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Identification cards — Integrated circuit cards —

Part 6: Interindustry data elements for interchange

iTeh STANDARD PREVIEW
Cartes d'identification — Cartes à circuit intégré —
(standards.iteh.ai) *Partie 6: Éléments de données intersectoriels pour les échanges*

ISO/IEC FDIS 7816-6

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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).

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) 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.

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 7816-6:2016), which has been technically revised.

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

- The data format of IC manufacturer ID has been extended from a single byte to multiple bytes.

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.

Introduction

ISO/IEC 7816 is a series of International 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) specifies access by close coupling. ISO/IEC 14443 (all parts) and ISO/IEC 15693 (all parts) specify access by radio frequency. Such cards are also known as contactless cards.

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Identification cards — Integrated circuit cards —

Part 6: Interindustry data elements for interchange

1 Scope

This document specifies directly or by reference, data elements, including composite data elements that may be used in interindustry interchange.

It identifies the following characteristics of each data element:

- identifier;
- name;
- description and reference;
- format and coding (if not available in other ISO standards or parts of the ISO/IEC 7816 series).

The layout of each data element is described as seen at the interface between the interface device and the card.

This document provides the definition of data elements without consideration of any restrictions on the usage of the data elements.

It does not cover the internal implementation within the card and/or the outside world. With the exception of login data objects (6.5), only application class tags are eligible in this document.

When using an interindustry template, an application is allowed to nest context-specific class tags (see ISO/IEC 7816-4) under such a template unless it is previously marked as reserved for future use by ISO/IEC JTC 1/SC 17.

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 4909, *Identification cards — Financial transaction cards — Magnetic stripe data content for track 3*

ISO/IEC 7813, *Information technology — Identification cards — Financial transaction cards*

ISO/IEC 10918-1, *Information technology — Digital compression and coding of continuous-tone still images: Requirements and guidelines*

ISO/IEC 11544, *Information technology — Coded representation of picture and audio information — Progressive bi-level image compression*

3 Terms and definitions

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

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

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <http://www.electropedia.org/>

**3.1
cardholder**

end user of the security device

**3.2
data element**

item of information seen at the interface for which are defined a name, a description of logical content, a format and a coding

[SOURCE: ISO/IEC 7816-4:—, 3.15]

**3.3
data object**

information seen at the interface consisting of the concatenation of a mandatory tag field, a mandatory length field and a conditional value field

[SOURCE: ISO/IEC 7816-4:—, 3.16]

**3.4
template**

concatenation of BER-TLV *data objects* (3.3) forming the value field of a constructed BER-TLV data object

Note 1 to entry: The meaning of which is the same when found in 'XY' template, template for 'XY' DOs or 'XY' DOs template

[SOURCE: ISO/IEC 7816-4:—, 3.60, modified — Note 1 to entry has been added.]
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4 Abbreviated terms and notation

- a alphabetic character
- n numeric (binary-coded decimal format)
- s special character
- an alphanumeric character
- ans alphanumeric and special characters
- .. denotes a range of values between two numbers
- BCD binary-coded decimal
- BER-TLV basic encoding rules – tag length value

NOTE 1 For BCD several encodings exist, e.g. packed and unpacked. The letter 'n' covers all of them unless specified otherwise.

Any number following the notation denotes the number of digits or characters.

EXAMPLE

- a3 means three alphabetic characters;

- n..100 means up to 100 digits, lower boundary out of scope for this document (possibly zero, one or any number lower or equal to 100);
- n2..4 means two, three or four numeric digits.

If the number of bits representing a data element is not a multiple of eight, then the mapping into a byte string should be defined in the context of the respective data element. If not specified otherwise, the bit-string representing the data element is right-padded with bits set to '1' until the length of the padded bit-string is a multiple of eight.

YDDD	last digit of year concatenated with day of year on three digits
YDDDDHHMMSS	YDDD concatenated with hour of day, minute and second each on two digits
YYMM	last two digits of year concatenated month on two digits
YYMMDD	YYMM concatenated with day of month on two digits
YYYYMMDD	four digits of year concatenated with month and day of month each on two digits

NOTE 2 The former 3-period notation being equivalent to 2-period notation is deprecated.

5 Maintenance of interindustry data objects

It is the intention that every interindustry data object, specified at the time of publication, should be listed in this document. To allow the introduction, deletion, or amendment of any data object, the following procedures shall be adopted:

- **Interindustry data objects from ISO/IEC 7816 (all parts)** — Following the publication of any part of the ISO/IEC 7816 series that introduces new data objects, these data objects will be incorporated into this document at the next revision.
- **Interindustry data objects from other standards** — For such data objects, an amendment to this document will be required and this will be subject to the normal ISO/IEC JTC 1 voting procedures. Following a successful ballot, the data objects will be incorporated into this document.
- **Allocation authority** — Once an application class tag is allocated to a norm as described above, this norm becomes the allocation authority for all context-specific data objects it endorses and encapsulates under the aforementioned tag.

6 Specific interindustry data elements

6.1 Name of an individual

Referenced by tag '5B', this interindustry data element consists of up to 39 bytes; each byte is a character as defined in ISO/IEC 7501-1. The data element consists of surname, i.e. family name, given name(s), i.e. forename(s), name suffix, e.g. Jr., number, and filler(s), all coded according to ISO/IEC 8859-1.

National languages with non-Latin characters shall be transliterated or transcribed into the Latin alphabet using the appropriate International Standard. In cases where names cannot be shown in full or a special alphabet is needed or the transliteration or transcription is not sufficient, the qualified name template should be used.

6.2 Proprietary login data

Referenced by tag '5E', this interindustry data element consists of login data with proprietary structures not specified in ISO/IEC 7816 (all parts).

6.3 Magnetic stripe data

The coding of the magnetic stripe data is as follows:

- referenced respectively by tags ‘5F21’, ‘5F22’ and ‘5F23’, these interindustry data elements shall code card tracks 1, 2 and 3. Such a tag shall be used when the data element is identical to the data coded on the corresponding track on the magnetic stripe of the card in accordance with ISO/IEC 7813 and ISO/IEC 4909;
- referenced respectively by tags ‘56’, ‘57’ and ‘58’, these interindustry data elements shall code application tracks 1, 2 and 3. Such a tag shall be used when, while formatted according to ISO/IEC 7813 and ISO/IEC 4909, the data element may differ from the data coded on the corresponding track of the magnetic stripe of the card.

6.4 PIN usage policy

Referenced by tag ‘5F2F’, this interindustry data element shall consist of two bytes. It lists the tests the terminal shall perform in order to determine whether a PIN (personal identification number) is applicable to the current transaction, and, therefore, whether the terminal should prompt for the PIN. If set to one, bit 8 of the first byte specifies that a PIN applies to this application and the terminal should prompt for the PIN. The meaning of the other fifteen bits is application-dependent. If all bits are set to zero, then the terminal should not prompt for the PIN. If bit 8 of the first byte is set to one or if any test implies a PIN, but the PIN cannot be presented, then the action to take is application-dependent.

6.5 Login template

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Referenced by tag ‘6A’, this interindustry template shall consist of one or more primitive data objects. Within the login template, the context-specific class (first byte in the range ‘80’ to ‘BF’) is reserved for login data objects, such as qualifiers, numbers, texts and delay indicators, as listed in [Table 1](#) and specified hereafter.

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Table 1 — Login data objects

Tag (hex)	Meaning
6A	Interindustry template for nesting login data objects with the following tags
80	Qualifier
81	Number
82	Text
83, 84	Delay indicators
In this context, ISO/IEC JTC 1/SC 17 reserves any other data object of the context-specific class (first byte from ‘80’ to ‘BF’)	

- **Qualifier** — Referenced by tag ‘80’ in a login template, this data element shall consist of one to nine bytes: A mandatory first byte coding a rank, followed by up to eight optional bytes coding a mnemonic. It shall qualify the subsequent objects in the template, until the next qualifier, if any.
 - The rank is a number from zero to 255. If two or more qualifiers have the same rank within the same context, then only the set of objects qualified by the most recent one is valid.
 - The mnemonic is a string of up to eight bytes consisting of 7-bit characters (bit 8 set to 0, see ISO/IEC 646) to display at the man-machine interface.
- **Number** — Referenced by tag ‘81’ in a login template, this data element shall consist of an even number of quartets where each quartet codes one character for representing a telephone number according to [Table 2](#).
- **Text** — Referenced by tag ‘82’ in a login template, this data element shall consist of one or more bytes where each byte codes one character. Bit 8 sets the difference between data characters (bit 8

set to zero) and control characters (bit 8 set to one). The byte string consists of one or more strings of data characters (7-bit character, see ISO/IEC 646) separated by strings of control characters. The following control characters are defined.

- ‘80’ — A message has to be received before sending the next character.
- ‘C0’ — A modulation has to be present before sending the next character.
- ‘8X’ — X characters have to be received in echo before waiting for a message.
- **Delay indicators** — Referenced by tag ‘83’ or ‘84’ in a login template, this data element shall consist of one byte as specified in [Table 3](#).
 - When present, a delay indicator data object with tag ‘83’ fixes the time for detecting an end of message. The default value shall be two seconds.
 - When present, a delay indicator data object with tag ‘84’ fixes the time for detecting an absence of response. The default value shall be sixty seconds.

Table 2 — Telephone number

Quartet	Character	Meaning
‘0’ to ‘9’	0 to 9	Decimal digits
‘A’	(Opening bracket
‘B’)	Closing bracket
‘C’	C	Requirement for connecting to the line before continuing
‘D’	+	Introduction to an international telephone number
‘E’	—	If first, introduction of a number to use without prefix If not first, requirement for a delay (two seconds) before continuing
‘F’		Reserved for padding

Table 3 — Delay indicator byte

b8	b7	b6	b5	b4	b3	b2	b1	Meaning
0	0							Any other value is reserved for future use by ISO/IEC JTC 1/SC 17.
—	—	x	x	—	—	—	—	The time unit is
—	—	0	0	—	—	—	—	— 100 milliseconds
—	—	0	1	—	—	—	—	— 1 second
—	—	1	0	—	—	—	—	— 10 seconds
—	—	1	1	—	—	—	—	— 100 seconds
				x	x	x	x	Number of time units from zero to fifteen

6.6 Qualified name template

Referenced by tag ‘6B’, this interindustry template shall consist of the following:

- one or more object identifiers (tag ‘06’) referring to the standards defining the qualified name presentation;
- a name (tag ‘80’ or ‘A0’), the value and coding of which are defined by the aforementioned standards;
- other related optional information (e.g. sex, nationality, place of birth).

6.7 Cardholder image template

Referenced by tag '6C', this interindustry template shall contain at least one data object as defined hereafter, possibly preceded by a tag allocation authority indicator (see ISO/IEC 7816-4) for identifying the authority responsible for the data object format.

- **Cardholder biometric data** — referenced by tag '5F2E', this interindustry data element contains biometric data for verifying the claimed identity of the person presenting the card. Examples of biometric data are fingerprints, palm prints, voiceprints, dynamic signatures, etc.
- **Cardholder portrait image** — referenced by tag '5F40', this interindustry data element shall be formatted as defined in ISO/IEC 10918-1, unless otherwise specified and/or requested by an authority.
- **Cardholder handwritten signature image** — referenced by tag '5F43', this interindustry data element shall be formatted as defined in ISO/IEC 11544 unless otherwise specified and/or requested by an authority.

The use of this interindustry data object should be associated with appropriate security measures.

Further information on personal verification through biometric methods may be found in ISO/IEC 7816-11.

6.8 Application image template

Referenced by tag '6D', this interindustry template shall contain at least an application image (tag '5F44'), i.e. an icon or a logo related to the application. It may also contain an authority indicator (see ISO/IEC 7816-4) identifying the authority responsible for the data format of the application image. In the absence of authority indicator, the format shall be as defined in ISO/IEC 10918-1.

6.9 Display control template

Referenced by tag '7F20', this interindustry template may contain one or more data objects, the value of which, either directly or indirectly through templates, is not intended to be displayed and should only be used, when relevant, for processing of transmission.

7 Identification of integrated circuit manufacturers

7.1 General

This clause specifies

- a numbering system for integrated circuit manufacturer identifiers, and
- rules for registration of integrated circuit manufacturers and rules for assignment of identifiers

to identify manufacturers of integrated circuits to be embedded in contact and/or contactless integrated circuits cards. The assigned values of the integrated circuit manufacturer identifiers will form the register.

7.2 Identifier

The identifier is referenced by tag '5F4D'. It may be present in pre-issuing data (compact header '6Y' in the historical bytes and interindustry tag '46' in EF.ATR/INFO) on a proprietary basis.

NOTE Tag '5F4B' for referencing identifiers is deprecated in the ISO/IEC 7816 series, because two different definitions existed within that series.