ISO/IEC 19794-2:2005-09 (E)

Information technology - Biometric data interchange formats - Part 2: Finger minutiae data

Contents

Page

Foreword v

Introduction vi

1 Scope 1

2 Conformance 1

3 Normative references 1

4 Terms and definitions 1

5 Symbols and abbreviated terms 5

6 Minutiae Extraction 5
6.1 Principle 5
6.2 Minutia Type 5
6.3 Minutia Location 6
6.3.1 Coordinate System 6
6.3.2 Minutia Placement on a Ridge Ending (encoded as Valley Skeleton Bifurcation Point) 7
6.3.3 Minutia Placement on a Ridge Bifurcation (encoded as a Ridge Skeleton Bifurcation Point) 7
6.3.4 Minutia Placement on a Ridge Skeleton Endpoint 7
6.3.5 Minutia Placement on Other Minutia Types 8
6.4 Minutia Direction 8
6.4.1 Angle Conventions 8
6.4.2 Minutia Direction of a Ridge Ending (encoded as Valley Skeleton Bifurcation Point) 9
6.4.3 Minutia Direction of a Ridge Bifurcation (encoded as Ridge Skeleton Bifurcation Point) 9
6.4.4 Minutia Direction of a Ridge Skeleton End Point 9
6.5 Core and Delta Placement and Direction 9
6.6 Minutia Type Matching 10
6.7 Encoding of multibyte quantities 10

7 Finger Minutiae Record Format 11
7.1 Introduction 11
7.2 Record Organization 11
7.3 Record Header 11
7.3.1 Format Identifier 11
7.3.2 Version Number 11
7.3.3 Length of Record 11
7.3.4 Capture Equipment Certifications 11
7.4 Single Finger Record Format 12
7.4.1 Finger Header 12
7.4.2 Finger Minutiae Data 14
7.5 Extended Data 14
7.5.1 Common Extended Data Fields 15
7.5.2 Ridge Count Data Format 15
7.5.3 Core and Delta Data Format 17
7.5.4 Zonal Quality Data 19
7.6 Minutia Record Format Summary 21
7.3.5 Capture Device Type ID 12

7.3.6 Size of Scanned Image in X direction 12
7.3.7 Size of Scanned Image in Y direction 12
7.3.8 X (horizontal) resolution 12
7.3.9 Y (vertical) resolution 12
7.3.10 Number Of Finger Views 12
7.3.11 Reserved Byte 12

8.4.1 Data objects for additional features 26

9 CBEFF Format Owner and Format Types 27

Annex A (normative) Record Format Diagrams 28

A.1 Overall Record Format 28
A.2 Record Header 28
A.3 Single Finger View Minutiae Record 28
A.4 Finger Minutiae Data 29
A.5 Extended Data 29

Annex B (normative) Fingerprint Image Quality Specifications 30

B.1 SCOPE AND PURPOSE 30
B.2 FINGERPRINT SCANNERS 30
B.2.1 Geometric Image Accuracy 30
B.2.2 Modulation Transfer Function 30
B.2.3 Signal-to-Noise Ratio 31
B.2.4 Gray-Scale Range of Image Data 31
B.2.5 Gray-scale Linearity 32
B.2.6 Output Gray Level Uniformity 32
B.3 LATENT PRINT SCANNERS 32
B.3.1 Geometric Image Accuracy 33
B.3.2 Modulation Transfer Function 33

Annex C (informative) Example Data Record 34

C.1 Data 34
C.2 Example Data Format Diagrams 35
C.3 Raw Data for the Resulting Minutiae Record 36

Annex D (informative) Handling of Finger Minutiae Card Formats 37

D.1 Enrollment 37
D.1.1 Number of minutiae 37
D.1.2 Number of required finger presentations 37
D.2 Matching 37
D.2.1 Matching conditions 38
D.2.2 Threshold Value 38
D.2.3 Retry Counter 39
D.3 Security Aspects of Finger Minutiae Presentation to the Card 39

Bibliography 40

8 Finger Minutiae Card Format 22
8.1 Normal Size Finger Minutiae Format 22
8.2 Compact Size Finger Minutiae Format 22
8.3 Number of Minutiae, Minutiae Ordering Sequence and Truncation 23
8.3.1 General Aspects 23
8.3.2 Biometric matching algorithm parameters 23
8.3.3 Number of Minutiae 23
8.3.4 Minutiae Order 24
8.4 Usage of additional features for the card format 26
8.4.2 Indication of card capabilities 26