USER MANUAL
A370

Nanjing Corewise Smart Technology Inc.

Support

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Profile Picture

Pictorial Illustrations

Volume+/-   Reset   Power

Earphone   USB   DC

SD Card

RFID   Touch Screen   Camera   Fingerprint Sensor

Indicator Light
(a) (b) (c) (d)
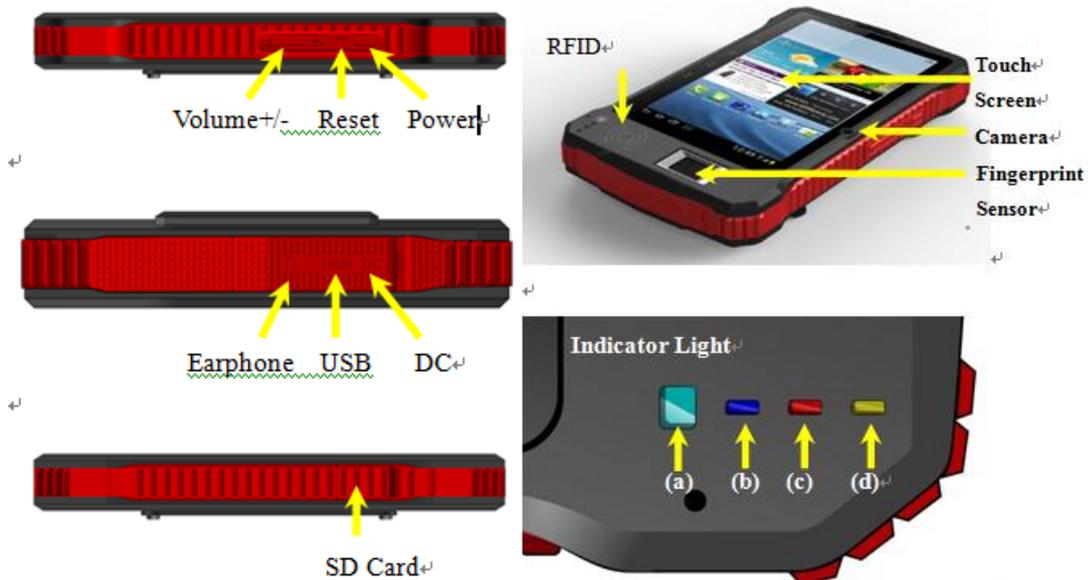
Indicator Light is used to show the device in a certain status, from left to right:

(a) Charging Indicator: red in charging and green for charge saturation;

(b) Power Indicator: blue for power-on status;

(c) Fingerprint Indicator: blue indicator blinks for fingerprint processing;

(d) ID Card Indicator: blue indicator blinks for RFID card processing.

Technical Specifications

Dimensions	220 x 132 x 23(mm) (8.7" x 5.2" x 0.9")
Weight	0.5Kg (1.1lbs) with battery
3G	GSM/GPRS/EDGE 850/900/1800/1900Mhz WCDMA 2100Mhz
CPU	Qualcomm MSM 8225 Dual Core 1.2GHz
Internal Memory	1GB RAM, 4GB ROM
External Storage	T-Flash/Micro SD card, up to 32 GB
Operating System	Google Android 4.0.4
Display	TFT LCD 7 inch, sunlight readable, capacitive touch screen with resolution: 1024 x 600
Camera	Front 1.3M, rear 5.0M, LED, auto focus
Network Interface	Integrated WLAN 802.11 b/g, integrated Bluetooth 2.1 EDR
GPS	Supported, 10m
USB	Mini USB 10-pin, OTG supported
UART & RS232	Supported
Battery	DC 3.7V, 8000mAh
Features	
Waterproof/Dustproof	IP65
Shockproof	1.0M falling
	Build-in fingerprint sensor, capacitive touch screen, 508 DPI
	HF RFID 13.56Mhz, ISO/IEC 14443 A, ISO/IEC 14443 B, ISO 15693
	UHF RFID 915Mhz, ISO18000-6C, 0~6m
	1D Bar Codes Supported: UPC/EAN, Bookland EAN, UCC Coupon Code, ISSN EAN Code 128, GS1-128, ISBT 128, Code 39, Trioptic Code 39, Code 32, Code 93, Code 11,Interleaved 2of5, Discrete 2of5, Codabar ,MSI, Chinese 2of5, Matrix 2of5, Inverse 1D ,Korean 3of5, GS1 DataBar, Composite Codes
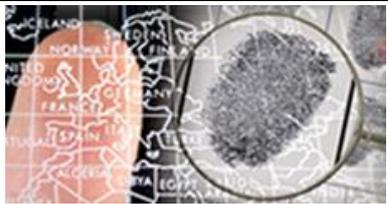
	2D Bar Codes Supported: PDF417, MicroPDF417, Data Matrix, Data Matrix Inverse, Maxicode, QR Code, Micro QR, QR Inverse, Aztec, Aztec Inverse, US Postnet, US Planet, US Postal, Japan Postal, Australian Postal, Netherlands KIX Code, USPS 4CB/One Code/Intelligent Mail, UPU FICS Postal

Ruggedness

Operating Temperature	-20°C (-4°F) to +70°C (158°F), <0.5°C / min; 24 hr cycle x 3 cycles	MIL-STD-810G, Methods 501.5, 502.5
Storage Temperature	-40°C (-40°F) to 70°C(158°F), <0.5°C / min; 24 hr cycle x 7 cycles	MIL-STD-810G, Methods 501.5, 502.5
Relative Humidity	90% @ 40°C (104°F), 3 x 24 hr cycles	MIL-STD-810G, Method 507.5
Dust Protection	IP6x (dust)	IEC 60529 /AC2:2007
Water Protection	IPx5 (water)	IEC 60529 /AC2:2007
Vibration	Fig 514.6E-1 & 514.6E-2.	MIL-STD-810G-514.6, Procedure I Cat. 24,
Drop Test	120CM(47") drop, 2» plywood over concrete, each edge, face and corner; 26 drops total (@ ambient temp)	MIL-STD-810G, Method 516.6,Procedure IV
Regulatory	CE, CCC, SONCAP, PC, ROHS, ISO9000	
IP65 Testing		

Structure
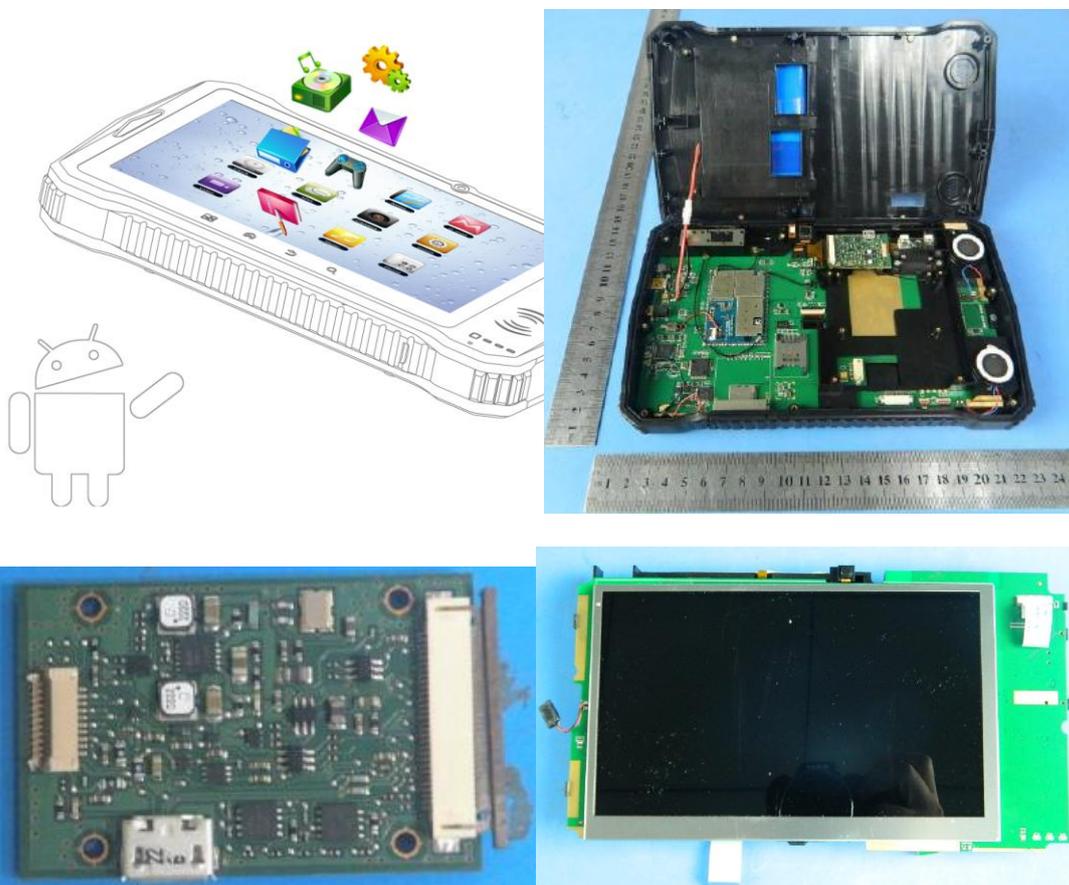
Fingerprint Sensor

	TCS2SS	TCS1ST
Picture		
Vendor	AuthenTec Inc. (On 27 July 2012, AuthenTec was acquired by Apple Inc.	AuthenTec Inc. (On 27 July 2012, AuthenTec was acquired by Apple Inc.
Size	10.4*14.4mm array (imaging area)	12.8*18.0mm array (imaging area)
Type	Capacitive touch chip	Capacitive touch chip
DPI	208*288pixel array, 508DPI, 8bits per pixel	256*360pixel array, 508DPI, 8bits per pixel
Lifetime	4M finger placements	4M finger placements
Imaging Mode	<=20mA @ 5.0V	<=20mA @ 5.0V
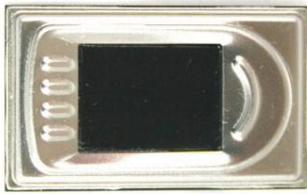
Standard IM Supply	4.4V to 5.5V	4.4V to 5.5V
EIM Modes Supply	4.5V to 4.6V	4.5V to 4.6V
Operating Temperature	-30 ºC to +85 ºC	-30 ºC to +85 ºC
Storage Temperature	-40 ºC to +85 ºC	-40 ºC to +85 ºC
Compliant	RoHS, FIPS 201	RoHS, FIPS 201
Demo		

Caution: The sensor surface is hard and extremely robust and will withstand years of normal wear-and-tear. However, do not subject the sensor to sharp or hard objects since this might cause permanent damage. Cleaning should be done with a lint-free cotton textile. Do not subject the sensor surface to mechanical force.

RFID (Radio-Frequency Identification)

	High Frequency (HF)	Ultra-High Frequency (UHF)
Picture		
Bands	13.56Mhz(HF)	865-868 MHz (Europe)
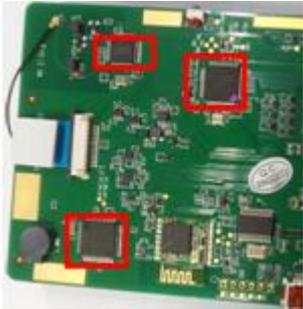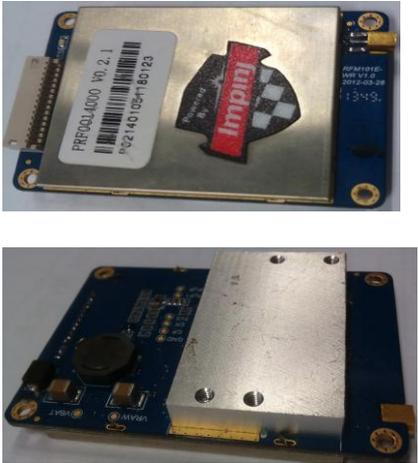
		902-928 MHz (North America)
Range	10cm-1m	1-10m
Standards	ISO/IEC 14443 Type A, ISO/IEC 14443 Type B, ISO/IEC 15693	ISO18000-6C
Vendor	Corewise	Impinj R2000
Demo		

Barcode Scanner

	Option 1	Option 2
Picture		
Module	PL3307	SE4500
Vendor	Chinese Manufacturer	Symbol (acquired by Motorola in 2005)
1D Barcode	UPC/EAN, Bookland EAN, UCC Coupon Code, ISSN EAN Code 128, GS1-128, ISBT 128, Code 39, Trioptic Code 39, Code 32, Code 93, Code 11,Interleaved 2of5, Discrete 2of5, Codabar ,MSI, Chinese 2of5, Matrix 2of5, Inverse 1D ,Korean 3of5, GS1 DataBar, Composite Codes	
2D Barcode	PDF417, MicroPDF417, Data Matrix, Data Matrix Inverse, Maxicode, QR Code, Micro QR, QR Inverse, Aztec, Aztec Inverse, US Postnet, US Planet, US Postal, Japan Postal, Australian Postal, Netherlands KIX Code, USPS 4CB/One Code/Intelligent Mail, UPU FICS Postal	

Rear View (exterior)	
Demo	

Demos

Step 1: Power on the Device

Slightly press the "power on" button for 3 seconds to power on the device

Step 2: Unlock the Screen

Slightly press the lock icon and move to screen right edge to unlock the screen

Step 3: Enter into Main Menu/System Settings
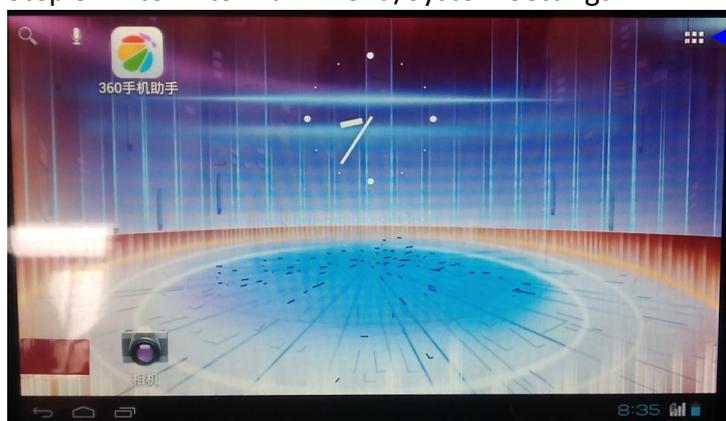
Click this icon to enter into main menu

Or click icon on the left below of the screen

Click this icon to enter into system settings directly

Select "系统设置" to enter into system settings

Step 4: System Language Changing
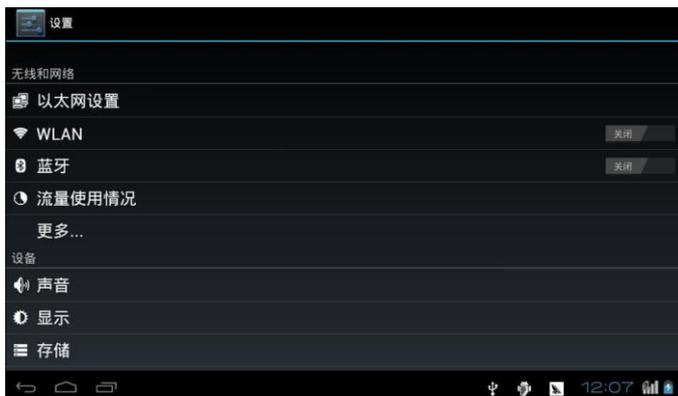
Use your finger tip to scroll down this screen

Select "语言和输入法" to change language
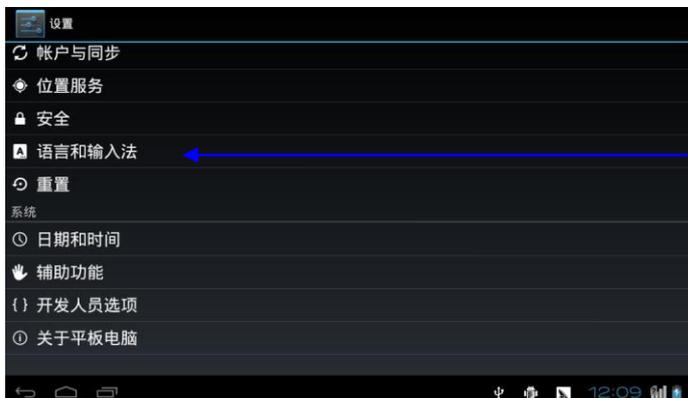
Select "语言和输入法" to change languages

Select "语言" to change languages
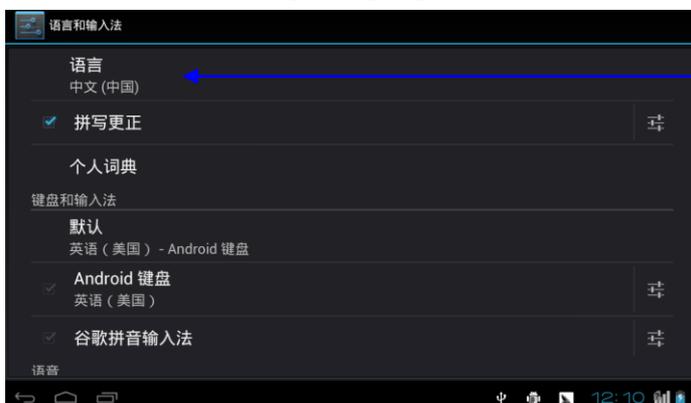
Select "语言" to change languages
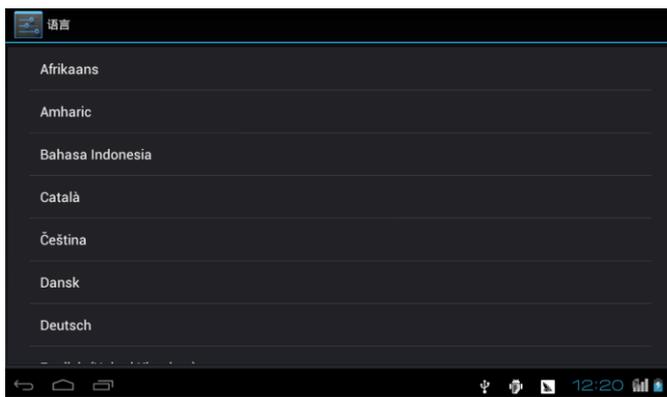
Use your finger tip to scroll down this screen

Select "English (United Kingdom)" for instance
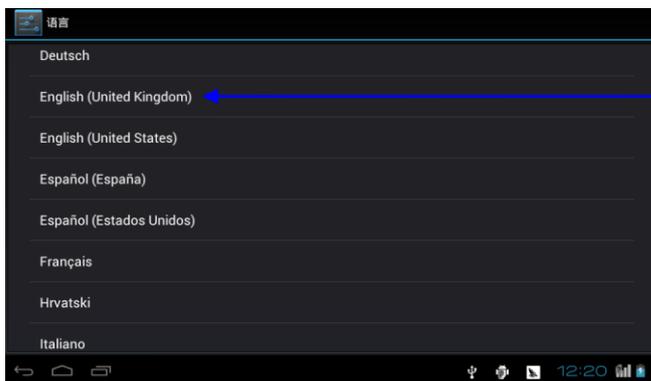
Select "English (United Kingdom" for instance

Step 5: Fingerprint Function Demo
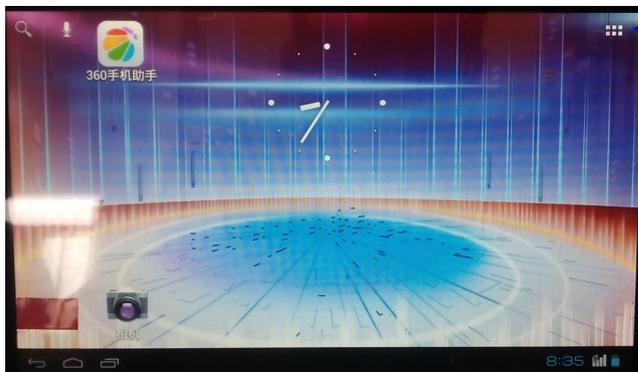
Click this icon to enter into main menu

Select "Authentication" Icon to enter into Demo
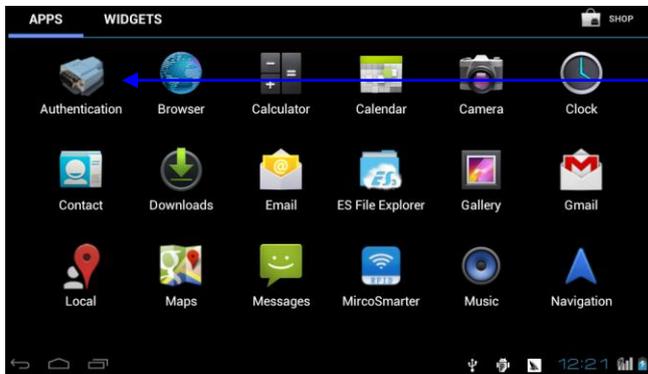
Select "Authentication" Icon to enter into Demo

Baud rate selection
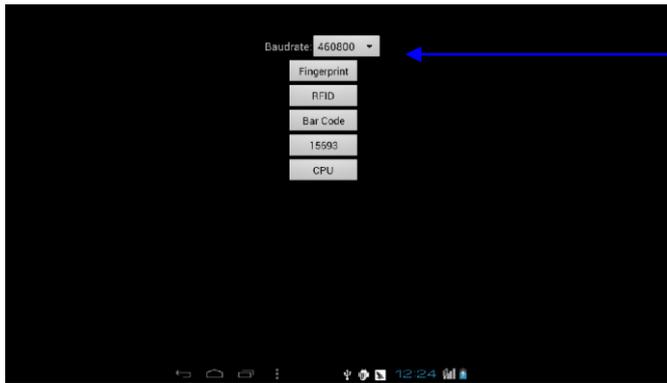
Click dropdown option to define baud rate, normally "460800" for int'l market by default
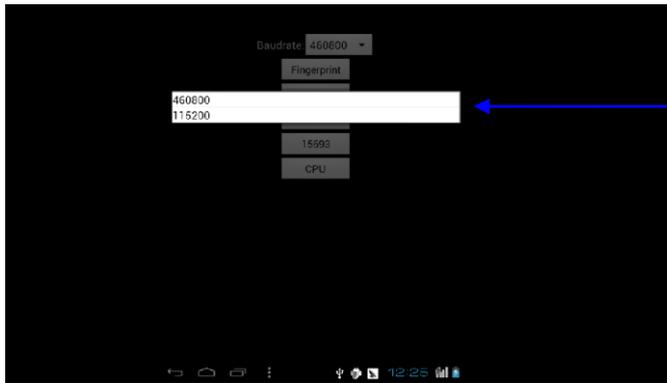
In case "460800" does not work fine, try "115200" for a trial

Then click "Fingerprint" to define fingerprint settings
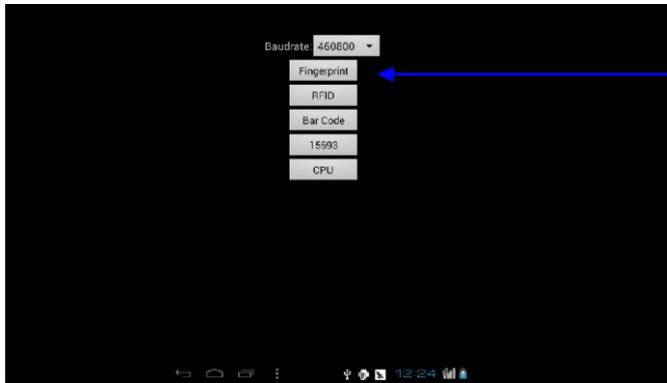
Click "Fingerprint" to define fingerprint settings
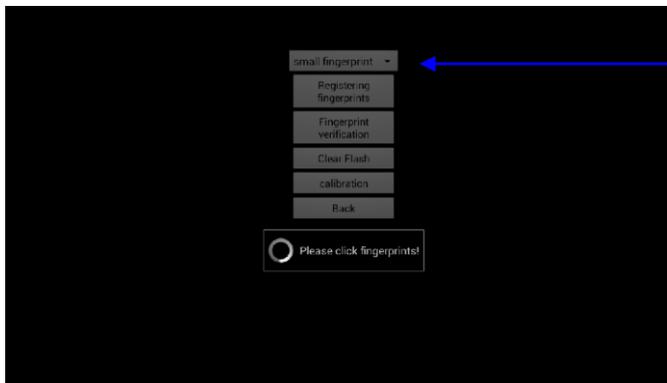
Click pull-down menu to define fingerprint settings
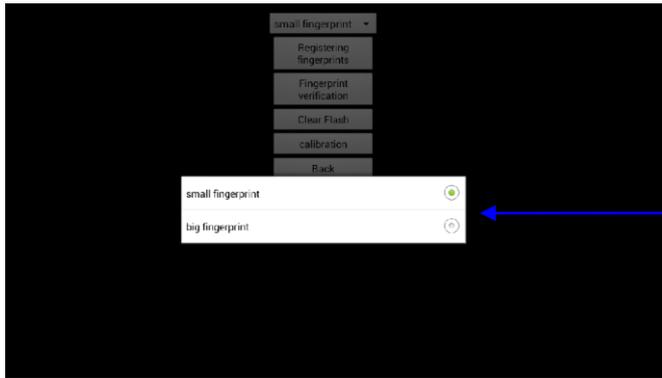
Choose "small fingerprint" or "big fingerprint" depends on sensor area. Please refer to Fingerprint Sensor section for differences

Click "Registering fingerprints" to register a fingerprint image/impression
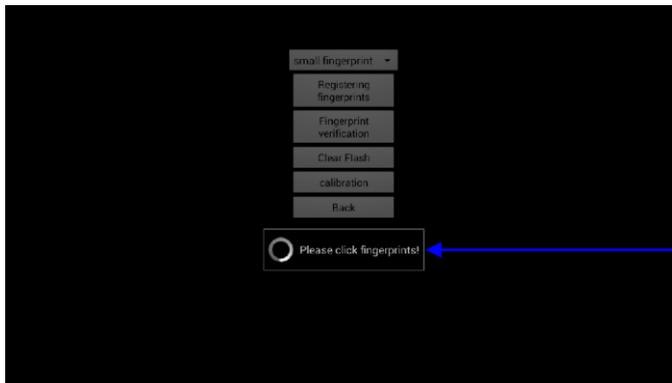
Gently press on the sensor, finger tips better to touch metal frame

Press the sensor for two times until successfully registration
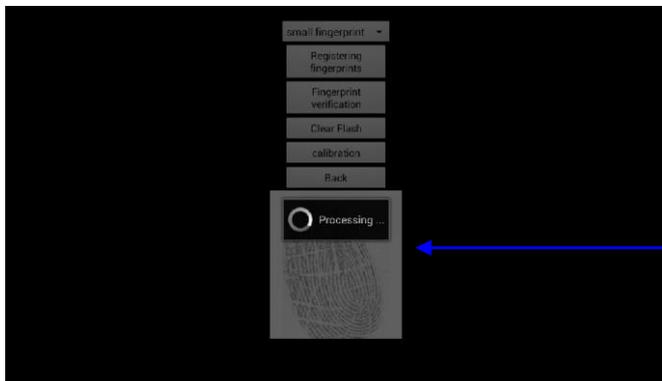
Press the sensor for two times until successful registration

IO UART Port
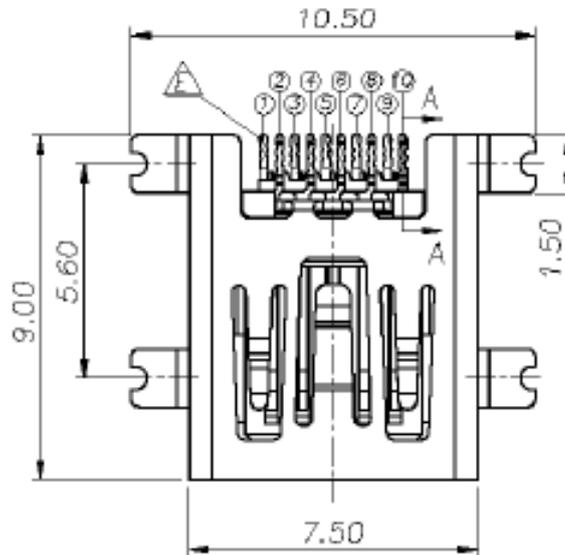
Main board: LCN UAF04-10376-1500

PIN SN:

Mini USB Pin SN	Pin Name	Remarks
1		
2	VCHG/VUSB	System Power
3		
4		
5		
6		
7	UART1_RXD	A370 UART Receiving
8		
9	UART1_TXD	A370 UART Transmitting
10	GND	Grounding

To use UART1, you need to send "D&C00040107" via UART0 to enable UART1 to work. UART1 works at 115200bps (8-bit digits), data in ASCII format. Working flow is as following:

- APP→UART0 → UART1 →device need to be connected
- Other device→ UART1→ UART0→APP

Fingerprint Registration Workflow

```
   PSGetImag                              PSGetImage
       |                                      |
       v                                      v
   PSUpImag                               PSUpImag
       |                                      |
       v                                      v
   PSGenCha                               PSGenCha
       \                                    /
        \                                  /
         ---->  PSRegModel  <--------------
                    |
                    v
                 PSUpChar

 Notice:parameter                      Notice:paramete
 assignment                            r assignment
 charbuffer1                           Charbuffer2
```
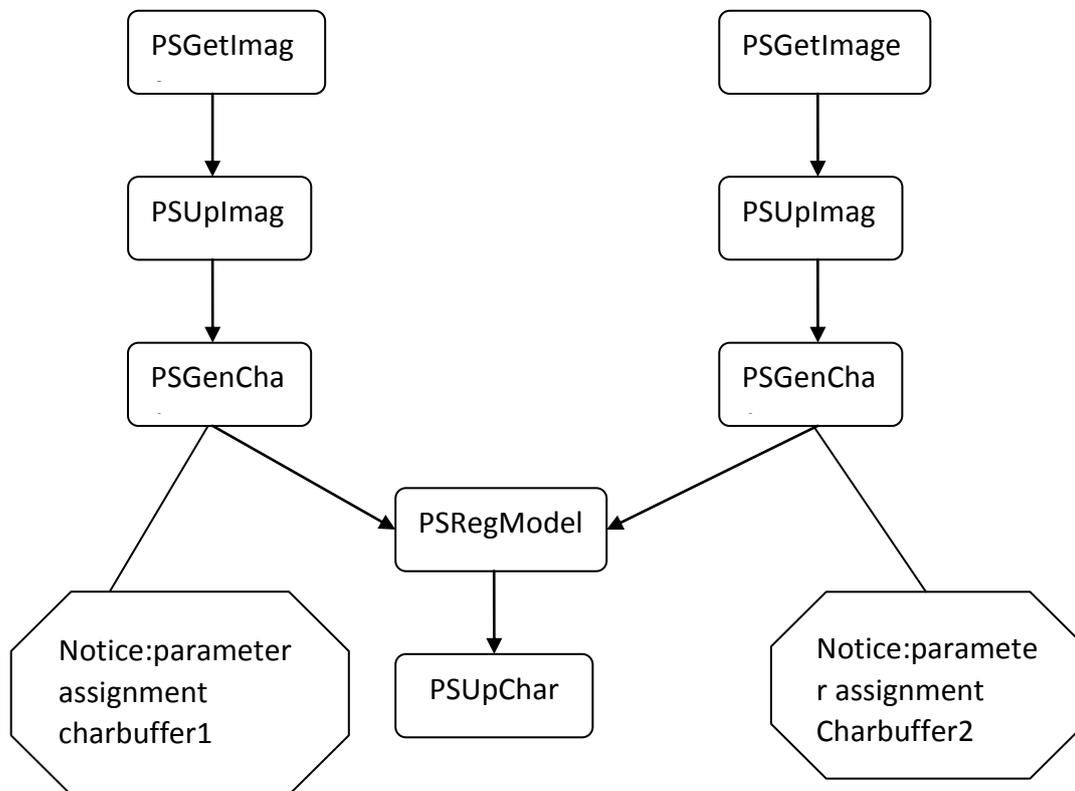
Note:
Process 1:PSGetImage->PSUpImage->PSGenChar1
Process 2：PSGetImage->PSUpImage->PSGenChar2

Fingerprint Verification Workflow

```
┌──────────────┐                                    ┌──────────────┐
│  PSGetImage  │                                    │  PSDownChar  │
└──────┬───────┘          ╱‾‾‾‾‾‾‾‾‾‾‾╲              └──────┬───────┘
       │                 │  Notice:para │                  │
       ▼                 │  meter       │                  │
┌──────────────┐         │  assignment  │                  │
│  PSUpImage   │         │  charbuffer1 │                  │
└──────┬───────┘          ╲_____╱                   │
       │                                                   │
       ▼                                                   │
┌──────────────┐                                           │
│  PSGenChar   │                                           │
└──────┬───────┘                                           │
       │              ┌──────────────┐                     │
       └─────────────▶│   PSMatch    │◀────────────────────┘
                      └──────────────┘
```
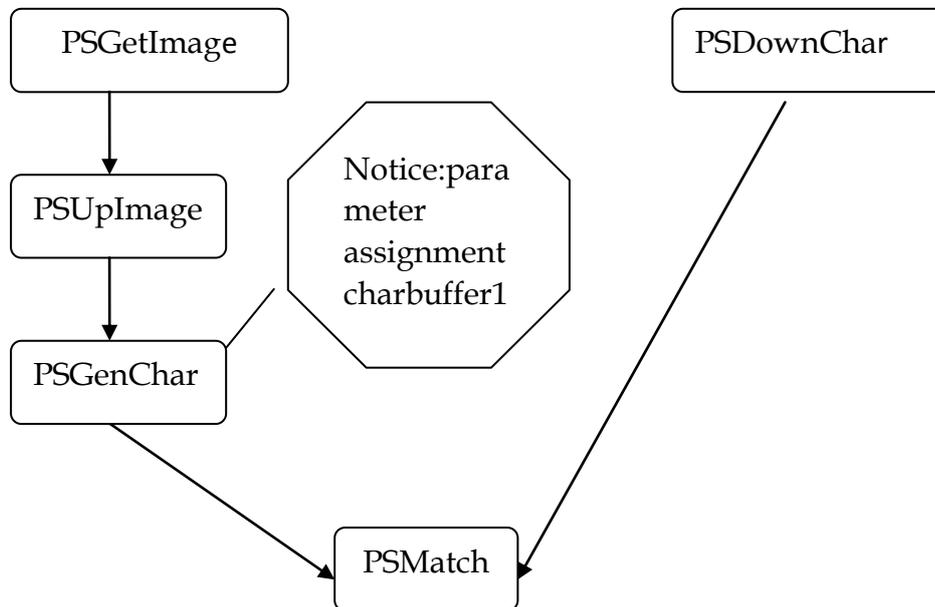
Fingerprint API: detailed notes see android_serialport_api.FingerprintAPI

Note: Fingerprint API class fingerprint method of operation are blocked Process 1：
PSGetImage->PSUpImage->PSGenChar

Process 2：PSDownChar Download the template data from the fingerprint enrollment functional flow chart in the PSUpChar method returns data.

The two processes regardless of the order, you can first perform a re-implementation process two processes can also be contrary

PSUpImageThis step can be omitted, this method is to upload the fingerprint image data

PSGetImage: Input fingerprint image

PSUpImage: The image of the fingerprint image buffer ImageBuffer data uploaded to the host computer

PSGenChar: Fingerprint image according to the image data buffer in the specified characteristic value generated CharBuffer

PSRegModel：According CharBuffer1 and CharBuffer2 the feature value data stored in CharBuffer1 template synthesis and CharBuffer2 in (two CharBuffer the same data)

PSUpChar: CharBuffer in the specified characteristic value or template data uploaded to the host computer

PSDownChar：The characteristic values or templates to download data to a specified CharBuffer1 or CharBuffer2 in (default CharBuffer2)

PSMatch: Compared CharBuffer1 and CharBuffer2 whether the data is the same one fingerprint
Buffer and fingerprint
Chip with a 72 k bytes of image buffer and two 512 bytes (256 words) the characteristics of the file size
Buffer, name called: ImageBuffer CharBuffer1, CharBuffer2. Users can refer to
To read and write any buffer. CharBuffer1 or CharBuffer2 both common feature can be used to store files also
Can be used to store file template features. Upload or download the image through the UART port to speed things up, only to like
Element four bytes of high, the two pixels synthetic one byte transfer. Through the USB port is the 8 bit pixels.
Fingerprint database is changed in accordance with the articulated the FLASH capacity is different, the system automatically. The fingerprint template according to the order
Store number, serial number is defined as: 0 to n-1, N refers to the fingerprint database is). Users can only according to the serial number to access content of fingerprint.

Characteristics and the template
Fingerprint characteristics of the file size of 256 bytes, including feature point information and general information; Template size of 512 bytes,
Is the sum of two same fingerprint characteristics。

Note: about the project need to use the jars and jni calls. So documents are under demo libs directory.

SerialPortManager：public void openSerialPort()：Need access to fingerprint, need to open the serial port, then carries on the related operations
public void closeSerialPort()：When the program exit or don't have to fingerprint information, this method is called to close a serial port

Free SDK for Further Development

Nanjing Corewise Smart Technology Inc. is basically a hardware manufacturer, producing various smart terminals. There handheld devices are semi-finished products, which are technically ready for miscellaneous applications in Windows Mobile OS or Google Android OS, however request further development on basis of our hardware.

Google Android downloadable apps or tailor-made software can work in conjunction with our powerful terminals to create most controllable and versatile solutions to bring human, financial, material resources as well as vehicles under absolute control

Best support will be provided by Corewise to help our buyers to code & program software on basis of our products. We offer free SDK to the purchasers for their purpose; programmers can take whatever they want from the software kit for secondary development.

For any technical issues, our technical software engineers can support online via Skype or emails to enable our purchases to make full use of the machine.
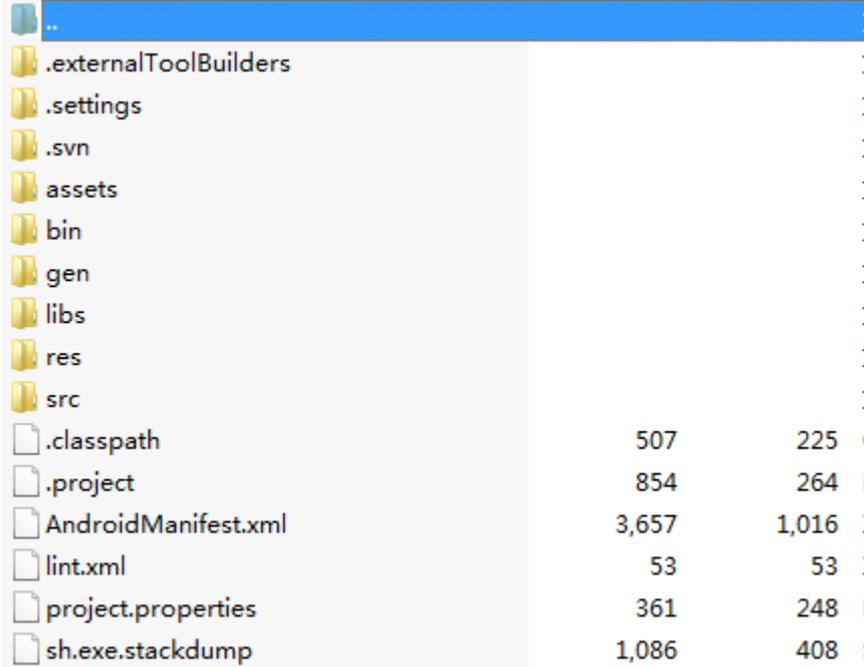
..			
.externalToolBuilders			
.settings			
.svn			
assets			
bin			
gen			
libs			
res			
src			
.classpath	507	225	
.project	854	264	
AndroidManifest.xml	3,657	1,016	
lint.xml	53	53	
project.properties	361	248	
sh.exe.stackdump	1,086	408	

Packaging & Transportation

Maintain: Please use a soft and dry cloth to wipe and clean the device gently regularly, especially display screen.

Packaging and Transportation: For long-distance transportation, packaging must be done with protective measures. Do NOT allow rain, snow or liquid to be poured directly on the device during transportation, as this may result in mechanical damage.

Storage Ambience: ventilated, dry and free of sharp temperature changes, without affecting the surrounding magnetic field, no acid, alkali or other harmful gases in the air.

Packing List:
- Tablet PC: 1pc
- Charger: 1 Set
- Battery (built-in):1pc
- Data Cable: 1pc
- User Manual 1pc