INTERNATIONAL STANDARD

ISO 9992-1

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Financial transaction cards — Messages between the integrated circuit card and the card accepting device —

Part 1: Concepts and structures

Cartes de transactions financières — Messages entre la carte à circuit intégré et le dispositif d'acceptation des cartes —

Partie 1: Concepts et structures

Reference number
ISO 9992-1 : 1990 (E)

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

International Standard ISO 9992-1 was prepared by Technical Committee ISO/TC 68, *Banking and related financial services.*

ISO 9992 consists of the following parts, under the general title *Financial transaction cards — Messages between the integrated circuit card and the card accepting device*:

— *Part 1: Concepts and structures*

— *Part 2: Functions*

— *Part 3: Messages (commands and responses)*

— *Part 4: Common data for interchange*

— *Part 5: Data elements*

Annex A of this part of ISO 9992 is for information only.

Financial transaction cards - Messages between the integrated circuit card and the card accepting device -

Part 1 : Concepts and structures

Introduction

The concepts on which this part of ISO 9992 has been developed are based upon the following considerations :

- this part of ISO 9992 provides compatibility with existing ISO standards referenced in clause 2 and is intended to provide the flexibility to accommodate future Integrated Circuit Card (ICC) technology;

- this part of ISO 9992 supports the use of a single application or multiple applications in an ICC. When more than one application exists in the ICC, multiple applications of the same type of service (e.g. electronic chequebook) may be present. Applications may be added to the ICC at any time during its life cycle, with the agreement of the issuer, and according to security rules defined in ISO 10202. An application may be logically deleted from the ICC at any time during its life cycle, in accordance with agreed procedures between the operating parties.

1 Scope

This part of ISO 9992 is applicable to the use of Integrated Circuit Cards issued by Financial Institutions in retail financial applications in an interchange environment. It specifically addresses :

- the functions required for financial interchange,

- the structure and types of messages between the Integrated Circuit Card (ICC) and the Card Accepting Device (CAD) to effect those functions,

- the identification and definition of data elements which may or shall be used during exchanges between the ICC and the CAD.

ISO 9992-1 establishes the concepts by which the ICC and the CAD exchange messages. This makes it necessary also to describe the logical structure of data within the ICC.

This part of ISO 9992 defines messages to support the security requirements of authentication (e.g. card authentication, CAD authentication, cardholder verification). It does not specify or recommend any method or procedure. Security techniques shall be implemented in accordance with ISO 10202.

This part of ISO 9992 is independent of the capabilities of the CAD (connectable or not, attended or unattended) and its status (on-line or off-line).

This part of ISO 9992 does not define the methodologies deployed to implement an application.

This part of ISO 9992 is based on the existence of a logical data structure and provides rules for the way data in the ICC is logically referenced by the CAD. It does not define how data is physically structured in the ICC.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this part of ISO 9992. 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 9992 are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 4909 : 1987,	*Bank cards-Magnetic stripe data content for track 3.*
ISO 7810 : 1985,	*Identification cards - Physical characteristics.*
ISO 7812 : 1987,	*Identification cards - Numbering system and registration procedure for issuer identifiers*
ISO 7813 : 1987,	*Identification cards - Financial transaction cards.*
ISO 7816-3 :1989,	*Identification cards - Integrated circuit(s) cards with contacts. Part 3 : Electronic signals and transmission protocols .*
ISO 7816-4 : ---- [1],	*Identification cards - Integrated circuit(s) cards with contacts. Part 4 : Interindustry commands (under study by ISO /IEC 1 /17/4)*
ISO 10202 : -----[1],	*Financial transaction cards - Security architecture of financial transaction systems using integrated circuit cards.* [1]

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1) **To be published.**

3 Definitions and abbreviations

For the purpose of this International Standard, the following definitions apply.

Application Data File (ADF): A file that supports one or more services.

Card Accepting Device (CAD): The device used to interface with the Integrated Circuit Card.

command: A request or advice message which initiates an action and which solicits a response.

Common Data File (CDF): A mandatory file that contains the common data elements stored in the ICC and used to describe the card, the card issuer and the cardholder.

file: An organised set of data elements and/or program code in the ICC.

function: A process accomplished by one or more commands and resultant actions which is used to perform all or part of a transaction.

Integrated Circuit Card (ICC) : An ID-1 type card (see ISO 7810) into which has been embedded one or more integrated circuits.

message: An ordered series of characters transmitted from the CAD to the ICC or vice-versa.

Primary Account Number (PAN): The assigned number that identifies the card issuer and cardholder. This number is composed of an issuer identification number, individual account identification, and an accompanying check digit.

NOTE: Equivalent to identification number, as specified in ISO 7812. See also ISO 4909.

Personal Identification Number (PIN): The code or password the customer possesses for verification of identity.

response: A message returned to the initiator after the processing of a command to the recipient.

4 Concepts and structures

4.1 Logical structure of the data within the ICC

The logical data structure enables an ICC to support, with the minimum duplication of data, services independent from each other. These services may be provided by different application suppliers.

Data that may be used by all services supported by an ICC (e.g. PAN, card expiry date) are contained in the Common Data File (CDF). Only one CDF shall be present in an ICC. The card issuer shall be responsible for the presence, contents and use of the CDF.

Data stored in an ICC to service a business transaction is contained in the CDF and/or in an Application Data File (ADF). One or more ADF may be present in an ICC to accommodate different financial and non-financial services.

An ICC may contain a CDF without the presence of an ADF.

4.2 Interactions between the ICC and the CAD

The ICC and the CAD interact using messages. These messages, which are commands and their responses, are used to accomplish functions which are part or all of a transaction.

Annex A illustrates the relationships which are described hereafter.

4.2.1 Relationship between transactions and functions

A transaction (e.g. cash withdrawals, purchase, PIN change) consists of one or more functions (e.g. cardholder verification, CAD authentication, transaction recording).

Those functions which are defined as either mandatory or recommended for use in international financial interchange are specified in part 2 of this International Standard. Additional functions may be added to support activities defined by bilateral agreements.

4.2.2 Relationship between functions and messages

A function as described in 4.3.1 shall be accomplished using one or more pairs of messages. These messages are commands (e.g. read, write) and their responses (e.g. acknowledgement, data). After processing a command, resulting in a decision and/or an action, the receiver shall return a response to the sender.

The commands and responses used to accomplish each function are identified in part 3 of this International Standard.

Generic commands are described in ISO 7816-4. Financial ICC specific commands are described in part 3 of this International Standard.

4.3 Data access attributes

4.3.1 Read access attributes

Three classes of read access are defined :

- Public Read Access (PR): The data is available to the CAD without any restriction;

- Conditional Read Access (CR): The data is available only after specific criteria have been met;

- No Read Access (NR): The data shall never be read by the CAD.

4.3.2 Write access attributes

Three classes of write access are defined :

- Free Write Access (FW): The data may be added, modified or deleted without any restriction;

- Conditional Write Access (CW) : The data may be added, modified or deleted only after specific criteria have been met;

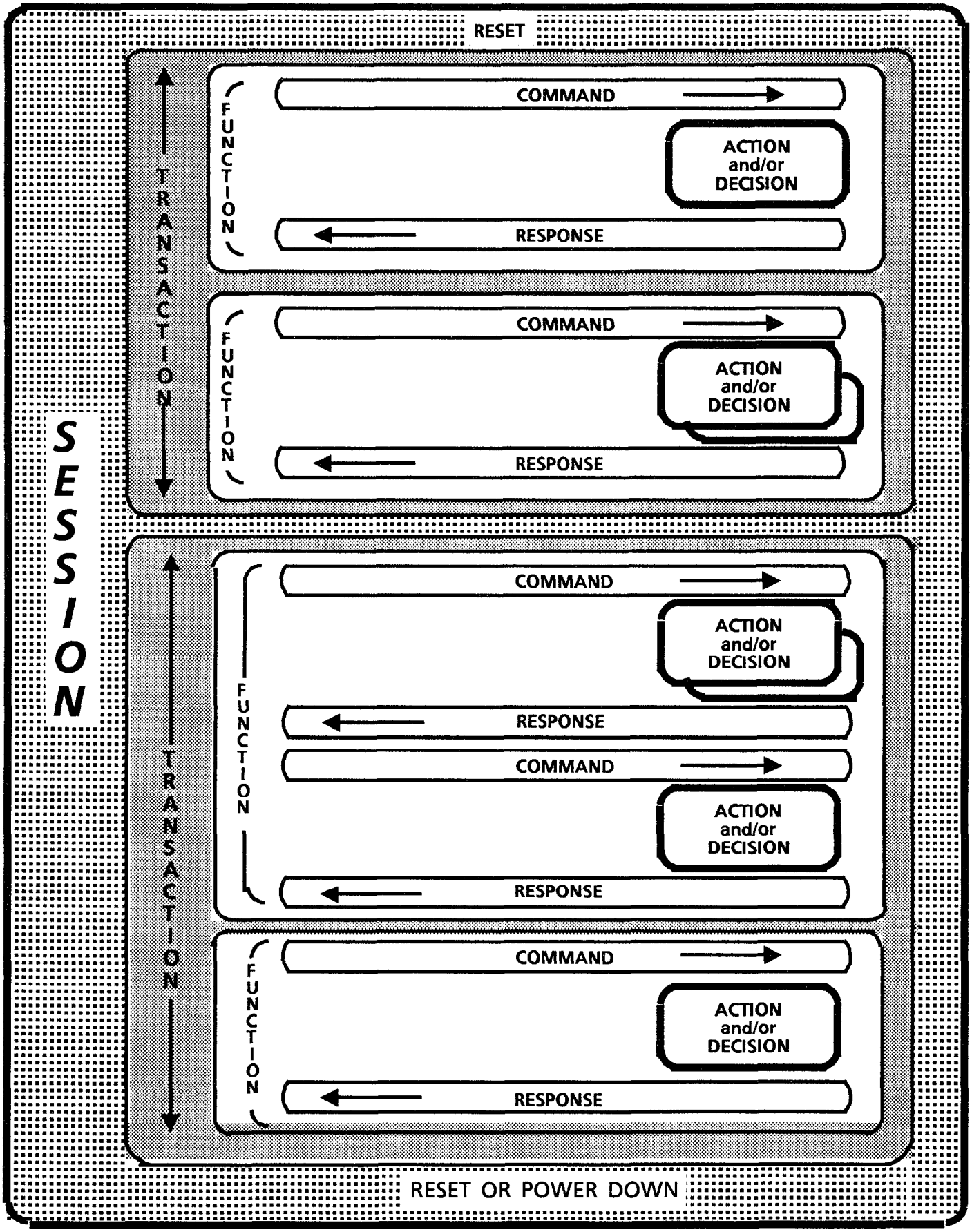
- One time Write Access (OW) : The data, once written, cannot be altered or modified.

4.4 Compatibility with present technology

The Primary Account Number, or PAN, shall always be present in the CDF (see ISO 7812, 7813 and 4909).

If the ICC also contains an embossed PAN and/or magnetic stripes encoded according to ISO 7813, the International Interchange PAN in the CDF shall be identical to that embossed and/or that encoded in the magnetic stripes.

Annex A
(informative)
Relationships between transactions, functions and messages



Notations on ICC relationships

The schematic shows the relationships between the components of a session initiated by the insertion of an ICC into the CAD and terminated by its removal.

The illustration is not intended to show that the flow is unidirectional (from CAD to ICC), nor does it imply that future technology will be restricted to these boundaries (e.g. an entire transaction may be accomplished by a single command and response).

Three levels of relationships are identified in this schematic:

a) function consisting of a single command which causes a single action or decision followed by a response is expressed as

$$F = [C1 + A1/D1 + R1]$$

b) function consisting of multiple sets of commands, actions/decisions and responses is expressed as

$$F = [(C1 + A1 + R1) + (C2 + D2 + R2)... + (C5 + D5 + R5)]$$

c) function consisting of a single command and response that has multiple actions and decisions is expressed as

$$F = [C1 + (A1 + D2 + A3) + R1]$$

where F is the function

C1, C2 etc. are commands;
A1, A2 etc. are actions;
D1, D2 etc. are decisions; and
R1, R2 etc. are responses.

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Descriptors : banking, credit cards, printed-circuit cards, messages, data representation.

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