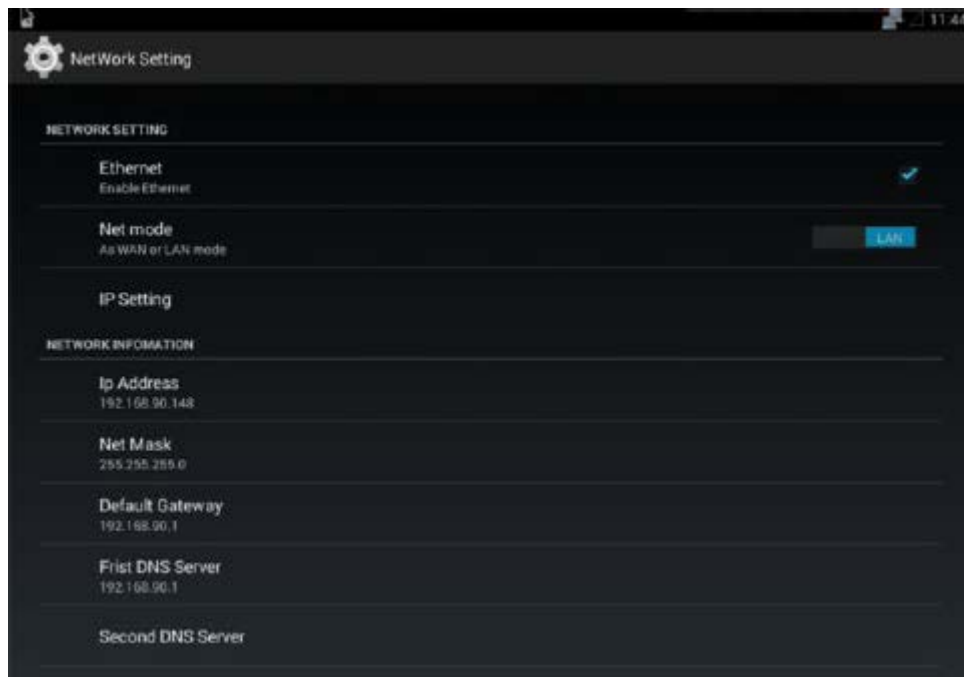
## 4.1.6 WIFI

Support SDIO interface module and USB interface module;

Customer can select which WIFI interface module (used SDIO as default)

## 4.1.7 Ethernet

Support 10/100/1000Mbps Ethernet. Can be configured from the Android System's "Setting"->"Ethernet" as the following screenshot.



## 4.1.8 Network Auto Switch

Support Network auto switch.

Priority:Ethernet->WIFI->3G/4G

## 4.1.9 USB Camera

USB Camera support YUV、 MJPG data format.

## 4.1.10 Audio

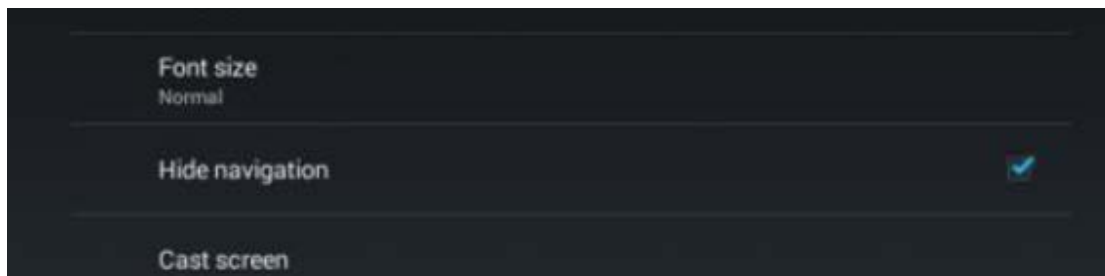
Support local and HDMI dual channel audio. Local audio supports an independent headphone and MIC, the built-in amplifier can be connected to a speaker directly.

## 4.1.11 Hide Navigation and Notification Bar

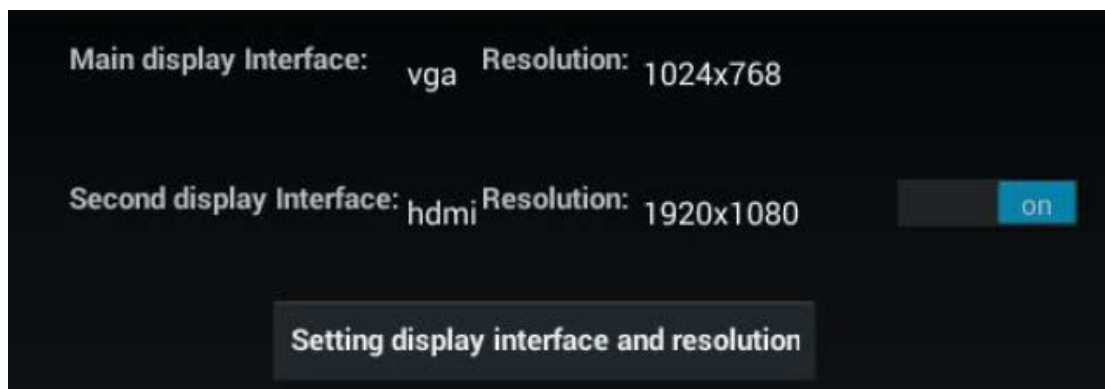
At “setting”->”display” set Hide navigation on or off as the following screenshot:

## 4.1.12 Display Interface Setting

At “setting”->”display”, change the interface and resolution setting as the following

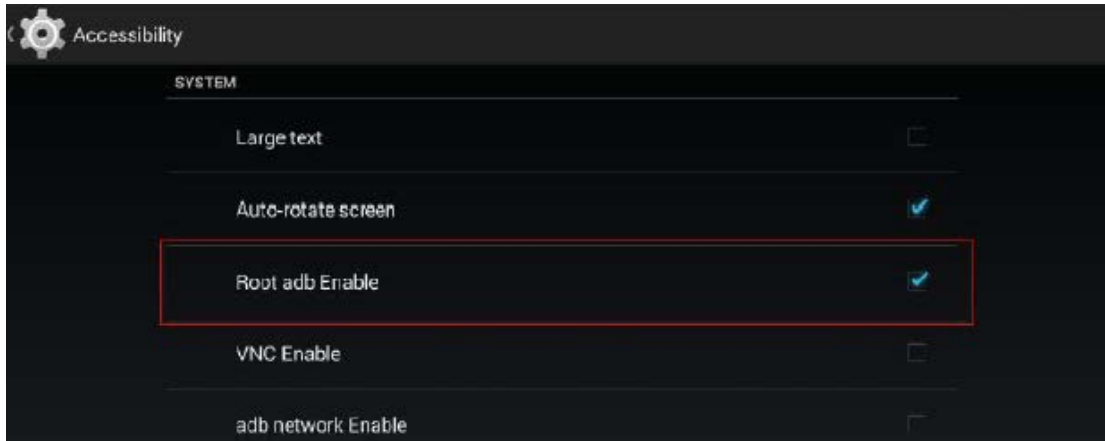


screenshot:



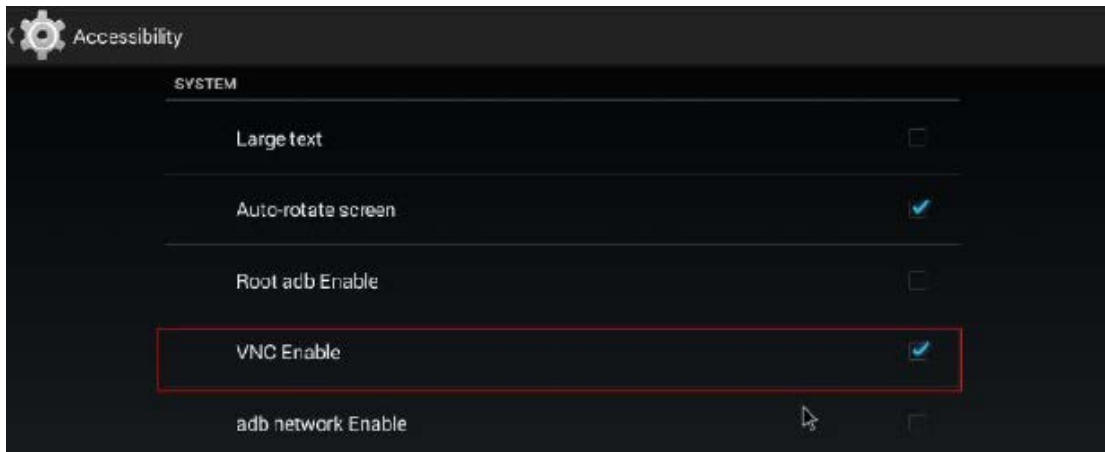
## 4.1.13 Accessibility

At “Setting” ->”Accessibility”->”Root adb Enable” as the following screenshot:



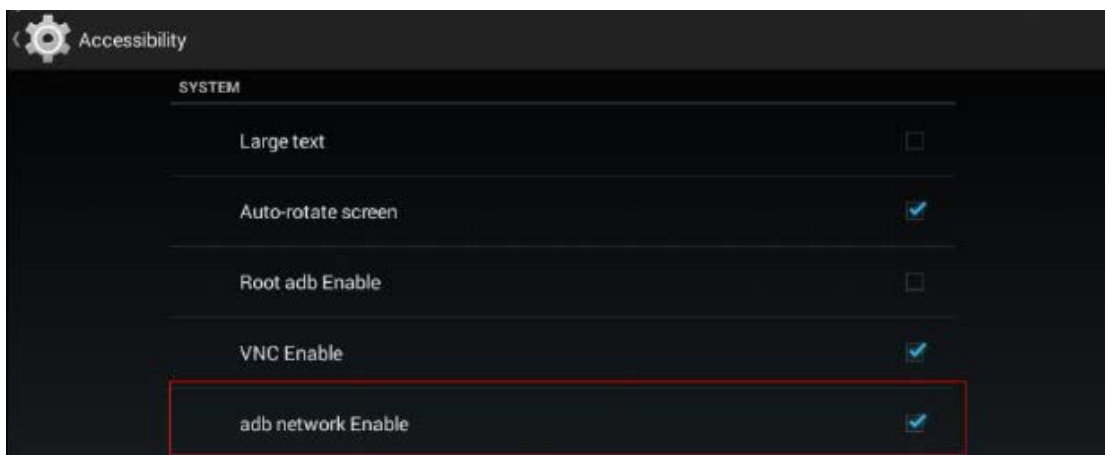
Cancel Root adb Enable will take effect after reboot.

At "Setting" ->"Accessibility"->"VNC Enable". as the following screenshot:



Can be remote control by VNC-Viewer software.

At "Setting" ->"Accessibility"->" adb network Enable", as the following screenshot:



Adb network Enable will take effect after reboot.

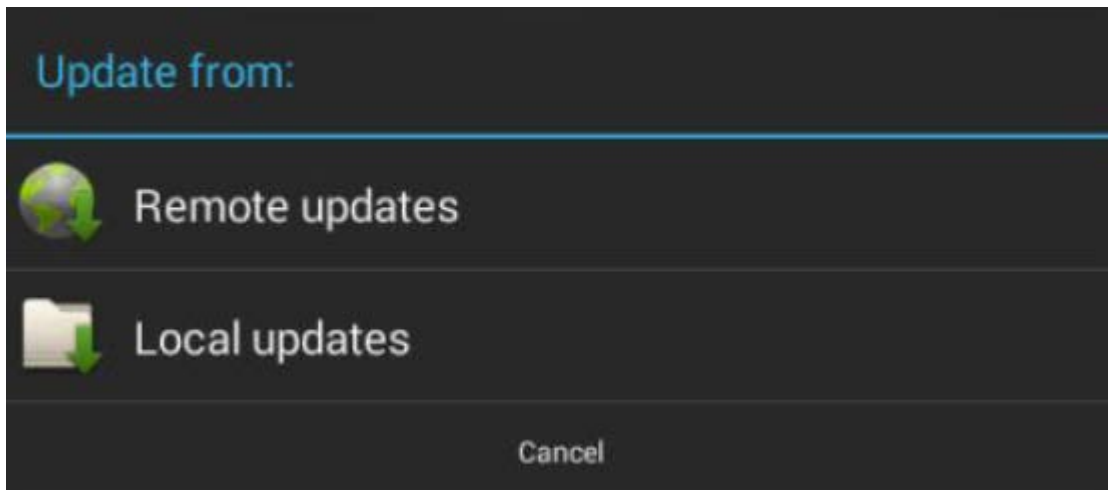
You can do adb test on the Windows cmd.

```
C:\Users\Administrator>adb connect 192.168.9.134
already connected to 192.168.9.134:5555

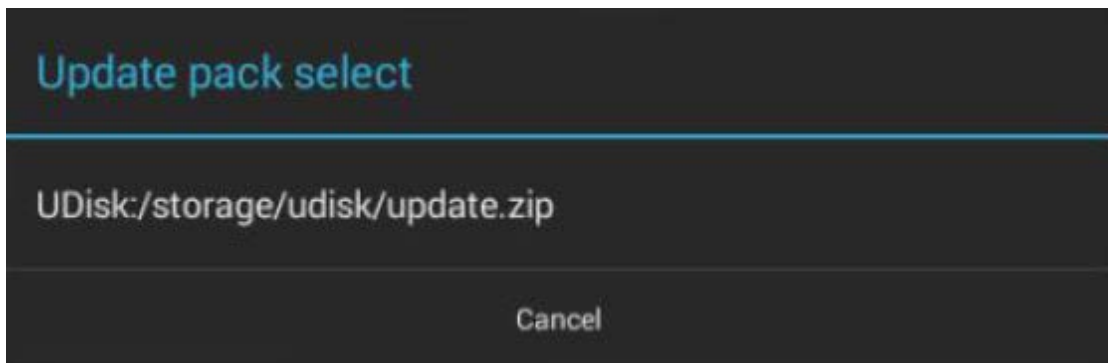
C:\Users\Administrator>adb devices
List of devices attached
192.168.9.134:5555    device
```

### 4.1.14. System Update

At “Setting”->”About tablet”->”System update”->Local updates.



Select the update file to finish the system update.





# Appendix I General Questions