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

Cartes d'identification — Cartes de transactions financières — Contenu des données de plage magnétique pour la piste 3

Reference number
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Foreword

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International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of the joint technical committee is to prepare International Standards. Draft International Standards adopted by the joint technical committee are circulated to national bodies for voting. Publication as an International Standard requires approval by at least 75 % of the national bodies casting a vote.

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.

ISO/IEC 4909 was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 17, *Cards and personal identification*.

This first edition of ISO/IEC 4909 cancels and replaces the third edition of ISO 4909:2000, which has been technically revised.

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Introduction

This International Standard recognizes the need for formats of track 3 which can be used independently of, or in conjunction with, track 2 as defined in ISO/IEC 7813. This approach is intended to permit the greatest degree of flexibility within the financial community in facilitating international interchange.

Using track 3 in conjunction with track 2 is a mode of operation in both on-line and off-line interchange environments. This mode of operation requires that the original encoded data on track 2 be read; the data on track 3 be read; and, if update is required, all the data on track 3 be rewritten.

Independent use of track 3 is an alternative mode of operation permitting both on-line interchange and off-line interchange based on mutual agreement between interested parties. It requires reading only of the data on track 3 and, if update is required, the rewriting of all the data on track 3.

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

1 Scope

This International Standard establishes specifications for financial transaction cards using track 3 and is intended to permit interchange based on the use of magnetic stripe encoded information. It specifies the data content and physical location of read/write information on track 3 and is to be used in conjunction with the relevant parts of ISO/IEC 7811 and ISO/IEC 7812.

2 Normative references

The following referenced documents are indispensable for the application 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 4217, *Codes for the representation of currencies and funds*

ISO/IEC 7810, *Identification cards — Physical characteristics*

ISO/IEC 7811 (all parts), *Identification cards — Recording technique*

ISO/IEC 7812 (all parts), *Identification cards — Identification of issuers*

ISO 9564-2: *Banking — Personal Identification Number management and security — Part 2: Approved algorithms for PIN encipherment*

3 Terms and definitions

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

3.1
card
financial transaction card generally used to identify parties to a financial transaction, and to provide input data for a transaction

3.2
check digit
check digit character as described in ISO/IEC 7812

3.3
cycle period
fixed or predetermined period of time qualifying the validity of certain transactions

3.4
issuer identification number
IIN
major industry identifier and issuer identifier as described in ISO/IEC 7812

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3.5
individual account identification
individual account identification as described in ISO/IEC 7812

3.6
personal identification number
PIN
code or password that the cardholder possesses for verification of identity

3.7
primary account number
PAN
number containing a maximum of 19 digits which serves to identify the card issuer and the card holder, consisting of the IIN, the individual account identification provided by the issuer and a check digit derived by using the Luhn Formula (see ISO/IEC 7812)

3.8
SAN-1
first optional subsidiary account identification held in addition to PAN (see 8.21)

3.9
SAN-2
second optional subsidiary account identification held in addition to PAN and SAN-1 (see 8.23)

4 Physical characteristics of the card

The card shall conform in all respects to the specifications in ISO/IEC 7810.

5 Location and dimensions of embossed data

If present, all embossed data on the card shall conform to the specifications in ISO/IEC 7811-1.

6 Physical and performance characteristics of the magnetic material

6.1 Physical characteristics

The physical characteristics and location of the magnetic material shall conform in all respects to the requirements of ISO/IEC 7811-2 and ISO/IEC 7811-6.

6.2 Performance characteristics

The performance characteristics of the magnetic materials for the card shall conform in all respects to the specifications contained in ISO/IEC 7811-2 and ISO/IEC 7811-6.

7 Encoding specifications

Encoding specifications shall conform in all respects to the requirements of ISO/IEC 7811-2 and ISO/IEC 7811-6.

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8 Data content of track 3

The sequence and length of data fields shall be as shown in Table 1 or 2 with details as follows. The coding character set shall be 5 bit numeric as defined in ISO/IEC 7811.

Table 1 — Track 3 information layout for format code 01

Field		M = Mandatory O = Optional	D = Dynamic S = Static (See NOTE 1)	F = Fixed V = Variable	Length
No.	**Content**				
1	Start sentinel	M	S	F	1
2	Format code	M	S	F	2
3	Primary account number: PAN	O	S	V	Max. 19
4	Field separator	M	S	F	1
5	Country code	M	S	F	1
6	Currency	M	S	F	3
7	Currency exponent	M	S	F	1
8	Amount authorized per cycle period	M	S	F	4
9	Amount remaining this cycle	M	D	F	4
10	Cycle begin	M	D	F	4
11	Cycle length	M	S	F	2
12	Retry count	M	D	F	1
13	PINPARM	M	S	F	6
		See NOTE 3			
14	Interchange control	M	S	F	1
15	Type of account and service restriction (PAN)	M	S	F	2
16	TA and SR (SAN-1)	M	S	F	2
17	TA and SR (SAN-2)	M	S	F	2
18	Expiry date	M	S	F	4
		See NOTE 3			
19	Card sequence number	M	S	F	1
20	Card security number	M	D	F	9
		See NOTE 3			
21	SAN -1	O	S	V	See NOTE 2
22	Field separator	M	S	F	1
23	SAN-2	O	S	V	See NOTE 2
24	Field separator	M	S	F	1
25	Relay marker	M	S	F	1
26	CCD	M	D	F	6
		See NOTE 3			
27	Additional data	O	D	V	See NOTE 2
28	End sentinel	M	S	F	1
29	LRC	M	D	F	1
				Maximum	107

NOTE 1 Dynamic fields shall be updated as appropriate by interchange partners. Static fields shall be updated by the card issuer only.

NOTE 2 The total number of characters in track 3 shall not exceed 107.

NOTE 3 If not used, replace by one field separator.

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Table 2 — Track 3 information layout for format code 02

Field		M = Mandatory O = Optional	D = Dynamic S = Static (See NOTE 1)	F = Fixed V = Variable	Length
No.	Content				
1	Start sentinel	M	S	F	1
2	Format code	M	S	F	2
3	Primary account number: PAN	O	S	V	Max 19
4	Field separator	M	S	F	1
5	Country code	M	S	F	1
6	Currency	M	S	F	3
7	Currency exponent	M	S	F	1
8	Amount authorized per cycle period	M	S	F	4
9	Amount remaining this cycle	M	D	F	4
10	Cycle begin	M	D	F	4
11	Cycle length	M	S	F	2
12	Retry count	M	D	F	1
13	PINPARM	M See NOTE 3	S	F	6
14	Interchange control	M	S	F	1
15	Type of account and service restriction (PAN)	M	S	F	2
16	TA and SR (SAN-1)	M	S	F	2
17	TA and SR (SAN-2)	M	S	F	2
18	Expiry date	M See NOTE 3	S	F	4
19	Card sequence number	M	S	F	1
20	Card security number	M See NOTE 3	D	F	9
21	SAN -1	O	S	V	See NOTE 2
22	Field separator	M	S	F	1
23	SAN-2	O	S	V	See NOTE 2
24	Field separator	M	S	F	1
25	Relay marker	M	S	F	1
26	CCD	M	D	F	6
27	Additional data	See NOTE 3			
27.1	Transaction date	M See NOTE 3	D	F	4
27.2	Additional verification value	M See NOTE 3	S	F	8
27.3	Alternative card sequence number	O See NOTE 4	S	F	3
27.4	International network identification code	M See NOTE 3	S	F	3
27.5	Discretionary data	O	D	V	See NOTE 2
28	End sentinel	M	S	F	1
29	LRC	M	D	F	1
				Maximum	107

NOTE 1 Dynamic fields shall be updated as appropriate by interchange partners. Static fields shall be updated by the card issuer only.

NOTE 2 The total number of characters in track 3 shall not exceed 107.

NOTE 3 If not used, replace by one field separator.

NOTE 4 A field separator in field 19 indicates that this field is present.

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8.1 Field 1: start sentinel

Purpose : To identify the start of data. The start sentinel is the first data character encoded on the track.

Format : One character.

Content : See ISO/IEC 7811-2 and ISO/IEC 7811-6.

8.2 Field 2: format code

Purpose : To identify the data format on track 3.

Format : Two digits.

Content : 00 - Invalid for international interchange.

01 - The layout shall conform to Table 1 of this International Standard.

02 - The layout shall conform to Table 2 of this International Standard.

03-89 – Reserved for future use by ISO.

90-99 - Available for use by individual card issuers but not for international interchange.

8.3 Field 3: primary account number (PAN)

Purpose : To identify the card issuer to which the transaction is to be routed and to identify the card holder.

Format : As defined in 3.7 of this International Standard, and in ISO/IEC 7812

Content : Issuer identification - 6 digits

Individual account identification – variable up to 12 digits.

Check digit - 1 digit

In dual track operation, where the PAN is encoded on track 2, the encoding of PAN on track 3 is optional.

8.4 Field 4: field separator (FS)

Purpose : To indicate the end of the PAN, whether PAN is encoded or not.

Format : One character.

Content : See ISO/IEC 7811-2 and ISO/IEC 7811-6.

8.5 Field 5: country code

Purpose : Deprecated. Previously used by ISO 4909:1987 for Country Code.

Format : One-character

Content : FS - See ISO/IEC 7811-2 and ISO/IEC 7811-6.

8.6 Field 6: currency

Purpose : To denote the type of currency to be employed when calculating for update.

Format : Three digits.

Content : Three zeros in the currency field indicate that the card is not available for international interchange. All other codes shall signify the numeric currency code contained in ISO 4217.

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8.7 Field 7: currency exponent

Purpose : To determine the base value of the amount authorized and amount remaining fields.

Format : One digit.

Content : A digit denoting the number of times the contents of the amount authorized and the amount remaining fields must be multiplied by 10 to express the value in the major currency unit of the currency.

EXAMPLE If the currency exponent is 0, the value is equal to the content.

If the currency exponent is 1, the value is the content multiplied by 10.

If the currency exponent is 2, the value is the content multiplied by 100.

Thus 1 000 units can be expressed as 1 000 with currency exponent = 0, as 100 with currency exponent = 1, and as 10 with currency exponent = 2.

8.8 Field 8: amount authorized per cycle period

Purpose : To denote the amount which is used to reset the amount remaining.

Format : Four digits.

Content : All zeros indicate that no debits are permitted.

8.9 Field 9: amount remaining this cycle

Purpose : To denote the remaining available balance of amount authorized for the current cycle period. It is expressed as the nearest unit of the currency in the amount authorized field.

Format : Four digits.

Content : On the first use after the commencement of each new cycle period, this field shall be reset to the value shown in the amount authorized field. Thereafter it shall contain the amount remaining this cycle.

8.10 Field 10: cycle begin

Purpose : To denote the date on which a new cycle period begins. This field may also be used to define the date on which the card becomes valid.

Format : Four digits in the form YDDD, where

Y is the least significant digit of the year

DDD is the sequential number of the day within the year in the range 001 to 366.

Content : The field shall be updated to the current date when the value of the cycle begin field plus the value of the cycle length field is less than or equal to the current date, unless the cycle length field is set in the range 80-99.

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8.11 Field 11: cycle length

Purpose :		To denote the period of time during which the accumulated sum of all debit transactions shall not exceed the amount authorized.
Format :		Two digits.
Content :	00	A card on which the amount remaining this cycle field shall be decremented but shall not be reset.
	01-79	The number of days in the cycle period.
	80	The cycle period shall be of 7 days duration, and the cycle begin field shall be updated only by the addition of multiples of 7.
	81	The cycle period shall be of 14 days duration, and the cycle begin field shall be updated only by the addition of multiples of 14.
	82	The cycle period shall begin only on the first or fifteenth day of a calendar month, whichever is appropriate.
	83	The cycle period shall begin on the same date of every calendar month commencing on the date represented by the cycle begin field which was set at card issue.
	84	The cycle period shall begin on the same date of every third calendar month commencing on the date represented by the cycle begin field which was set at card issue.
	85	The cycle period shall begin on the same date every sixth calendar month commencing on the date represented by the cycle begin field which was set at card issue.
	86	The cycle period shall begin on the anniversary of the date represented by the cycle begin field which was set at card issue.
	87-89	Reserved for future use by ISO.
	90-99	Available for use by individual card issuers but not for international interchange.

8.12 Field 12: retry count

Purpose :	To record the number of outstanding attempts available to enter the personal identification number (PIN) associated with the card.
Format :	One digit.
Content :	This field shall be set at card issue and subsequently reset after each successful entry of the PIN. It shall be decremented by one for each incorrect entry of the PIN.

In interchange the reset value shall be 3.

The card shall be invalid for all interchange purposes if the content of this field is zero.

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8.13 Field 13: personal identification number control parameters (PINPARM)

Purpose : To provide an optional security feature in the form of an algorithm code and a verification value.

Format : With format code 01, six numeric digits in the form AAVVVV, where present, or a one-character FS, where

AA is the algorithm identification ;

VVVV is the verification value.

With format code 02, six numeric digits in the form AKVVVV, where present, or a one-character FS, where

A is the algorithm identification ;

K is the key identification ;

VVVV is the verification value.

Content : With format code 01 :

AA value 00-09 indicates that a private algorithm is used.

value 10-19 indicates that TDEA is used (see ISO 9564-2).

value 20-99 : Reserved for future use by ISO

VVVV that number which, when used in conjunction with the algorithm calculation. Will validate the personal identification number.

FS See ISO/IEC 7811-2 and ISO/IEC 7811-6 - indicates that no PINPARM is present.

With format code 02 :

A value 0 indicates that a private algorithm is used.

A value 1 indicates that TDEA is used.

A value 2-9 : Reserved for future use by ISO

K value 0-9 at issuer's discretion or for bilateral agreement.

VVVV that number which, when used in conjunction with the algorithm calculation, will validate the personal identification number.

FS See ISO/IEC 7811-2 and ISO/IEC 7811-6 - indicates that no PINPARM is present.

8.14 Field 14: interchange control

Purpose : To indicate whether interchange is permitted on this card.

Format : One digit.

Content : 0 - No restriction.

1 - Not available for international interchange.

2–8 - Interchange restricted.

9 - Interchange restricted; recommended for test cards.

NOTE If interchange is restricted, card usage is limited to a specific locale, city or country and should not be accepted without prior arrangements with the card issuer.

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8.15 Field 15: type of account (TA) and service restriction (SR) – PAN

Purpose : To define TA and SR.

The TA digit defines the type of account recorded in the individual account identification in field 3.

The SR digit provides for control of interchange and control of debits, credits and transfers applied to the account number in field 3.

Format : Two digits.

Content : a) Type of account - first digit.

0 - PAN not encoded on track 3.

1 - Savings account.

2 - Current or checking account.

3 - Credit card account.

4 - A common number applicable to more than one type of account, for example universal account number.

5 - Interest-bearing current or checking account.

6–8 - Reserved for future use by ISO

9 - Available for issuer's internal use and not for interchange.

b) Service restrictions - second digit.

0 - No restrictions.

1 - No cash dispense.

2 - No point of service (POS) transaction.

3 - No cash dispense and no POS transaction.

4 - Positive authorization required.

5–7 - Reserved for future use by ISO

8–9 - Available for issuer's internal use.

NOTE With service restrictions 8 and 9, card usage is limited to a specific locale, city or country and should not be accepted without prior arrangements with the card issuer.

8.16 Field 16: type of account and service restrictions - SAN-1

Purpose : As specified in 8.15 but the content of this field shall refer to the account number contained in the SAN-1.

Format : Two digits.

Content : As specified in 8.15 except that TA with a value of zero indicates that SAN-1 is not encoded on track 3.

8.17 Field 17: type of account and service restrictions – SAN-2

Purpose : As specified in 8.15 but the content of this field shall refer to the account number contained in the SAN-2.

Format : Two digits.

Content : As specified in 8.15 except that TA with a value of zero indicates that SAN-2 is not encoded on track 3.

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8.18 Field 18: expiry date

Purpose :	To indicate the date after which the card ceases to be valid.
Format :	Four digits in the form YYMM, where present, or a one-character FS, where :
	YY is the year of expiry ;
	MM is the month of expiry
Content :	YY - Two digits to signify the year during which the card ceases to be valid.
	MM - The numeric sequence of the month within the year. The card ceases to be valid after the last day of the month specified.
	FS – See ISO/IEC 7811-2 and ISO/IEC 7811-6 - indicates that no expiry date is present.

8.19 Field 19: card sequence number

Purpose :	To distinguish between separate cards (issued concurrently or consecutively) with the same PAN.
Format :	One digit.
Content :	Any numeric digit at issuer's discretion.
	If format code 02 is used any numeric character or FS. A field separator indicates that alternative card sequence number, is present.

This field shall be set at original issue or at the renewal of the card following expiration. It should be incremented each time an additional or replacement card is issued.

8.20 Field 20: card security number

Purpose :	To relate the data contained on the magnetic stripe to the physical card.
Format :	Nine digits in the form MCCCCCCCC, where present, or a one-character FS, where
	M is the security method identifier ;
	CCCCCCCC is the code which enables the relationship between data and card to be established.
Content :	M - value 0-4 Available for national use.
	M - value 5-8 - Reserved for international security methods standardized by ISO
	M - value 9 - Available for private use.
	CCCCCCCC - To be determined by the security method.
	FS - See ISO/IEC 7811-2 and ISO/IEC 7811-6 - indicates that no card security number is present.

8.21 Field 21: first subsidiary account number (SAN-1)

Purpose :	To identify the first optional subsidiary account.
Format :	Variable, including zero length.
Content :	Any numeric value.

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8.22 Field 22: field separator

Purpose : To terminate, or to indicate the absence of, SAN-1.

Format : One character.

Content : See ISO/IEC 7811-2 and ISO/IEC 7811-6.

8.23 Field 23: second subsidiary account number (SAN-2)

Purpose : To identify the second optional account.

Format : Variable, including zero length.

Content : Any, numeric value.

8.24 Field 24: field separator

Purpose : To terminate, or to indicate the absence of, SAN-2.

Format : One character.

Confent : See ISO/IEC 7811-2 and ISO/IEC 7811-6.

8.25 Field 25: relay marker

Purpose : To provide the facility whereby the length of interchange messages passing between banks' computer centres may be reduced. An indicator will show whether or not the interchange message is to include the contents of the additional data field.

Format : One digit.

Content : 0 – Include all discretionary data.

1 – Do not include additional data.

2 – Do not include discretionary data.

3 – 9 Invalid.

8.26 Field 26: crypto check digits (CCD)

Purpose : To provide a means of verifying the integrity of the data elements on track 3 through application of a cryptographic formula.

Format : Six digits, where present, or a one-character FS.

Content : Not defined in this International Standard

FS : See ISO/IEC 7811-2 and ISO/IEC 7811-6 - indicates that no CCD is present.

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8.27 Field 27: additional data

If format code 01 is used the following definition applies :

Purpose : To contain discretionary data meaningful to the card issuer. The contents of this field shall be contained in the interchange message passing between the device operator and the card issuer if the relay marker is zero.

Format : Variable, including zero length.

Content : Any numeric value.

If format 02 is used the following subfields are required.

8.27.1 Field 27.1: transaction date

Purpose : To recognize the date of last cash dispense.

Format : Four digits in the form YDDD or a one-character FS, where :

Y is the least significant digit of the year ;

DDD is the sequential number of the day within the year in the range 001-366.

Content : In an interchange environment this field shall be updated to the current date after each cash dispense.

FS : See ISO/IEC 7811-2 and ISO/IEC 7811-6 - indicates that no transaction date is present.

8.27.2 Field 27.2: additional verification value(s)

Purpose : To provide the validation of the PIN or a relation between two PIN verification procedures of the same procedure with different keys.

Format : Eight numeric digits or a one character FS.

Content : By bilateral agreement this field may be used for two four digit verification values or an eight digit verification value; or, in connection with the last four characters of field 13, these two fields may be used for two six digit verification values.

FS : See ISO/IEC 7811-2 and ISO/IEC 7811-6 - indicates that no additional verification value is present.

8.27.3 Field 27.3: alternative card sequence number

Purpose : To distinguish between separate cards (issued concurrently or consecutively) with the same PAN and to allow a maximum of 999 card sequence numbers if there are more than nine cards.

Format : Three numeric digits “nnn”.

Content : At issuer’s discretion.

If this field is present, it is essential that field 19 contain an FS (see ISO/IEC 7811-2 and ISO/IEC 7811-6).

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8.27.4 Field 27.4: international network identification code

Purpose : Code identifying an international grouping of card issuers providing a reciprocal service. This code is designed to permit the identification of groupings, when the preferred use of Issuer Identification Number (IIN) as defined in ISO/IEC 7812 is not possible.

Format : Three numeric digits or a one-character FS.

Content : Numeric code as registered or FS.

FS : See ISO/IEC 7811-2 and ISO/IEC 7811-6 - indicates that no international network identification code is present.

Applicants wishing to register a network code shall apply through their national standards body to ISO/TC 68.

NOTE This is equivalent to the term Network International Identifier used in ISO 8583.

8.27.5 Field 27.5: discretionary data

Purpose : To contain discretionary data meaningful to the card issuer. The contents of this field shall be contained in the interchange message passing between the device operator and the card issuer if the relay marker is zero.

Format : Variable, including zero length.

Content : Any numeric value.

8.28 Field 28: end sentinel

Purpose : To indicate the termination of meaningful data on track 3.

Format : One character.

Content : See ISO/IEC 7811-2 and ISO/IEC 7811-6.

8.29 Field 29: longitudinal redundancy check (LRC)

Purpose / Content : The LRC character shall conform in all respects to the specification contained in ISO/IEC 7811-2 and ISO/IEC 7811-6.

Format : One character.

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Bibliography

[1] ISO/IEC 18033-3: *Information technology — Security techniques — Encryption algorithms — Part 3: Block ciphers*

[2] ISO 8583 (all parts), *Financial transaction card originated messages — Interchange message specifications*

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