

# Identification card systems — Surface transport applications —

## Part 2: Transport payment related data elements

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# National foreword

This Draft for Development is the English language version of ENV 1545-2:1998.

**This publication is not to be regarded as a British Standard.**

It is being issued in the Draft for Development series of publications and is of a provisional nature due to the limited duration of the European prestandard. It should be applied on this provisional basis, so that information and experience of its practical application may be obtained.

Comments arising from the use of this Draft for Development are requested so that UK experience can be reported to the European organization responsible for its conversion into a European Standard. A review of this publication will be initiated 2 years after its publication by the European organization so that a decision can be taken on its status at the end of its three-year life. The commencement of the review period will be notified by an announcement in *Update Standards*.

According to the replies received by the end of the review period, the responsible BSI Committee will decide whether to support the conversion into a European Standard, to extend the life of the prestandard or to withdraw it. Comments should be sent in writing to the Secretary of BSI Technical Committee IST/17, Identification cards and related devices, at 389 Chiswick High Road, London W4 4AL, giving the document reference and clause number and proposing, where possible, an appropriate revision of the text.

The UK did not participate in this prestandard due to lack of technical expertise in this area.

A list of organizations represented on this committee can be obtained on request to its secretary.

**Cross-references**

The British Standards which implement international or European publications referred to in this document may be found in the BSI Standards Catalogue under the section entitled “International Standards Correspondence Index”, or by using the “Find” facility of the BSI Standards Electronic Catalogue.

**Summary of pages**

This document comprises a front cover, an inside front cover, pages i and ii, the ENV title page, pages 2 to 30 and a back cover.

This standard has been updated (see copyright date) and may have had amendments incorporated. This will be indicated in the amendment table on the inside front cover.

This Draft for Development, having been prepared under the direction of the DISC Board, was published under the authority of the Standards Committee and comes into effect on 15 November 1998

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**Amendments issued since publication**

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## Identification card systems — Surface transport applications — Part 2: Transport payment related data elements

This European Prestandard (ENV) was approved by CEN on 19 April 1998 as a prospective standard for provisional application.

The period of validity of this ENV is limited initially to three years. After two years the members of CEN will be requested to submit their comments, particularly on the question whether the ENV can be converted into a European Standard.

CEN members are required to announce the existence of this ENV in the same way as for an EN and to make the ENV available promptly at national level in an appropriate form. It is permissible to keep conflicting national standards in force (in parallel to the ENV) until the final decision about the possible conversion of the ENV into an EN is reached.

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# CEN

European Committee for Standardization  
Comité Européen de Normalisation  
Europäisches Komitee für Normung

**Central Secretariat: rue de Stassart 36, B-1050 Brussels**

## Foreword

This European Prestandard has been prepared by Technical Committee CEN/TC 224 “Machine-readable cards, related device interfaces and operations”, the secretariat of which is held by AFNOR.

This European Pre-Standard comprises the following parts, under the general title “Identification card systems — Surface transport applications”:

- Part 1: General data elements;
- Part 2: Transport Payment related data elements;
- Part 3: Tachograph related data elements;
- Part 4: Driving licence related data elements;
- Part 5: Freight related data elements;
- Part 6: Vehicle licence related data elements.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to announce this European Prestandard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

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## Introduction

Magnetic stripe cards and bar coded cards are used in a variety of transport applications, while IC cards offer far greater opportunities for use across multiple transport applications. The standardisation of data elements will permit the usage of transport cards across multiple applications and operators, as well as in a variety of different transport related terminals. The standard will also permit application builders to minimise data duplication.

This European Pre-Standard contains definitions of data formats, data elements, and data structures for use in the creation of surface transport related data sets which may or may not reside on a transport card. The Abstract Syntax Notation One (ASN.1) has been used in the definition of data types in this Pre-Standard.

The ASN.1 Basic Encoding Rules (BER) includes significant redundancy in order to make transferred data fully self defining, which may result in data sets too large for identification cards with restricted data storage capacity. Therefore this Pre-Standard allows the use of alternative encoding rules such as the ones based upon the ASN.1 packed encoding rules (PER).

This European Pre-Standard does not pretend to identify and specify every possible ASN.1 type that may be used in future applications by application builders. In addition, local systems may be defined in their own way. This European Pre-Standard will be updated and added to over time as new surface transport applications are created in the normal CEN practice.

## 1 Scope

This European Pre-Standard specifies data formats, data elements, and data structures for general use within surface transport applications (STAs) using identification cards. The abstract syntax notation (ASN.1) has been used in the definition of data types (i.e. ASN.1 types) in this Pre-Standard.

This European Pre-Standard refers to existing ASN.1 encoding rules (transfer syntaxes), such as the basic and packed encoding rules, for use within STAs. However this Pre-Standard does not exclude the use of other encoding rules. The mechanism for how to establish the application context, including the decision of which encoding rules to use, is outside the scope of this Pre-Standard.

This European Pre-Standard defines the ASN.1 modules (libraries). These ASN.1 modules consist of ASN.1 types that are to be encoded for use within Surface Transport Applications.

The data may be used by other applications than STAs, and the data defined in this part is open for use on technologies other than identification cards.

## 2 Normative references

This European Pre-Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Pre-Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

EN ISO 3166-1, *Codes for the representation of names of countries and their subdivisions — Part 1: Country codes*. (ISO 3166-1:1997)

EN 27816-1, *Identification cards — Integrated circuit(s) cards with contacts — Part 1: Physical characteristics*. (ISO 7816-1:1987)

EN ISO/IEC 7816-5, *Identification cards — Integrated circuit(s) cards with contacts — Part 5: Numbering system and registration procedure for application identifiers*. (ISO/IEC 7816-5:1994)

EN ISO/IEC 7816-6, *Identification cards — Integrated circuit(s) cards with contacts — Part 6: Interindustry data elements*. (ISO/IEC 7816-6:1996)

ISO 3779:1983, *Road vehicles — Vehicle identification number (VIN) — Content and structure*.

ISO 4217:1990, *Codes for the representation of currencies and funds*.

EN ISO/IEC 7812-1:1995, *Identification cards — Identification of issuers — Part 1: Numbering system*. (ISO/IEC 7812-1:1995)

EN ISO/IEC 7812-2:1995, *Identification cards — Identification of issuers — Part 2: Application and registration procedures*.

ISO 8859-1:1987, *Information processing — 8-bit single-byte coded graphic character sets*.

ISO/IEC 8824-1:1995, *Information technology — Abstract Syntax Notation One (ASN.1): Specification of basic notation*.

ISO/IEC 8825-1:1995, *Information technology — ASN.1 encoding rules: Specification of Basic Encoding Rules (BER), Canonical Encoding Rules (CER) and Distinguished Encoding Rules (DER)*.

ISO/IEC 14662, *Information technology — Open EDI reference model*<sup>1)</sup>.

### 3 Definitions

For the purposes of this European Pre-Standard, the following definitions apply.

#### 3.1

##### **account**

an account held in a central location, used for payment for services. When payment is made through the use of a card, the card identifies the centrally held account [prENV 1545-1]

#### 3.2

##### **contract**

a specific relationship between a transport service provider and a customer. The contract defines the conditions under which the customer may use the services which are predefined by the service provider. The contract may also indicate how the customer is charged. In public transport, a ticket represents a contract

#### 3.3

##### **currency**

a unit in which a value is expressed. This may be conventional legal currency or proprietary tokens

#### 3.4

##### **customer**

an individual or organisation which receives a service in a commercial relationship with a service provider

#### 3.5

##### **event**

a circumstance which causes data to be written to a machine readable card. This may be an external event or a card event. The card may already be available at the Interface device, or it may be presented, which action may itself create an event

#### 3.6

##### **first event**

the first of a set of related events which are deemed to constitute a single journey

#### 3.7

##### **holder**

the person or organisation which is recognised as being the authorised user of the application [prENV 1545-1]

#### 3.8

##### **interchange**

the transfer of a passenger from one vehicle to another between two journey segments

#### 3.9

##### **interface device**

the device used to interface with the Integrated Circuit Card

#### 3.10

##### **journey**

movement of a customer between two points via a transport system. This movement may include the use of more than one vehicle and using more than one transport mode

---

<sup>1)</sup> At present at the stage of draft

**3.11****journey segment**

a part of a journey in which the customer uses one vehicle only. Some journeys consist of just one segment

**3.12****machine readable card**

an ID-1 standard card containing information that may be read or written to by a machine or a card reading device

**3.13****network**

one coherent group of transportation services, presented to the customer as one continuous service. A network may be provided by a single operator or a group of operators

**3.14****operator**

organisation responsible for the operation of a surface transport service

**3.15****point**

when used as a location reference, the smallest addressable location in space (where smallest will depend on the context in which the reference is used)

**3.16****purse**

a generic name for all types of card based payment means where value is expressed electronically on the card. Applications may range from an inter-sector electronic purse to a prepaid value card for one application within one company. In this latter case, the term On-board Account is sometimes used

**3.17****route**

an ordered sequence of points passed through by a transport service

**3.18****service**

facilities provided and/or actions performed by an operator/service provider

**3.19****transport mode**

means of transport characterised by the technology of the vehicle and infrastructure employed

**3.20****zone**

an area in which all points are considered identical from the point of view of fare collection

**4 Abbreviations**

For the purposes of this European Pre-Standard, the following abbreviations apply.

|       |                                               |
|-------|-----------------------------------------------|
| AID   | Application Identifier                        |
| ASN.1 | Abstract Syntax Notation One, [ISO/IEC8824-1] |
| AVI   | Automatic Vehicle Identification              |
| BCD   | Binary Coded Decimal                          |
| BER   | Basic Encoding Rules, [ISO/IEC8825-1]         |
| DOW   | Day Of Week                                   |
| IFD   | Interface device                              |
| EAN   | European Article Numbering                    |
| EC    | European Commission                           |

|       |                                                |
|-------|------------------------------------------------|
| ICC   | Integrated Circuit Card, [EN 27816-1]          |
| IEP   | Inter Sector Electronic Purse                  |
| MII   | Major Industry Identifier, [EN ISO/IEC 7812-1] |
| NOTOK | Not OK                                         |
| PER   | Packed Encoding Rules                          |
| RFU   | Reserved Future Use                            |
| STA   | Surface Transport Applications                 |
| VAT   | Value Added Tax                                |
| VIN   | Vehicle Identification Number, [ISO 3779:1983] |

## 5 Approach for definitions of data types

See prENV1545-1, clause 5.

## 6 Data type definitions

### 6.1 Universal Class Types

#### 6.1.1 Amount

The size of a monetary transaction (for example a price) expressed in a PayUnit. Note that an amount is always a positive integer. This amount includes VAT.

Amount {INTEGER:AmountRange} :: = INTEGER (0..AmountRange)

**Value Assignment:** Unspecified

#### 6.1.2 BestContracts

Array denoting the currently valid contracts.

BestContracts :: = **SET SIZE (0..15) OF** {  
    bestContract                      BestContract }

BestContract :: = **SEQUENCE** {  
    bestContractNetworkId      [0] NetworkId                      **OPTIONAL,**  
    bestContractTariff          [1] ContractTariff                **OPTIONAL,**  
    bestContractPointer        [2] InstancePointer               **OPTIONAL}**

**bestContractNetworkId** is the network in which the contract is valid. If it is not present, the network is the default one (EnvNetworkId).

**bestContractTariff** is the contract code.

**bestContractPointer** points to the concerned contract (Contract structure).

### 6.1.3 Contract

Information pertaining to a surface transport contract. It identifies the service rights, either by reference to the tariff or explicitly, associated with the contract for service. Note that it also contains references to payment methods which are allowed under the contract.

```

Contract : := SEQUENCE {
    contractNetworkId          [0] NetworkId          OPTIONAL,
    contract Provider          [1] Company             OPTIONAL,
    contractTariff              [2] INTEGER (0..65535)   OPTIONAL,
    contractSerialNumber        [3] Int4                OPTIONAL,
    contractCustomerInfo        [4] ContractCustomerInfo OPTIONAL,
    contractPassengerInfo       [5] ContractPassengerInfo OPTIONAL,
    contractVehicleClassAllowed [6] INTEGER (0..65535)   OPTIONAL,
    contractPaymentPointers     [7] SET SIZE (0..5) OF Pointer OPTIONAL,
    contractPayMethod           [8] Paymethod           OPTIONAL,
    contractServices             [9] Services           OPTIONAL,
    contract PriceAmount        [10] Amount             OPTIONAL,
    contractPriceUnit           [11] PayUnit            OPTIONAL,
    contractRestriction          [12] ContractRestriction OPTIONAL,
    contractValidityInfo         [13] ContractValidityInfo OPTIONAL,
    contractJourneyData          [14] ContractJourneyData OPTIONAL,
    contractSaleData             [15] ContractSaleData  OPTIONAL,
    contractStatus               [16] Status            OPTIONAL,
    contractLoyaltyPoints        [17] LoyaltyPoints     OPTIONAL,
    contractAuthenticator        [18] Authenticator     OPTIONAL,
    contractData                 [19] OCTET STRING      OPTIONAL
}

ContractTariff {INTEGER: ContractTariffRange} : := INTEGER (0..ContractTariffRange)

ContractCustomerInfo : := SEQUENCE {
    contractCustomerProfile      [0] CustomerProfile    OPTIONAL,
    contractCustomerNumber       [1] Int4               OPTIONAL
}

ContractPassengerInfo : := SEQUENCE {
    contractPassengerClass       [0] PassengerClass     OPTIONAL,
    contractPassengerTotal       [1] INTEGER (0..255)    OPTIONAL
}

ContractRestriction : := SEQUENCE {
    contractRestrictStart        [0] TimeCompact        OPTIONAL,
    contractRestrictEnd          [1] TimeCompact        OPTIONAL,
    contractRestrictDay          [2] RestrictDOW         OPTIONAL,
    contractRestrictTimecode     [3] INTEGER (0..255)    OPTIONAL,
    contractRestrictCode         [4] INTEGER (0..255)    OPTIONAL,
    contractRestrictProduct      [5] INTEGER (0..65535)  OPTIONAL,
    contractRestrictLocation     [6] LocationReference   OPTIONAL
}

ContractValidityInfo : := SEQUENCE {
    contractValidityStartDate     [0] DateCompact        OPTIONAL,
    contractValidityStartTime     [1] TimeCompact        OPTIONAL,
    contractValidityEndDate       [2] DateCompact        OPTIONAL,
    contractValidityEndTime       [3] TimeCompact        OPTIONAL,
    contractValidityDuration      [4] INTEGER (0..255)    OPTIONAL,
    contractValidityLimitDate     [5] DateCompact        OPTIONAL,
    contractValidityZones         [6] SET (SIZE (0..10) ) OF INTEGER (0..255)
    OPTIONAL,
    contractValidityJourneys      [7] INTEGER (0..65535)  OPTIONAL,
    contractPeriodJourneys       [8] INTEGER (0..65535)  OPTIONAL
}

```