RT Series Fingerprint Acquisition Instrument

An instruction manual

Catalog

Chapter 1 Technical parameters of fingerprint instrument

Hardware parameters:

image	256*288 pixel image, resolution up to 600 DPI, 256 gray level
working temperature	- 20 C to + 70 C
Working humidity	0%~98%
Average acquisition speed	< 1 seconds
Antistatic ability	IEC 61000-4-2 Standard 15KV
Anti-counterfeiting	Identification of artificial fingerprints
Peak power consumption	110 mA
Interface standard	USB
working voltage	5V

Technical index

Rejection rate FRR	The actual test value is less than 0.005%.
False recognition rate FAR	The actual test value is less than 0.00008%.

Software Indicators (USB Fingerprint)

Windows 2000/2003/XP/Vista/7/8 32Bit	Support
Windows 2000/2003/XP/Vista/7/8 64Bit	Support
Windows CE ARM	Support
Windows CE MIPS	Support
Android 1.5-4.2 ARM	Support
Android X86	Support
Linux Distributions	Support
MAC OS	Support

Remarks:

RT series supports a variety of fingerprint acquisition sensors, such as optics, semiconductor area, semiconductor sliding, etc.All fingerprint instruments using different sensors adopt a unified hardware and software interface.The program is general.

In addition, RT series also provides RS232, UART, SPI, WIFI and other interface fingerprints for customers to choose to use. The working voltage is 3.3V/5V.

The following illustrations take the fingerprint instrument with USB interface as an example.

Chapter II Basic Requirements for Fingerprint Installation Platform

PC Basic Requirements
1. The host needs at least one USB port.
2. Host screen resolution 800*600 and above
3, RAM minimum 256MB, recommended 1G memory
4. CPU minimum PIII 800 or more
5. Windows Operating System: Win 2000 and above, Win 98/ME and below are not supported
6. Other Operating Systems: Choose the latest Operating Systems as much as possible

Embedded/Mobile Platform Requirements
1. The host only needs a USB HOST interface or a USB OTG interface.
2. Host screen resolution 320*480 or more
3. Minimum RAM 64 MB, recommendation 128 MB or more
4. CPU frequency 200 MHZ and above
5, X86/ARM/MIPS support
6, Operating System: Windows CE 5/6/7 Windows Mobile 5/6 Android 1.5/2.2/2.3/4.0, etc.

Chapter 3 Instructions for the Use of Windows Platform

1. Windows platform fingerprint instrument specifically shows that we provide two kinds of fingerprint instrument on Windows platform, one is driven, the other is not driven.Development kits are generic.Both driver-driven and non-driver fingerprinters support 32-bit and 64-bit versions commonly used in Windows.The non-driver version is virtually a CD-ROM on the operating system, as shown in the figure below.:No driver fingerprint, no installation driver. Inserting PC can directly use SDK to use fingerprint instrument to drive fingerprint instrument. As the name implies, the device inserts PC. Windows will pop up the window and require the installation of fingerprint instrument. As shown in the following figure:

    There are two kinds of driver for fingerprint instrument. One is the driver that can only be used on 32-bit Windows, the other is the driver that can be used on 32-bit and 64-bit Windows.When the two drivers are installed, they will be shown as follows in the Device Manager:

    or

2. 32The 32-bit driver installation contains two files, MyUSB.sys and MyUSB.inf.The installation process is as follows:

3.   64Bit   Drive   Installation
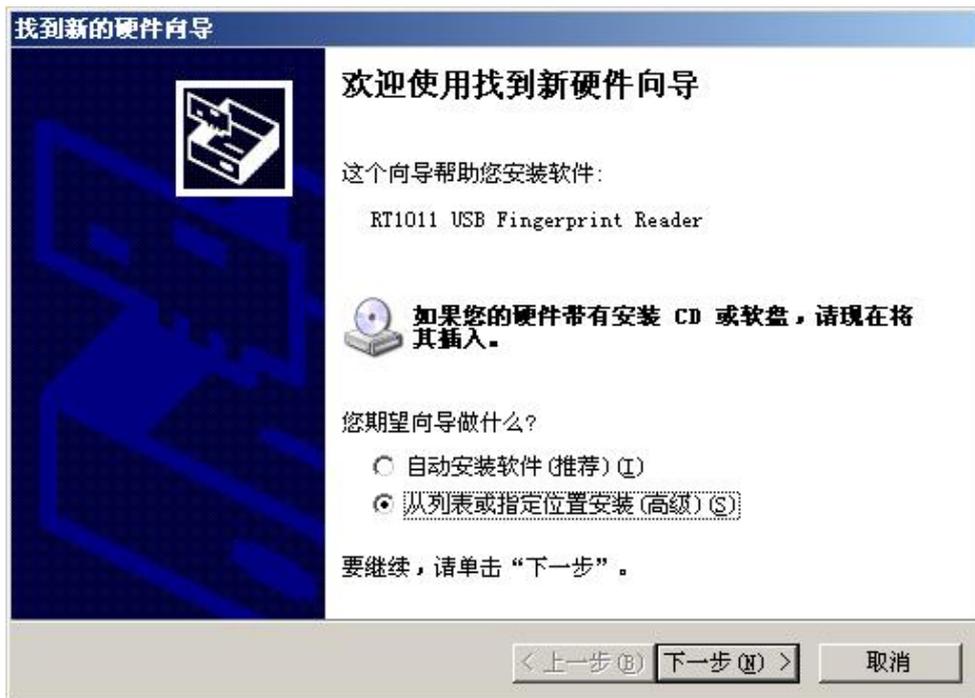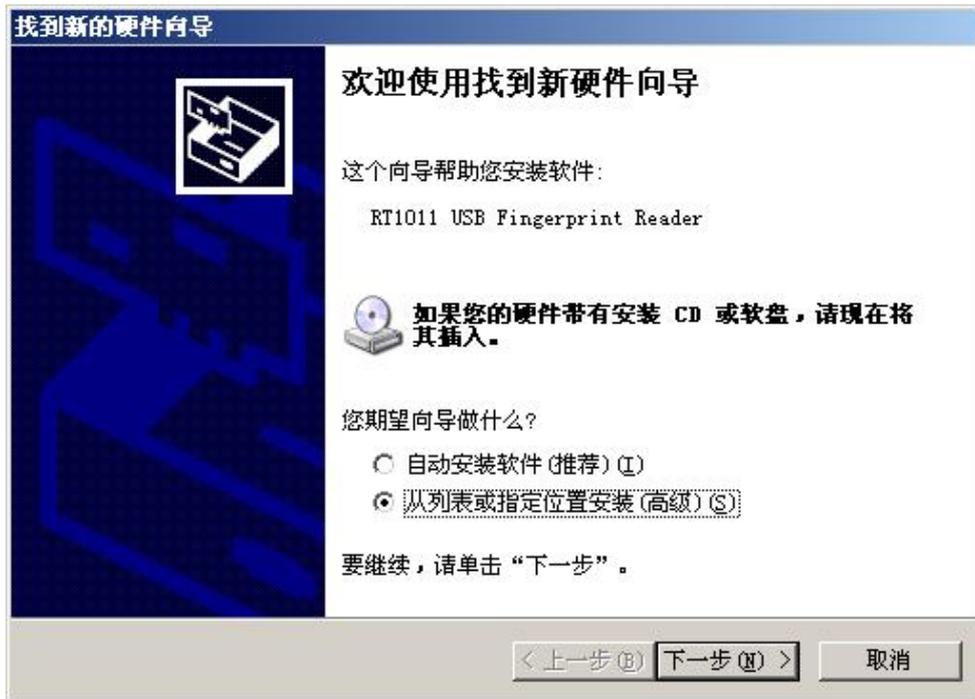
4. Once the Demo driver is installed, you can run the Demo test. We provide sample codes in various development languages for customer development. As shown in the following figure:

C#   example:
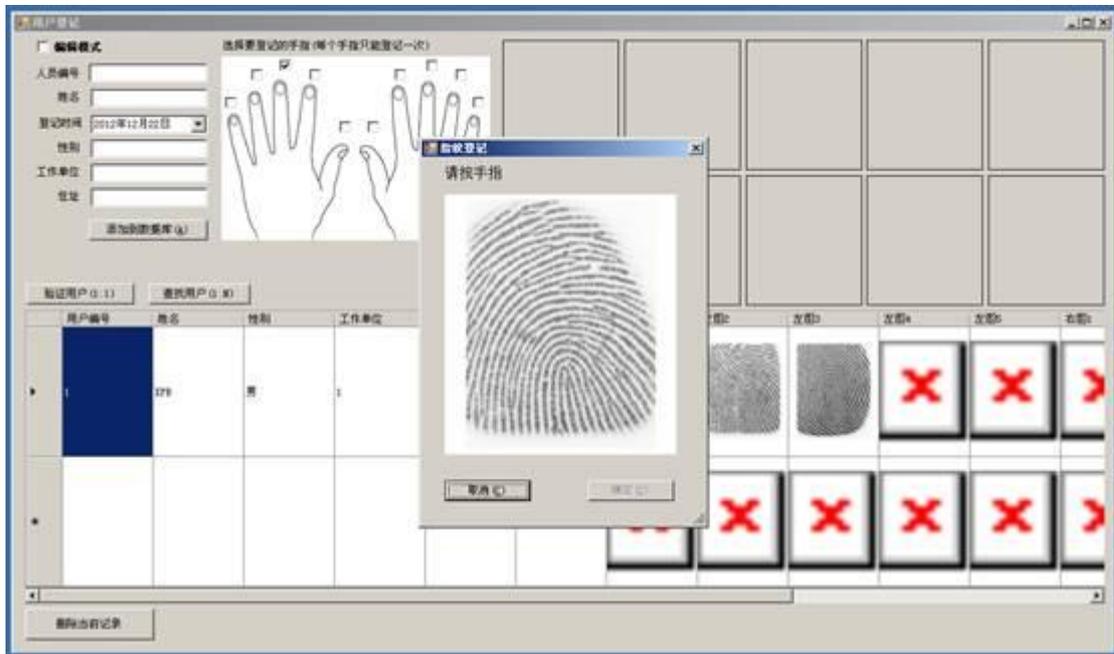
Delphi   sample:

VC example:

Samples used in ActiveX control web pages can be usedWEB

1. Drive installation
   Add in the project. reg file

   [HKEY_LOCAL_MACHINE Drivers USB LoadClients 1107_36869 220 967295_0_80 IOCtrl_Class]
   "Dll" = "UFPDrv. dll"

   [HKEY_LOCAL_MACHINE Drivers USB LoadClients Default 220 0_0_80 IOCtrl_Class]
   "Dll" = "UFPDrv. dll"

   [HKEY_LOCAL_MACHINEDriversUSBClientDriversIOCtrl_Class]
   "Prefix" = "UFP"
   "Dll" = "UFPDrv. dll"

   Add in the project. Bib file
   UFPDrv.dll $(_FLATRELEASEDIR) UFPDrv.dll NK SHK

2. Running Demo program, the following is a quick test process, which can be programmed into the ROM image without the need to do the above.

   1Without inserting RT1011 into the device
    2Copy the files fpengine. dll, testce. exe, UFPDrv. DLL to the NandFlash (or corresponding) directory of the device
    3Copy the UFPDrv. DLL file to the Windows directory. UFPDrv. DLL is the device driver file
    4Insert RT1011 into the device, and the driver should be installed automatically.
     5By running testce. exe, you can do the registration and identification operation.

    Operational screenshots are as follows:
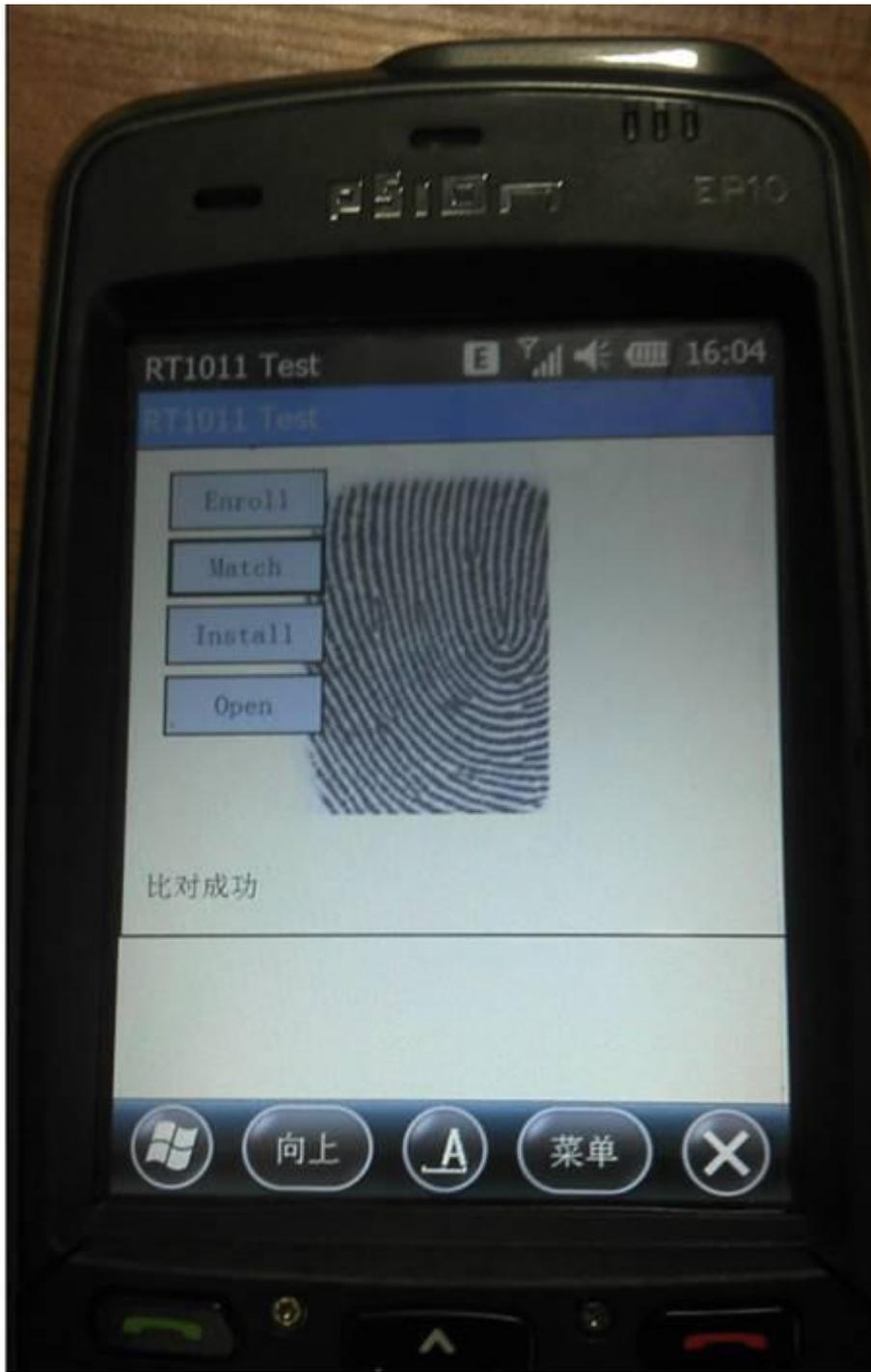
Chapter 5 Instructions on the Use of Android Platform

1. system configuration
   The fingerprint instrument communicates with Android by usbfs and USB direct communication

   Android modifies device permissions in init.rc file

   1Usbfs
      Make sure that the usbfs is loaded successfully. After the usbfs is loaded successfully, there will be devices files and directories and files like 001,002 in the / proc/bus/usb directory.
   Inserted USB device information is recorded in the devices file
      If these directories and files are not available, then usbfs is not loaded. Please customize the loading of usbfs.

   Mount usbfs none/proc/bus/usb-o devmode=0666

   2USB direct communication
      This requires setting USB access rights. There are device files like 001,002,003 in the / dev/bus/usb/001/ directory. If you grant permissions, you can access them.
   Chmod 777/dev/bus/usb/001/003

      In the LibFP Java sample program provided, it provides the function of automatically granting device access rights. If the system ROOT, it can run directly.

2. Running Demo programs is currently running on dozens of Android tablets. The following is a screenshot of the operation on the

development
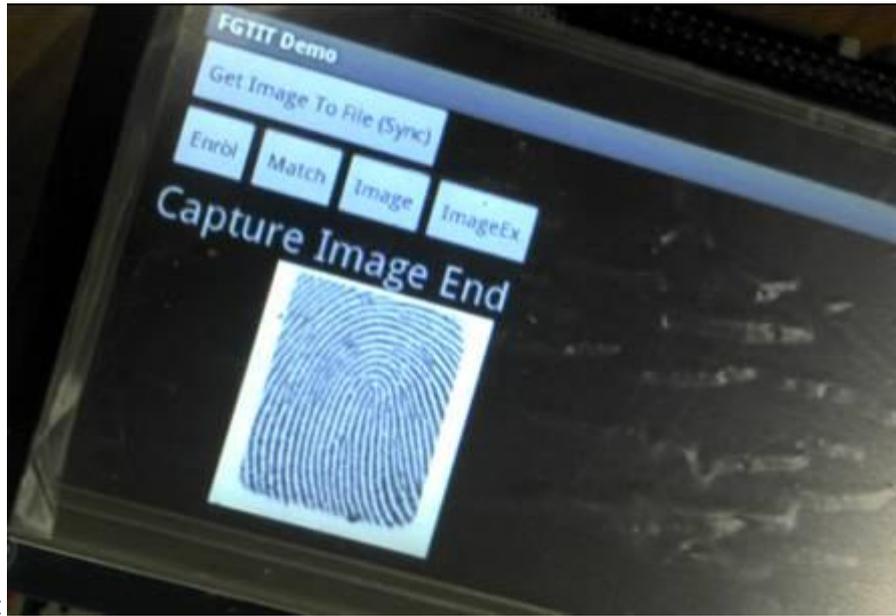
board:

Chapter 6 Instructions for the Use of Linux Platform

1. system configuration
   The fingerprint instrument communicates in the way of usbfs on Linux.
   If there is no component change, please install the component. No other
   driver is required. It is also necessary to grant device access rights.

2. Running Demo is currently well supported in all distributions. The
   following figure shows the effect of running Demo on version 12 of
   Fedora   (using   sliding
   sensors)
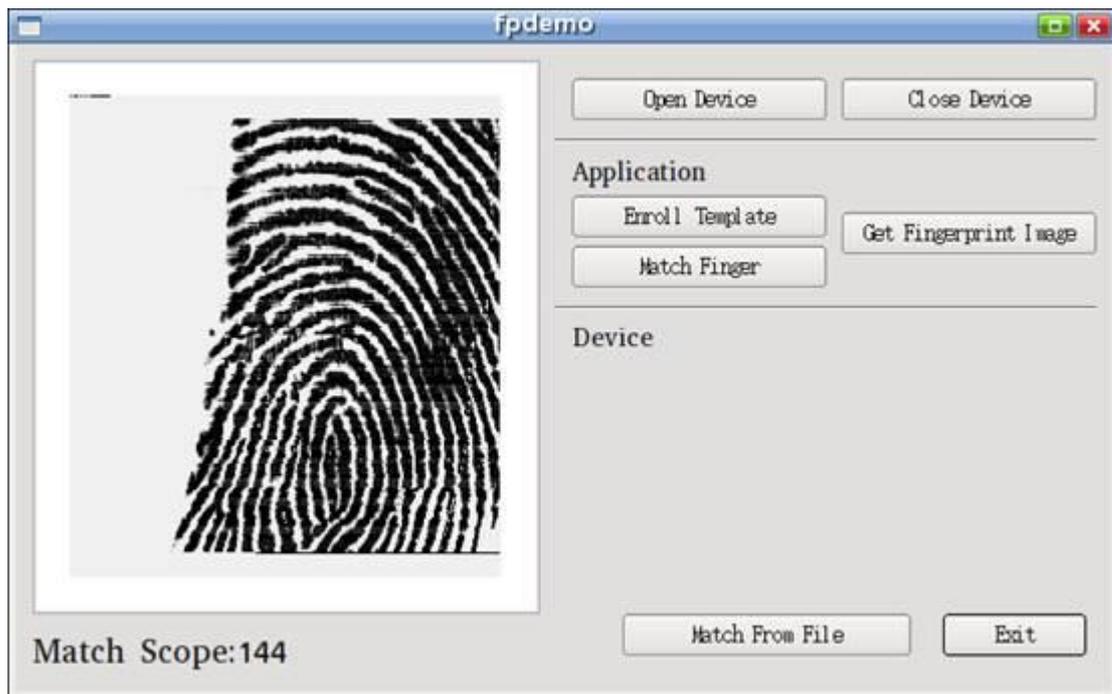
Chapter VII Description of SDK Fingerprint Instrument

RT series platforms and fingerprints can adopt a unified development interface.The functions and parameters of each platform are identical.Based on local use of hexadecimal storage, network-based use of standard BASE64 encoding.Process development as shown in the following figure:

```
                          OpenDevice
                              |
                          LinkDevice
                              |
        ┌─────────────────────┴─────────────────────┐
    EnrolFpChar                              GenFpChar
        └─────────────────────┬─────────────────────┘
                          GetWorkMsg
                              |
  ┌──────────┬──────────┬─────┴─────┬──────────┬──────────────┬──────────┐
FPM_DEVICE FPM_PLACE FPM_LIFT FPM_GENCHAR FPM_ENRFPT FPM_NEWIMAGE FPM_TIMEOUT
                                 |          |            |
                             GetRetMsg  GetRetMsg    DrawImage
                                 |          |
                           GetFpStrByGen GetFpStrByEnl
                                 |          |
                              匹配模板     参考模板
                                 └────┐ ┌────┘
                                  MatchTemplateEx

                          CloseDevice
```
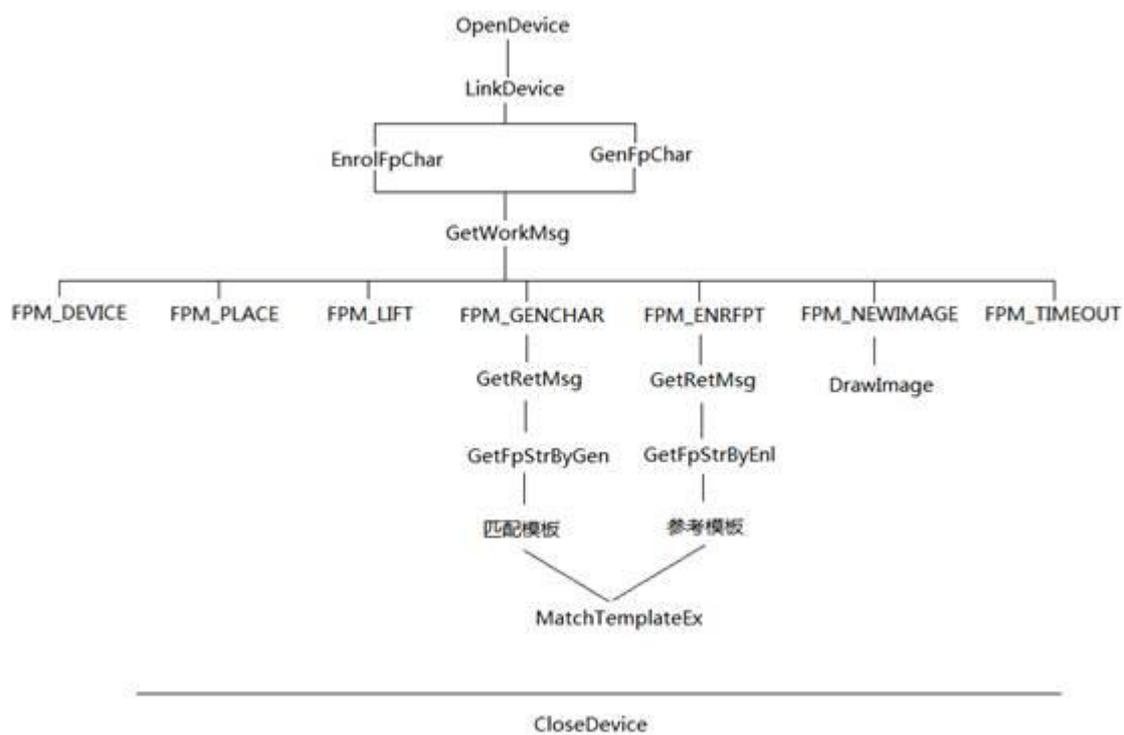
When the device is turned on, a timer is set up, and then the GetWorkMsg GetRetMsg function is executed in the timer callback function, and different operations are performed according to the return value. This is an asynchronous process.

Chapter VIII Operational Instructions for Fingerprint Instruments

Under normal use conditions, dust, skin residues, oil marks or other substances accumulated on fingers may affect fingerprint images, leading to the inability to read fingerprints or application errors. For the semiconductor area fingerprint sensor, the identification problem is often caused by these factors. Any upper software algorithm is based on the quality of fingerprint image. In order to obtain high quality fingerprint images, some suggestions for finger cleaning are given.

Proper finger preparation before fingerprint reading can significantly reduce the impact of skin residues. The following suggestions can be used to reduce the number of times the sensor surface is cleaned.

1. Clean your fingers with clean water in a dry environment
2. Wash your fingers with alcohol in a humid environment

When reading fingerprints, correct finger movements can significantly improve the quality of the collected images. The following suggestions can be used to reduce the number of acquisitions and improve the quality of acquisition.

3. In a dry environment, press your fingers hard.
4. In wet environment, please press your finger gently.
5. Press your fingers as flat as possible. Do not use your fingertips.
6. Fingers on the chip surface, do not scroll or drag

Chapter 9 Maintenance of Fingerprint Instruments

Regular cleaning: According to the different frequency of use, the fingerprint instrument can be cleaned regularly.
It effectively improves the quality of fingerprint collection and prolongs the service life of fingerprint instrument.
When cleaning regularly, use lens paper (using medical hemostatic forceps as fixture) or degreasing cotton wool for dipping.
A small amount of anhydrous ethanol (or methanol or ether) along the surface of the fingerprint acquisition window
Give it a gentle rub.
Change to a new lens paper or degreased cotton wool and wipe it repeatedly in the direction of the previous one.
Keep going until the fingerprint collection surface is bright and clean.Note: Wipe along one
Direction, can not move back and forth.

Chapter 10 Important Tips for Maintenance and After-sales of Fingerprint Instruments

Important tips for fingerprint chip maintenance and after-sales service
1Fingerprint chip belongs to semiconductor device, and its antistatic value is 15KV, which can meet all kinds of normal use.
Environmental requirements, for very dry fingers or frequent static electricity in autumn and winter, before pressing fingerprints
Must discharge static electricity, the method is very simple, first touch with the hand of conductive objects, such as metal objects, come from
Water pipes, etc.Note: Chips damaged by static electricity above 15KV do not enjoy the quality service terms.
2In order to enhance the hardness of fingerprint chip and resist electrostatic damage, the surface of fingerprint chip is coated with protective film.Correct
It will not cause damage to the protective film. The correct way to use it is to press the fingerprint vertically as much as possible, and
Only use lens paper or medical degreasing cotton wool to gently rub along one direction of the surface of the fingerprint acquisition window.
Try.If the surface of fingerprint chip is too dirty, it can also be wiped with absolute alcohol.notes
Meaning: It is absolutely forbidden to wipe fingerprint chips with any paper towel. It is visible to the naked eye on the surface of fingerprint chips.
Cracks or scratches are not covered by quality service terms.
3Fingerprint chip is a sensitive fingerprint acquisition device, please keep the normal pressure (finger smoothly placed)

Place it on the surface of the chip and then use a little force to operate.If it finds it impossible to pass, it should not.

It's a pressing force problem. Please check the cleanliness of the chip and whether it's a software problem.

Pressing will not improve the recognition effect, but also accelerate the aging of fingerprint chips.