

INTERNATIONAL
STANDARD
7816-3

ISO/IEC

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**Identification cards — Integrated circuit(s) cards
with contacts —**

Part 3 :
Electronic signals and transmission protocols

*Cartes d'identification — Cartes à circuit(s) intégré(s) à contacts -
Partie 3 : Signaux électroniques et protocoles de transmission*



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Foreword

ISO (the International Organization for Standardization) and IEC (the International Electrotechnical Commission) together form a system for worldwide standardization as a whole. 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.

In the field of information technology, ISO and IEC have established a joint technical committee, ISO/IEC JTC1. Draft International Standards adopted by the joint technical committee are circulated to national bodies for approval before their acceptance as International Standards. They are approved in accordance with procedures requiring at least 75 % approval by the national bodies voting.

International Standard ISO/IEC 7816-3 was prepared by Joint Technical Committee ISO/IEC JTC1, *Information Technology*.

Introduction

This part of ISO/IEC 7816 is one of a series of standards describing the parameters for integrated-circuit(s) cards with contacts and the use of such cards for international interchange.

These cards are identification cards intended for information exchange negotiated between the outside and the integrated circuit in the card. As a result of an information exchange, the card delivers information (computation results, stored data), and/or modifies its content (data storage, event memorization).

During the preparation of this International Standard, information was gathered concerning relevant patents upon which application of this standard might depend. Relevant patents were identified in France and USA, the patent holder being Bull S.A. in each case. However, ISO cannot give authoritative or comprehensive information about evidence, validity or scope of patents or like rights.

The patent holder has stated that licences will be granted on appropriate terms to enable application of this part of ISO/IEC 7816, provided that those who seek licences agree to reciprocate.

Further information is available from:

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FRANCE

Identification cards - Integrated circuit(s) cards with contacts -

Part 3 : Electronic signals and transmission protocols

Scope

This part of ISO/IEC 7816 specifies the power and signal structures, and information exchange between an integrated circuit(s) card and an interface device such as a terminal.

It also covers signal rates, voltage levels, current values, parity conventions, operation procedures, transmission mechanisms and communication with the integrated circuit(s) card.

It does not cover information and instruction content, such as identification of issuers and users, services and limits, security features, journaling and instruction definitions.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this part of ISO/IEC 7816.

At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this part of ISO/IEC 7816 are encouraged to investigate the possibility of applying the most recent editions of the standards listed below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 1177 : 1985, *Information processing — Character structure for start/stop and synchronous character oriented transmission.*

ISO 7810 : 1985. *characteristics.*

Identification cards — Physical

ISO 7816-1:1987, *Identification cards — Integrated circuit(s) cards with contacts — Part 1 : Physical characteristics.*

ISO 7816-2:1988, *Identification cards — Integrated circuit(s) cards with contacts — Part 2: Dimensions and location of the contacts.*

3 Definitions

The term identification card is defined in ISO 7810. For the purpose of this part of ISO/IEC 7816, the following definitions apply:

Interface device: A terminal, communication device or machine to which the integrated circuit(s) card is electrically connected during operation.

State H : High state logic level.

State L : Low state logic level.

State Z : Mark (as defined in ISO 1177).

State A : Space (as defined in ISO 1177).

'XY': Hexadecimal notation, equal to XY to the base 16.

4 Electrical characteristics of the contacts

4.1 Electrical functions

Contacts assignments are specified in ISO 7816-2, supporting at least the following electrical circuits:

I/O: Input or output for serial data to the integrated circuit inside the card.

VPP: Programming voltage input (optional use by the card).

GND: Ground (reference voltage).

CLK: Clocking or timing signal (optional use by the card).

RST: Either used by itself (reset signal supplied from the interface device) or in combination with an additional internal reset control circuit (optional use by the card). If internal reset is implemented, the voltage supply on VCC is mandatory.

VCC: Power supply input (optional use by the card).

NOTE — The use of two remaining contacts will be defined in the appropriate application standards.

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