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# INDUSTRY STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

# GA 1012-2012

## Technical specifications for fingerprint acquisition and comparison of Resident Identity Card

居民身份证指纹采集和比对技术规范

**(English Translation)**

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Preview: page 1 of 5 shown, 15 in the full document. Complete English PDF, instant download:
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# Table of Contents

Foreword
1 Scope
2 Normative references
3 Terms and definitions
4 Fingerprint collection requirements
4.1 Fingerprint data
4.2 Collection methods
4.3 Collection Quantity
4.4 Acquisition Finger Position
4.5 Collection Quality Requirements
4.6 Collection results
5 Fingerprint comparison requirements
5.1 Comparison method
5.2 Comparison results
6 Technical indicators and test methods of fingerprint algorithm
6.1 Technical indicators
6.2 Test methods
Appendix A (Normative Appendix) Fingerprint Data Structure
Appendix B (Normative Appendix) Application Program Interface Function Description
References

## Foreword

This standard was drafted in accordance with the rules given in GB/T 1.1-2009.

This standard replaces GA 1012-2012 "Technical Specifications for Fingerprint Collection and Comparison of Resident Identity Cards", and the main changes compared with GA 1012-2012 as follows.

-Amended to a recommended standard.

Please note that some elements of this document may involve patents. The issuer of this document is not responsible for identifying these patents.

This standard is proposed by the Public Security Administration of the Ministry of Public Security.



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This standard is under the jurisdiction of the Computer and Information Processing Standardization Technical Committee of the Ministry of Public Security.

This standard was drafted. The First Research Institute of the Ministry of Public Security, the Public Security Administration of the Ministry of Public Security, and the Ministry of Public Security's safety and police electronic product quality testing Xin, Beijing China Shield Security Technology Development Corporation.

## 1 Scope

This standard specifies the requirements for fingerprint collection and comparison of resident ID cards, technical indicators and test methods for fingerprint algorithms.

This standard applies to fingerprint collection and comparison of resident ID cards.

## 2 Normative references

The following documents are essential for the application of this document. For dated references, only the dated version applies to this document.

For undated references, the latest version (including all amendments) applies to this document.

GB/T 13000 Information Technology Universal Multi-octet Coded Character Set (UCS) GA/T 449 Resident ID Terms GA/T 625-2010 Live Fingerprint Image Collection Technical Specification GA 773-2008 Terminology for Automatic Fingerprint Identification System GA 774.1-2008 Fingerprint Feature Specification Part 1. Fingerprint Direction GA 774.3-2008 Fingerprint Feature Specification Part 3. Method of Labeling Fingerprint Center Point GA 774.5-2008 Fingerprint Feature Specification Part 5. Fingerprint Detail Feature Point Marking Method GA/T 893-2010 Security biometric identification application term GA/T 894.3-2010 Security Fingerprint Identification Application System Part 3. Fingerprint Image Quality GA/T 894.6-2010 Security Fingerprint Identification Application System Part 6. Evaluation Method of Fingerprint Identification Algorithm GA/T 1011-2012 General technical requirements for fingerprint reader of resident ID card ISO/IEC 19794-4 Information technology. Biometric data exchange format. Part 4. Fingerprint image data (Information technology - Biometric data interchange formats - Part 4. Finger image data) IAFIS-IC-0110 (V3.1) Wavelet Scalar Quantization (WSQ) Grayscale Fingerprint Image Compression Specification (WSQ GRAY-SCALE FINGERPRINT IMAGE COMPRESSION SPECIFICATION)

## 3 Terms and definitions

GA/T 449, GA/T 625-2010, GA 773-2008, GA/T 893-2010, GA/T 894.3-2010, GA/T 894.6-2010 and the following terms and definitions apply to this document.



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Enrolment

When citizens register fingerprint information, the process of collecting finger fingerprint images, extracting their characteristics, and storing them.

Enrolment success

When citizens register fingerprint information, they can collect fingerprint images of their fingers, and the image quality meets the requirements for feature extraction.

Enrolment failure

When citizens register fingerprint information, they can collect fingerprint images of their fingers, and the image quality does not meet the feature extraction requirements.

Un-enrolled

When citizens register fingerprint information, they cannot collect fingerprint images of their fingers due to physical reasons such as finger disability.

Test database

Similar to the crowd distribution used by the tested fingerprint recognition application system, the fingerprint image or Feature file collection.

[GA/T 894.6-2010, definition 3.2]

#### 4.1.1.1 Fingerprint raw image data

Should be generated by a fingerprint collector that complies with GA/T 1011-2012. The original image data length of a single fingerprint should be 92 160 bytes.

The width should be equal to 256 pixels and the height should be equal to 360 pixels.

#### 4.1.1.2 Fingerprint compressed image data

It should be generated by compressing the original fingerprint image data. The compression method should meet the requirements of IAFIS-IC-0110 (V3.1).

According to the file structure, see Appendix A. The length of a single fingerprint compressed image data is not more than 20 480 bytes.

#### 4.1.1.3 Fingerprint reproduction image data

It should be generated by fingerprint image data reproduction, and the reproduction method should conform to the provisions of IAFIS-IC-0110 (V3.1).



Preview: page 4 of 5 shown, 15 in the full document. Complete English PDF, instant download:
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### 4.1.2 Fingerprint Feature Data

Data describing the characteristics of the fingerprint. For the file structure, see Appendix A. The length of a single fingerprint is 512 bytes.

## 4.2 Collection method

The collection method is as follows.

a) single fingerprint plane live collection;

b) The orientation of the fingerprint should meet the requirements of GA 774.1-2008;

c) After the collection is completed, the original fingerprint image data and fingerprint reproduction image data should be cleared.

## 4.3 Collection quantity

Each person collects two fingerprints.

## 4.4 Acquisition finger order

The order of collecting fingers is as follows.

a) Register your fingerprint with your right hand and then your left hand;

b) Finger position in the order of thumb, index finger, middle finger, ring finger, little finger;

c) When the right thumb registration fails, the other fingers of the right hand should be registered;

d) when the left thumb registration fails, the other fingers of the left hand should be registered;

e) If the registration of the fingers of the right hand fails, the other fingers of the left hand should be registered;

f) When the registration of the left-hand finger fails, the other fingers of the right hand should be registered.

## 4.5 Collection quality requirements

The collection quality requirements are as follows.

a) The original fingerprint data of three fingerprints collected by the same finger should be greater than the preset quality value;

b) Perform feature extraction on the original fingerprint image data, generate fingerprint feature data, obtain three similarity values after cross-comparison, and calculate the average value, which should be greater than the preset similarity value;



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