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**Identification cards — Integrated  
circuit cards —**

Part 4:  
**Organization, security and commands  
for interchange**

*Cartes d'identification — Cartes à circuit intégré —*

*Partie 4: Organisation, sécurité et commandes pour les échanges*



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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](http://www.iso.org/directives)).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO and IEC shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see [www.iso.org/patents](http://www.iso.org/patents)) or the IEC list of patent declarations received (see <http://patents.iec.ch>).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

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](http://www.iso.org/iso/foreword.html).

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 fourth edition cancels and replaces the third edition (ISO/IEC 7816-4:2013), which has been technically revised. It also incorporates the Amendments ISO/IEC 7816-4:2013/Amd.1:2018 and ISO/IEC 7816-4:2013/Amd.2:2018 and the Corrigendum ISO/IEC 7816-4:2013/Cor.1:2014.

The main changes compared to the previous edition are as follows:

- incorporation with the amendments and the corrigendum;
- revision of unclear portions and correction of editorial mistakes.

A list of all parts in the ISO/IEC 7816 series can be found on the ISO website.

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](http://www.iso.org/members.html).

## Introduction

ISO/IEC 7816 (all parts)<sup>[4]</sup> is a series of standards specifying integrated circuit cards and the use of such cards for interchange. These cards are identification cards intended for information exchange negotiated between the outside world and the integrated circuit in the card. As a result of an information exchange, the card delivers information (computation result, stored data) and/or modifies its content (data storage, event memorization).

- Five parts are specific to cards with galvanic contacts and three of them specify electrical interfaces.
  - ISO/IEC 7816-1 specifies physical characteristics for cards with contacts.
  - ISO/IEC 7816-2 specifies dimensions and location of the contacts.
  - ISO/IEC 7816-3 specifies electrical interface and transmission protocols for asynchronous cards.
  - ISO/IEC 7816-10 specifies electrical interface and answer to reset for synchronous cards.
  - ISO/IEC 7816-12 specifies electrical interface and operating procedures for USB cards.
- All the other parts are independent from the physical interface technology. They apply to cards accessed by contacts and/or by radio frequency.
  - ISO/IEC 7816-4 specifies organization, security and commands for interchange.
  - ISO/IEC 7816-5 specifies registration of application providers.
  - ISO/IEC 7816-6 specifies interindustry data elements for interchange.
  - ISO/IEC 7816-7 specifies commands for structured card query language.
  - ISO/IEC 7816-8 specifies commands for security operations.
  - ISO/IEC 7816-9 specifies commands for card management.
  - ISO/IEC 7816-11 specifies personal verification through biometric methods.
  - ISO/IEC 7816-13 specifies commands for handling the life cycle of applications.
  - ISO/IEC 7816-15 specifies cryptographic information application.

ISO/IEC 10536 (all parts)<sup>[11]</sup> specifies access by close coupling. ISO/IEC 14443 (all parts)<sup>[14]</sup> and ISO/IEC 15693 (all parts)<sup>[16]</sup> specify access by radio frequency. Such cards are also known as contactless cards.

The International Organization for Standardization (ISO) and International Electrotechnical Commission (IEC) draw attention to the fact that it is claimed that compliance with this document may involve the use of a patent.

ISO and IEC take no position concerning the evidence, validity and scope of this patent right.

The holder of this patent right has assured ISO and IEC that he/she is willing to negotiate licences — reasonable and non-discriminatory terms and conditions with applicants throughout the world. In this respect, the statement of the holder of this patent right is registered with ISO and IEC. Information may be obtained from the patent database available at [www.iso.org/patents](http://www.iso.org/patents).

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# Identification cards — Integrated circuit cards —

## Part 4:

# Organization, security and commands for interchange

## 1 Scope

This document is intended to be used in any sector of activity. It specifies:

- contents of command-response pairs exchanged at the interface,
- means of retrieval of data elements and data objects in the card,
- structures and contents of historical bytes to describe operating characteristics of the card,
- structures for applications and data in the card, as seen at the interface when processing commands,
- access methods to files and data in the card,
- a security architecture defining access rights to files and data in the card,
- means and mechanisms for identifying and addressing applications in the card,
- methods for secure messaging,
- access methods to the algorithms processed by the card. It does not describe these algorithms.

It does not cover the internal implementation within the card or the outside world.

This document is independent from the physical interface technology. It applies to cards accessed by one or more of the following methods: contacts, close coupling and radio frequency. If the card supports simultaneous use of more than one physical interface, the relationship between what happens on different physical interfaces is out of the scope of this document.

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

ISO/IEC 7816-6, *Identification cards — Integrated circuit cards — Part 6: Interindustry data elements for interchange*

ISO/IEC 8825-1, *Information technology — ASN.1 encoding rules: Specification of Basic Encoding Rules (BER), Canonical Encoding Rules (CER) and Distinguished Encoding Rules (DER) — Part 1:*

## 3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.