International Standard

ISO/IEC 17839-1

Information technology — Biometric system-on-card —

Part 1: Core requirements

Technologies de l'information — Système biométrique sur carte — Partie 1: Exigences de base

Second edition
2025-11

Reference number
ISO/IEC 17839-1:2025(en)

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Published in Switzerland

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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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This document was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 17, *Cards and security devices for personal identification*.

This second edition cancels and replaces the first edition (ISO/IEC 17839:2014), which has been technically revised.

The main changes are as follows:

— updated Biometric System-on-Card architecture in alignment with ISO/IEC 24787-1;

— replaced references to S1 and S2 with ID-1 and ID-T;

— removed normative references to ISO/IEC 15693;

— added diagram for feedback.

A list of all parts in the ISO/IEC 17839 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

In the context of this document, a Biometric System-on-Card is a portable card-sized device including the following entities: biometric capture, data processing, storage, comparison, decision, and action. It is a functional extension to on-card biometric comparison by physically and logically integrating the sensor and signal processing into the card.

ISO/IEC 7816-11, ISO/IEC 19785-3, ISO/IEC 19795-7 and ISO/IEC 24787-1 include technologies with respect to on-card biometric comparison.

The physical integration of a biometric sensor in an ISO/IEC 7810 card withstanding torsion and bending tests is technically challenging. This document describes two types of Biometric System-on-Card. Type ID-1 BSoC is a flexible card fully conformant to ISO/IEC 7810 while Type ID-T BSoC conformant to Annex A of ISO/IEC 18328-2:2021 intentionally deviates from some of the requirements to size and bending stiffness, keeping the rest of the requirements intact, including the use of a contactless ICC interface.

The ISO/IEC 17839 series is currently organized in 3 separate documents:

— ISO/IEC 17839-1, *Biometric System-on-Card — Part 1: Core requirements* (this document)

— ISO/IEC 17839-2, *Biometric System-on-Card — Part 2: Physical characteristics*

— ISO/IEC 17839-3, *Biometric System-on-Card — Part 3: Logical information interchange mechanism*

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Information technology — Biometric system-on-card —

Part 1: Core requirements

1 Scope

This document establishes:

— functional architecture of a Biometric System-on-Card (BSoC);

— definition of Type ID-1 BSoC (ISO/IEC 7810 conformant) and Type ID-T BSoC (see ISO/IEC 18328-2:2021, Annex A) implementation of a BSoC;

— sensor types in a BSoC;

— requirements to a BSoC with respect to:

  — discriminative power (i.e. biometric accuracy criteria);

  — interfaces;

  — power supply options.

The following aspects are out of scope of this document (see ISO/IEC 24787-1):

— off-card biometric comparison, storage-on-card;

— on-card biometric comparison (sensor-off-card);

— work-sharing implementations;

— detailed specification and configuration of individual components.

This document provides a functional architectural description of a BSoC and describes how the interfaces are mapped using existing commands and data structures from other International Standards.

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 7810, *Identification cards — Physical characteristics*

ISO/IEC 7816-3, *Identification cards — Integrated circuit cards — Part 3: Cards with contacts — Electrical interface and transmission protocols*

ISO/IEC 7816-12, *Identification cards — Integrated circuit cards — Part 12: Cards with contacts — USB electrical interface and operating procedures*

ISO/IEC 14443 (all parts), *Cards and security devices for personal identification — Contactless proximity objects*

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ISO/IEC 17839-3, *Information technology — Biometric System-on-Card — Part 3: Logical information interchange mechanism*

ISO/IEC 18092, *Telecommunications and information exchange between systems — Near Field Communication Interface and Protocol 1 (NFCIP-1)*

ISO/IEC 18328-2:2021, *Identification cards — ICC-managed devices — Part 2: Physical characteristics and test methods for cards with devices*

ISO/IEC 24787-1:2024, *Information technology — On-card biometric comparison — Part 1: General principles and specifications*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO/IEC 2382-37 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
Biometric System-on-Card
card-sized device including biometric capture, data processing, comparison, decision and action, used to compose a complete biometric verification system

3.2
storage-on-card
system architecture where biometric reference data is stored in an integrated circuit card (ICC) and compared outside of the ICC used as a portable data carrier

3.3
decision
process that compares a similarity score to a predefined threshold to decide whether the biometric claim is from the genuine cardholder or an imposter

[SOURCE: ISO/IEC 24787-1:2024, 3.9]

3.4
action
operation taken according to the results of the biometric decision

[SOURCE: ISO/IEC 24787-1:2024, 3.1, modified — Example and Note 1 to entry removed.]

3.5
biometric verification
process of confirming a biometric claim through comparison

[SOURCE: ISO/IEC 24787-1:2024, 3.8, modified — Note 1 to entry removed.]

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