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Australian STANDARD®

STANDARDS Australia

Information technology — Biometric sample quality

Part 4: Finger image data



AS ISO/IEC 29794.4:2025

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SITA

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This page explains the meaning of the language and structure of this Standard.

Refer to Standards Australia's Standardisation Guide 006 for more details about drafting rules.

Australian and Australian/New Zealand Standards are voluntary unless they are referenced in legislation or called up in contracts.

Requirements

To conform to a Standard, all requirements in the Standard need to be met.

A requirement is any statement in the Standard which uses the word "shall".

Recommendations, permissions and possibilities

The following words are commonly used in Standards, but statements using them do not have to be followed to conform to the Standard:

(a) "should" means that something is recommended.

(b) "may" means that something is permitted.

(c) "can" means that something is possible.

Structure of Standards

A Standard always has the following parts:

(i) The Preface states who developed the Standard, what the Standard is aiming to do, and how it relates to other documents.

(ii) The Scope states what the Standard is about, what it covers and what it does not cover.

(iii) The Normative references clause lists other documents that are referenced in the Standard as part of requirements.

(iv) The Terms and definitions clause defines important terms to help with understanding the Standard.

A Standard may also include other parts, such as the following:

(1) A normative appendix sets additional requirements that need to be conformed to.

(2) An informative appendix provides additional information or guidance. An informative appendix provides additional information or guidance. They usually do not contain requirements. If an informative appendix does contain requirements, the Standard will explain when those requirements apply.

(3) A Bibliography lists documents referenced in the Standard but not as part of requirements.

Many Standards include notes. Notes provide recommendations and/or guidance only. They never contain requirements.

Preface

This Standard was prepared by the Standards Australia Committee IT-032, Biometrics and Identification.

The objective of this document is to establish terms and definitions for quantifying finger image quality, methods used to quantify the quality of finger images, and standardized encoding of finger image quality for finger images at 196,85 px/cm spatial sampling rate scanned or captured using optical sensors with capture dimension (width, height) of at least 1,27 cm × 1,651 cm.

This document is identical to, and has been reproduced from, ISO/IEC 29794-4:2024, *Information technology — Biometric sample quality — Part 4: Finger image data.*

As this document has been reproduced from an international document, a full point substitutes for a comma when referring to a decimal marker.

Australian or Australian/New Zealand Standards that are identical adoptions of international normative references may be used interchangeably. Refer to the online catalogue for information on specific Standards.

The terms “normative” and “informative” are used in Standards to define the application of the appendices or annexes to which they apply. A “normative” appendix or annex is an integral part of a Standard, whereas an “informative” appendix or annex is only for information and guidance.

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Foreword

ISO (the International Organization for Standardization) and IEC (the International Electrotechnical Commission) form the specialized system for worldwide standardization. National bodies that are members of ISO or IEC participate in the development of International Standards through technical committees established by the respective organization to deal with particular fields of technical activity. ISO and IEC technical committees collaborate in fields of mutual interest. Other international organizations, governmental and non-governmental, in liaison with ISO and IEC, also take part in the work.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of document should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives or www.iec.ch/members_experts/refdocs).

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For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see www.iso.org/iso/foreword.html. In the IEC, see www.iec.ch/understanding-standards.

This document was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 37, *Biometrics*.

This second edition cancels and replaces the first edition (ISO/IEC 29794-4:2017), which has been technically revised.

The main changes are as follows:

— algorithms for normalization of finger image quality components have been added, along with new quality algorithm identifiers for the unique identification of the quality measures defined in this document;

— Annex A has been technically revised to reflect a new conformance test set.

A list of all parts in the ISO/IEC 29794 series can be found on the ISO and IEC websites.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html and www.iec.ch/national-committees.

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Introduction

This document specifies finger image quality measures. A reference implementation of the normative measures — NFIQ 2 — is available at Reference [16], which is described in more detail by the developers in Reference [1].

The quality of finger image data is determined by the degree to which the finger image data fulfils specified requirements for the targeted application. Information on quality is therefore useful in many applications. ISO/IEC 19784-1 allocates a quality field and specifies the allowable range for the scores, with a recommendation that the score be divided into four categories with a qualitative interpretation for each category. Finger image quality fields are provided in the finger image data interchange formats standardized in ISO/IEC 19794-4 and ISO/IEC 39794-4. Finger feature data interchange formats standardized in ISO/IEC 19794-2, ISO/IEC 19794-3, ISO/IEC 19794-8 and ISO/IEC 39794-2 provide finger image quality fields for the source image. To facilitate the interpretation and interchange of finger image quality scores, this document specifies how to calculate the finger image quality score of plain finger images with a spatial sampling rate of 196,85 px/cm and a bit depth of 8 bit for the greyscale pixel intensity values scanned from inked fingerprint cards or captured using optical area sensors based on frustrated total internal reflection.

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Information technology — Biometric sample quality

Part 4: Finger image data

1 Scope

This document establishes:

— terms and definitions for quantifying finger image quality;

— methods used to quantify the quality of finger images; and

— standardized encoding of finger image quality;

for finger images at 196,85 px/cm spatial sampling rate and a bit depth of 8 bit for the greyscale pixel intensity values scanned or captured using optical area sensors in direct contact with friction ridges.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO/IEC 2382-37, *Information technology — Vocabulary — Part 37: Biometrics*

ISO/IEC 39794-1, *Information technology — Extensible biometric data interchange formats — Part 1: Framework*

ISO/IEC 29794-1, *Information technology — Biometric sample quality — Part 1: Framework*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO/IEC 2382-37, ISO/IEC 29794-1 and the following apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at https://www.electropedia.org/

3.1
foreground region
set of all pixels of a finger image that form valid finger image patterns

Note 1 to entry: The most evident structural characteristic of a valid finger image is a pattern of interleaved ridges and valleys.

3.2
local region
block of $m \times n$ pixels of the foreground region, where m and n are smaller than or equal to the width and the height of the foreground region respectively

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