BRITISH STANDARD

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1362 : 1997

Identification card systems — Device interface characteristics — Classes of device interfaces

The European Standard EN 1362 : 1997 has the status of a British Standard

ICS 35.240.15

Committees responsible for this British Standard

The preparation of this British Standard was entrusted to Technical Committee IST/17, Identification cards and related devices, upon which the following bodies were represented:

APACS (Barclaycard)
APACS (Co-operative Bank)
APACS (Lloyds Bank)
APACS (Midland Bank)
APACS (National Westminster Bank)
Association for Payment Clearing Services (APACS)
BT Laboratories
Cellnet
Consumer Policy Committee of BSI
GPT Card Technology
Mondex International
Motorola Ltd.
Rochford Thompson Equipment
Shell UK
Stationery Office
Thorn Transit Systems International
Vodafone Ltd.
Westinghouse Cubic Ltd.

This British Standard, having been prepared under the direction of the DISC Board, was published under the authority of the Standards Board and comes into effect on
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Amendments issued since publication

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The following BSI references relate to the work on this standard:
Committee reference IST/17
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Contents

National foreword

This British Standard has been prepared by Technical Committee IST/17 and is the English language version of EN 1362 : 1997 *Identification card systems — Device interface characteristics — Classes of device interfaces*, published by the European Committee for Standardization (CEN).

This British Standard is published under the direction of the DISC Board whose Technical Committee IST/17 has the responsibility to:

- aid enquirers to understand the text;
- present to the responsible international/European committee any enquiries on interpretation, or proposals for change, and keep UK interests informed;
- monitor related international and European developments and promulgate them in the UK.

Important note. EN 1362 : 1997 was produced as a result of international discussions by CEN Technical Committee TC 224 in which the UK took an active part. The UK voted against the draft of EN 1362 : 1997 on the basis that Technical Committee IST/17 could foresee no practical application for the standard. However, the terms of the UK's membership in CEN require BSI to publish this standard.

Any enquiries about this British Standard should be directed to the Secretary of Technical Committee IST/17 at BSI.

NOTE. International and European Standards, as well as overseas standards, are available from Customer Services, BSI, 389 Chiswick High Road, London, W4 4AL.

Compliance with a British Standard does not of itself confer immunity from legal obligations.

Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, the EN title page, pages 2 to 14, an inside back cover and a back cover.

EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 1362

January 1997

ICS 35.240.15

Descriptors: Telecommunication, telecommunication terminals, magnetic cards, interfaces, characteristics, classifications, dimensions, messages, codification

English version

Identification card systems — Device interface characteristics — Classes of device interfaces

Systèmes de cartes d'identification — Caractéristiques d'interface des terminaux — Classes d'interfaces

Identifikationskartensysteme — Eigenschaften von Endgeräteschnittstellen — Schnittstellenklassen

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 Standard 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 Standard shall be given the status of a national standard, either by publication of an identical text, or by endorsement, at the latest by July 1997, and conflicting national standards shall be withdrawn at the latest by July 1997.

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

Contents

1 Scope

This European Standard specifies mandatory and optional interfaces between devices and machine readable cards, as well as other interfaces only to the extent that they are related to the processing of the machine readable card. It specifies the characteristics of each particular interface, and provides the means, through the use of bitmap coding, of readily identifying the capabilities of devices in order to ensure the compatibility between specific devices and cards. As far as technical specifications are concerned, it refers to other existing standards.

2 Normative references

This European 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 Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

EN 726-2	*Identification card systems — Telecommunications integrated circuit(s) cards and terminals — Part 2: Security framework*
EN 726-3	*Identification card systems — Telecommunications integrated circuit(s) cards and terminals — Part 3: Application independent card requirements*
EN 726-4	*Identification card systems — Telecommunications integrated circuit(s) cards and terminals — Part 4: Application independent card related terminal requirements*
prEN 753-1	*Identification card systems — Intersector thin flexible cards — Part 1: General technical specifications*
prEN 753-2	*Identification card systems — Intersector thin flexible cards — Part 2: Magnetic recording technique*
EN ISO/IEC 10536-1	*Identification cards — Contactless integrated circuit(s) cards — Part 1: Physical characteristics* (ISO/IEC 10536-1 : 1992)
EN 24909	*Bank cards — Magnetic stripe data content for track 3* (ISO 4909 : 1987)
EN 27810	*Identification cards — Physical characteristics* (ISO 7810 : 1985)
EN 27811-2	*Identification cards — Recording technique — Part 2: Magnetic stripe* (ISO 7811-2 : 1988)
EN 27811-4	*Identification cards — Recording technique — Part 4: Location of read-only magnetic tracks — Tracks 1 and 2* (ISO 7811-4 : 1985)
EN 27811-5	*Identification cards — Recording technique — Part 5: Location of read-write magnetic track — Track 3* (ISO 7811-5 : 1985)
EN 27813	*Identification cards — Financial transaction cards* (ISO 7813 : 1990)
EN 27816-1 : 1989	*Identification cards — Integrated circuit(s) cards with contacts — Part 1: Physical characteristics* (ISO 7816-1 : 1987)
EN 27816-2 : 1989	*Identification cards — Integrated circuit(s) cards with contacts — Part 2: Dimension and location of the contacts* (ISO 7816-2 : 1988)
EN 27816-3 : 1992	*Identification cards — Integrated circuit(s) cards with contacts — Part 3: Electronic signals and transmission protocols* (ISO/IEC 7816-3 : 1989)
EN 28583	*Financial transaction card originated messages — Interchange message specification* (ISO 8583 : 1993)
ENV 1375-1	*Identification card systems — Intersector integrated circuit(s) card additional format — Part 1: ID-000 card size and physical characteristics*
prENV 1375-2	*Identification card systems — Intersector integrated circuit(s) card additional format — Part 2: ID-00 card size and physical characteristics*
ETS 300 115	*Attachments to the Public Switched Telephone Network (PSTN); Category II attachment requirements for 300 bits per second duplex modems standardized for use on the PSTN (NET 21)*

ETS 300 116	*Attachments to the Public Switched Telephone Network (PSTN); Category II attachment requirements for 1200 bits per second duplex modems standardized for use on the PSTN (NET 22)*
ETS 300 117	*Attachments to the Public Switched Telephone Network (PSTN); Category II attachment requirements for 2400 bits per second duplex modems standardized for use on the PSTN (NET 23)*
ETS 300 118	*Attachments to the Public Switched Telephone Network (PSTN); Category II attachment requirements for 1200 bits per second half duplex and 1200/75 bits per second asymmetrical duplex modems standardized for use on the PSTN (NET 24)*
ETS 300 175-2	*Radio Equipment and systems (RES) — Digital European Cordless Telecommunications (DECT) Common Interface — Part 2: Physical layer*
ETS 300 175-3	*Radio Equipment and systems (RES) — Digital European Cordless Telecommunications (DECT) Common Interface — Part 3: Medium access control layer*
ETS 300 175-4	*Radio Equipment and systems (RES) — Digital European Cordless Telecommunications (DECT) Common Interface — Part 4: Data link control layer*
ETS 300 175-5	*Radio Equipment and systems (RES) — Digital European Cordless Telecommunications (DECT) Common Interface — Part 5: Network layer*
ETS 300 175-9	*Radio Equipment and systems (RES) — Digital European Cordless Telecommunications (DECT) Common Interface — Part 9: Public access profile*
ETS 300 331	*Radio Equipment and systems (RES) — Digital European Cordless Telecommunications (DECT) authentication module specifications*
I-ETS 300 021	*European digital cellular telecommunication system (Phase 1) — Mobile Station — Base Station System (MS-BSS) interface data link layer specification (GSM 04.06)*
I-ETS 300 022-1	*European digital cellular telecommunications system (Phase 1) — Mobile radio interface layer 3 specification (GSM 04.08)*
I-ETS 300 022-2	*European digital cellular telecommunications system (Phase 1) — Mobile radio interface layer 3 specification — Part 2: DCS extension (GSM 04.08-DCS)*
I-ETS 300 023	*European digital cellular telecommunications system (Phase 1) — Point-to-point short message service support on mobile radio interface (GSM 04.11)*
I-ETS 300 024	*European digital cellular telecommunications system (Phase 1) — Short Message Service Cell Broadcast (SMSCB) support on the mobile radio interface (GSM 04.12)*
I-ETS 300 025	*European digital cellular telecommunications system (Phase 1) — Rate adaptation on the Mobile Station — Base Station System (MS-BSS) interface (GSM 04.21)*
I-ETS 300 026	*European digital cellular telecommunications system (Phase 1) — Radio Link Protocol (RLP) for data and telematic services on the Mobile Station — Base Station System (MS-BSS) interface and the Base Station System — Mobile Services Switching Centre (BSS-MSC) interface (GSM 04.22)*
I-ETS 300 027	*European digital cellular telecommunications system (Phase 1) — Mobile radio interface layer 3 supplementary services specifications Formats and coding (GSM 04.80)*
I-ETS 300 028	*European digital cellular telecommunications system (Phase 1) — Mobile radio interface layer 3 call offering supplementary services specification (GSM 04.82)*

I-ETS 300 029	*European digital cellular telecommunications system (Phase 1) — Mobile radio interface layer 3 restriction supplementary services specification (GSM 04.88)*
I-ETS 300 030	*European digital cellular telecommunications system (Phase 1) — Multiplexing and multiple access on the radio path (GSM 05.02)*
I-ETS 300 031	*European digital cellular telecommunications system (Phase 1) — Channel coding (GSM 05.03)*
I-ETS 300 032	*European digital cellular telecommunications system (Phase 1) — Modulation (GSM 05.04)*
I-ETS 300 033-1	*European digital cellular telecommunications system (Phase 1) — Radio transmission and reception (GSM 05.05)*
I-ETS 300 033-2	*European digital cellular telecommunications system (Phase 1) — Radio transmission and reception — Part 2: DCS extension (GSM 05.05-DCS)*
I-ETS 300 034-1	*European digital cellular telecommunications system (Phase 1) — Radio sub-system link control (GSM 05.08)*
I-ETS 300 034-2	*European digital cellular telecommunications system (Phase 1) — Radio sub-system link control — Part 2: DCS extension (GSM 05.08-DCS)*
I-ETS 300 045-1	*European digital cellular telecommunications system (Phase 1) — Subscriber Identity Module — Mobile Equipment (SIM-ME) interface specification (GSM 11.11)*
I-ETS 300 045-2	*European digital cellular telecommunications system (Phase 1) — Subscriber Identity Module — Mobile Equipment (SIM-ME) interface specification — Part 2: DCS extension (GSM 11.11-DCS)*
ISO 2110	*Information technology — Data communication — 25-pole DTE/DCE interface connector and contact number assignments*
ISO 4902	*Information technology — Data communication — 37-pole DTE/DCE interface connector and contact number assignments*
ISO/IEC 7816-4	*Identification cards — Integrated circuit(s) cards with contacts — Part 4: Interindustry commands for interchange*
ISO/IEC 8473-1	*Information technology — Protocol for providing the connectionless-mode network service — Part 1: Protocol specification*
ISO/IEC /DIS 8473-2	*Information technology — Protocol for providing the connectionless-mode network service — Part 2: Provision of the underlying service by an ISO/IEC 8802 subnetwork*
ISO/IEC TR 8802-1	*Information technology — Telecommunications and information exchange between systems — Local and metropolitan area networks — Specific requirements — Part 1: Overview of Local Area Network Standards*
ISO/IEC 8802-3	*Information technology — Local and metropolitan area networks — Part 3: Carrier sense multiple access with collision detection (CSMA/CD) access method and physical layer specifications*
ISO/IEC 8802-4	*Information processing systems — Local area networks — Part 4: Token-passing bus access method and physical layer specifications*
ISO/IEC 8802-5	*Information processing systems — Local and metropolitan area networks — Part 5: Token ring access method and physical layer specifications*
ISO 9542	*Information processing systems — Telecommunications and information exchange between systems — End system to intermediate system routeing exchange protocol for use in conjunction with the Protocol for providing the connectionless-mode network service* (ISO 8473)

ISO 9992-2	*Financial transaction cards — Messages between the integrated circuit card and the card accepting device — Part 2: Functions, messages (commands and responses), data elements and structures*
ISO/IEC 10536-2	*Identification cards — Contactless integrated circuit(s) cards — Part 2: Dimensions and location of coupling areas*
ISO/IEC 10536-3	*Identification cards — Contactless integrated circuit(s) cards — Part 3: Electronic signals and reset procedures*
ISO/IEC 11694-2	*Identification cards — Optical memory cards — Linear recording method — Part 2: Dimensions and location of the accessible optical area*
ISO/IEC 11694-3	*Identification cards — Optical memory cards — Linear recording method — Part 3: Optical properties and characteristics*
ISO/IEC /DIS 11694-4	*Identification cards — Optical memory cards — Linear recording method — Part 4: Logical data structures*
ITU-T recommendation I.430	*Basic user-network interface — Layer 1 specification*
ITU-T recommendation V.24	*List of definitions for interchange circuits between data terminal equipment (DTE) and data circuit-terminating equipment (DCE)*
ITU-T recommendation V.28	*Electrical characteristics for unbalanced double-current interchange circuits*
CCITT recommendation X.21	*Interface between data terminal equipment and data circuit-terminating equipment for synchronous operation on public data networks*
ITU-T recommendation X.25	*Interface between data terminal equipment (DTE) and data circuit-terminating equipment (DCE) for terminals operating in the packet mode and connected to public data networks by dedicated circuit*
CCITT recommendation X.26	*Electrical characteristics for unbalanced double-current interchange circuits for general use with integrated equipment in the field of data communications*
CCITT recommendation X.27	*Electrical characteristics for balanced double-current interchange circuits for general use with integrated equipment in the field of data communications*
ITU-T recommendation X.28	*DTE/DCE interface for a start-stop mode data terminal equipment accessing the packet assembly/disassembly facility (PAD) in a public data network situated in the same country*
ITU-T recommendation X.31	*Support of packet mode terminal equipment by an ISDN*
ITU-T recommendation X.32	*Interface between DTE and DCE for terminals operating in the packet mode and accessing a packet switched public data network through a public switched telephone network or an integrated services digital network or a circuit switched public data network*

3 Definitions and abbreviations

NOTE. The definitions in this inter-industry standard are independent of any specific application.

3.1 Definitions

For the purposes of this standard, the following definitions apply:

3.1.1 *interface*

The logical and/or physical connection between a component or sub-assembly in a terminal and an external entity, e.g. a card, a secure application module, a human being or a communication link during a transaction process. An interface may be established for all or part of a transaction process and has or may have an interaction with the card, or with its technology(ies), or with its operation.

3.1.2 *security module*

A module intended to contain algorithm(s), related keys, security procedures and information to protect an application in such a way that unauthorized access is not possible. In order to achieve this, the module shall be physically, electrically and logically protected.

3.1.3 *interface device*

A communication device to which a card is logically connected during the transaction process.

3.1.4 ***personal identification number***

A code or password that the customer possesses for verification of identity.

3.1.5 ***basic interface characteristic***

A two digit code representing one or more options pertaining to a characteristic for a specific interface.

3.1.6 ***elementary interface code***

A sequence of basic interface characteristics in a particular order.

3.1.7 ***global interface code***

A set of elementary interface codes.

3.1.8 ***electrical interface***

An interface with galvanic contacts.

3.2 Abbreviations

ATR:	Answer to Reset
BPS:	Bits per second
CAD:	Card accepting device
DECT:	Digital European Cordless Telecommunications
DCE:	Data circuit-terminating equipment
DCS:	Digital cellular system
DTE:	Data terminal equipment
GSM:	Global System for Mobile Communications
HDLC:	High level data link control
HICO:	High coercivity
ICC:	Integrated circuit card
LOCO:	Low coercivity
PIN:	Personal identification number
SM:	Security module

4 Organization of interface characteristics

The following types of interface may be established:

– card interface: an interface between a CAD and a machine readable card. A terminal conforming to this standard shall provide the ability to establish a card interface. This interface is mandatory;

– security module interface: an interface between a CAD and a security module. A terminal conforming to this standard may provide the ability to establish an SM interface. This interface is optional;

– human interface : an interface between a CAD and a person. A terminal conforming to this standard may provide the ability to establish a human interface. This interface is optional;

– data communication interface : an interface between a CAD and another computing equipment. A terminal conforming to this standard may provide the ability to establish a communication network interface. This interface is optional.

A terminal may support more than one type of interface and more than one interface of the same type.

An interface is described according to one or more basic interface characteristics. A basic interface characteristic is a two hexadecimal digit code representing one or more options pertaining to this characteristic. An elementary interface code is derived from the selection of one available code for each basic interface characteristic in sequence. The combination of all the elementary interface codes determines the global interface code of this interface.

The global interface code of all the interfaces of a CAD shall be retrievable from the CAD. It can be made readable at one of the interfaces of the CAD, or on the manufacturer label of the equipment. The global interface code of all the interfaces shall be read in the following order : card interfaces, data communication interfaces, security module interfaces and human interfaces. If one is not present on the CAD, the code 00 shall appear in its place.

The general code shall therefore appear as follows:

C(card interface global interface code) - D(data communication interface global interface code) - S(security module interface global interface code) - H(human interface global interface code).

5 Card interface

A card interface is described according to the following characteristics:

– physical dimensions characteristics;

– technology characteristics;

– communication characteristics;

– message and data characteristics.

5.1 Card interface: physical dimensions characteristics

The card interface physical dimensions, as shown in table 1, are supported by this European Standard.

Table 1. Card types, reference standards

Card type	Reference standard
ID000	ENV 1375-1
ID00	prENV 1375-2
ID1	EN 27810
ID2	EN 27810
ID3	EN 27810
TFC0	prEN 753-1
TFC1	prEN 753-1
TFC5	prEN 753-1

5.2 Card interface: technology characteristics

5.2.1 *Magnetic*

The following types of magnetic cards are supported in this European Standard:

– in accordance with EN 27811-2, EN 27811-4 and EN 27811-5 on magnetic stripes with track 1 and/or track 2 and/or track 3;

– in accordance with prEN 753-2 for TFC0, TFC1 and TFC5 cards magnetic tracks.

5.2.2 *Electro-magnetic*

The following types of electro-magnetic cards are supported in this European Standard:

– in accordance with ISO/IEC 11694-2 for optical memory cards technologies;

– in accordance with ISO/IEC 10536-2 and ISO/IEC 10536-3 for capacitive and/or inductive technologies;

– reserved for future use for radiocommunication technologies.

5.2.3 *Electrical/galvanic*

The following types of card interface electrical technologies are supported in this European Standard:

– in accordance with EN 27816-1 : 1989, EN 27816-2:1989, clauses **3** to **5** of EN 27816-3:1992;

– in accordance with EN 726-3.

5.3 Card interface: communication characteristics

5.3.1 *Passive communication*

The following types of passive communication characteristics are supported in this European Standard:

– in accordance with EN 27811-2, EN 27811-4 and EN 27811-5 on magnetic stripes with track 1 and/or track 2 and/or track 3;

– in accordance with prEN 753-2 on magnetic stripes with central track and/or track 4;

– in accordance with ISO/IEC 11694-3 for optical memory cards.

5.3.2 *Active communication*

5.3.2.1 *Synchronous transmission*

The following types of synchronous transmission modes are supported in this European Standard:

– in accordance with **5.2** and **6.2** of EN 27816-3 : 1992 (synchronous integrated circuit card transmission).

5.3.2.2 *Asynchronous transmission*

The following types of asynchronous transmission modes are supported in this European Standard:

– character mode transmission according to the T=0 IC card protocol as described in clauses **6** and **8** of EN 27816-3 : 1992;

– block mode transmission according to the T=1 IC card protocol as described in clauses **6** and **9** of EN 27816-3 : 1992;

– parameters and protocol type selection (PTS) supported as described in clause **7** of EN 27816-3 : 1992;

– reserved for future use for duplex transmission.

5.4 Card interface: data characteristics

5.4.1 *Data for passive cards technologies*

The following data structures are supported in this European Standard:

– in accordance with EN 27813 for data on magnetic card tracks 1 and 2;

– in accordance with EN 24909 for data on magnetic card track 3;

– in accordance with ISO/IEC/DIS 11694-4 for data on optical memory cards;

– reserved for future use for data on magnetic card tracks TFC0, TFC1, and TFC5.

5.4.2 *Commands and data for active card technologies*

The following commands and data structures are supported in this European Standard:

– in accordance with ISO/IEC 7816-4 : all the supported messages are implemented as described in ISO/IEC 7816-4;

– in accordance with ISO 9992-2 for banking applications: all the supported messages are implemented as described in ISO 9992-2;

– in accordance with EN 726-3 for telecommunication applications: all the supported messages are implemented as described in EN 726-3;

– in accordance with ETS 300 331 for DECT telecommunication applications: all the supported messages are implemented as described in ETS 300 331;

– in accordance with I-ETS 300 045-1 for GSM telecommunication applications (and I-ETS 300 045-2 for DCS extension applications): all the supported messages are implemented as described in ETS 300 045-1 and I-ETS 300 045-2;

– proprietary messages: when proprietary messages are supported by the interface, they shall not be standardized, but this situation is included in the coding of the interface characteristics.

5.5 Basic card interface coding

A coding is specified in this standard in order to identify the interface characteristics. It uses a bitmap type of coding for all the characteristics, with some extension mechanisms for extra bytes to be added if needed.

It shall be the responsibility of every sector or application to define how such a data element is used, if needed.

The coding is done with at least 1 byte for each characteristic. The bit b8 (most significant bit) of a byte indicates the presence of a subsequent byte ; b8 is named 'Extension' in figures 1 to 8. The bit b7 of the first byte indicates a proprietary usage of this characteristic ; b7 is named 'Proprietary' in figures 1 to 8. When an option is supported at the interface, the corresponding bit in the interface characteristics coding shall be set to 1.

5.5.1 *Coding of the physical dimensions characteristics*

The following coding shall be used for the physical dimensions characteristics:

Extension	Proprietary	ID1	TFC1	ID000	ID00	TFC0	TFC5

Figure 1. Coding of the first byte

Extension	ID2	ID3	RFU	RFU	RFU	RFU	RFU

Figure 2. Coding of the second byte

Example of values for one single characteristic:

– 20 for ID1 capability;
– 08 for ID000 capability;
– 8040 for ID2 capability.

5.5.2 *Coding of the technological characteristics*

The following coding shall be used for technological characteristics:

Extension	Proprietary	Electrical	LOCO magnetic	HICO magnetic	Optical	Inductive	Capacitive

Figure 3. Coding of the first byte

Extension	Radio	RFU	RFU	RFU	RFU	RFU	RFU

Figure 4. Coding of the second byte

Examples of values for one single characteristic:

– 20 for electrical/galvanic capability;
– 08 for high coercivity magnetic capability;
– 8040 for radio capability.

5.5.3 *Coding of the communication characteristics*

The following coding shall be used for the communication characteristics:

Extension	Proprietary	Synchronous electrical	Asynchronous T=1	Asynchronous T=0	PTS	RFU	RFU

Figure 5. Coding of the first byte

Extension	Track 1 EN 27811-4	Track 2 EN 27811-4	Track 3 EN 27811-5	Track 4 prEN 753-2	Central track prEN 753-2	RFU	RFU

Figure 6. Coding of the second byte

Example of values for some characteristics:

– 08 for asynchronous capability with protocols T=0;
– 1 C for asynchronous capabilities with both protocols T=0 and T=1 and PTS;
– 9C20 for asynchronous capabilities with protocols T=0 and T=1, PTS and ISO track 2 magnetic capability.

NOTE. The T=0 (T=1 respectively) bit of the first byte set to 1 means that the interface is able to support the T=0 (T=1 respectively) standard protocol as defined in EN 27816-3 : 1992 clause **8** (clause **9** respectively) of EN 27816-3 : 1992.

5.5.4 *Coding of the data characteristics*

The following coding shall be used for the data characteristics:

Extension	Proprietary	ISO/IEC 7816-4	EN 726-2	ISO 9992-2	I-ETS 300 045-1	I-ETS 300 045-2	ETS 300 331

Figure 7. Coding of the first byte

Extension	Track 1 EN 27813	Track 2 EN 27813	Track 3 EN 24909	RFU	RFU	RFU	RFU

Figure 8. Coding of the second byte

Example values for some characteristics:

– 20 for IC card intersector data capabilities;
– 8020 for magnetic card track 2 data capabilities;
– A120 for IC card intersector and DECT data capabilities and magnetic card track 2 data capabilities.

6 Data communication interface

The data communication interface is described according to the following characteristics :

– physical characteristics;
– technology characteristics;
– communication characteristics;
– message and data characteristics.

6.1 Data communication interface: physical characteristics

The following types of connectors are supported in this European Standard:

– RS232 9 way D-type Male/female in accordance with ISO 4902;
– RS232 25 way D-type Male/female in accordance with ISO 2110;
– BNC/TNC (Coaxial cable);
– RJ11 jack plug (4 wires);
– RJ12 jack plug (6 wires);
– RJ45 jack plug (8 wires).

6.2 Data communication interface : technology characteristics

The following types of data communication interface technologies are supported in this European Standard :

a) electrical link.

The following mode of electrical links are supported in this European Standard:

– 300 bps V.21 modem:	such a connection shall comply with ETS 300 115;
– 1200 bps V.22 modem:	such a connection shall comply with ETS 300 116;
– 2400 bps V.22bis modem :	such a connection shall comply with ETS 300 117;
– 1200/75 bps V.23 modem :	such a connection shall comply with ETS 300 118;
– V.28 :	such a connection shall comply with ITU-T recommendation V.28;
– X.26 :	such a connection shall comply with CCITT recommendation X.26;
– X.27 :	such a connection shall comply with CCITT recommendation X.27;
– I.430 :	such a connection shall comply with ITU-T recommendation I.430;
– ISO/IEC 8802-3 :	such a connection shall comply with ISO/IEC 8802-3 physical layer;
– ISO/IEC 8802-4 :	such a connection shall comply with ISO/IEC 8802-4 physical layer;
– ISO/IEC 8802-5 :	such a connection shall comply with ISO/IEC 8802-5 physical layer;

b) radio frequencies electromagnetic link.

The following mode of radio links are supported in this European Standard:

– GSM link :	such a connection shall comply with I-ETS 300 030, I-ETS 300 031, I-ETS 300 032, I-ETS 300 033-1, I-ETS 300 034-1;
– DCS link :	such a connection shall comply with I-ETS 300 030, I-ETS 300 031, I-ETS 300 032, I-ETS 300 033-2 (DCS extension), I-ETS 300 034-2 (DCS extension);
– DECT link :	such a connection shall comply with ETS 300 175-2;

c) optical frequencies electromagnetic link: reserved for future use;

d) proprietary links.

6.3 Data communication interface: communication characteristics

The following types of data communication interface communication characteristics (layer 2, layer 3 and provisions for multiple networks interconnections) are supported in this European Standard:

– V.24 for interchange between DTE and DCE;

– X.21 for synchronous dial-in access to a public data network;

– HDLC (layer 2) point to point as described in ITU-T recommendation X.25;

– X.25 (layers 2 and 3), in accordance with full ITU-T recommendation X.25;

–X.28, in accordance with ITU-T recommendation X.28, for asynchronous dial-in access to a public data network;

– X.31 case A, in accordance with ITU-T recommendation X.31, for access to a public data network via an ISDN B-channel;

– X.31 case B, in accordance with ITU-T recommendation X.31, for access to a public data network via an ISDN D-channel;

– X.32, in accordance with ITU-T recommendation X.32, for packet-mode terminals (dial-in access);

– GSM protocol implemented in accordance with I-ETS 300 021 and I-ETS 300 022-1;

– DCS protocol implemented in accordance with I-ETS 300 021 and I-ETS 300 022-2;

– DECT layers 2 and 3 implemented in accordance with ETS 300 175-3, ETS 300 175-4 and ETS 300 175-5;

– ISO/IEC 8802-3 for protocols using a CSMA/CD access method;

– ISO/IEC 8802-4 for protocols using a token-passing bus access method;

– ISO/IEC 8802-5 for protocols using a token ring access method;

– ISO/IEC/DIS 8473-2 for connectionless-mode network services over an underlying ISO/IEC 8802 sub-network;

– ISO 9542 for the routing aspects in a LAN/WAN interconnection;

– proprietary communication characteristics.

6.4 Data communication interface: message characteristics

The following types of data communication interface message characteristics are supported in this European Standard:

– banking messages supported in accordance with EN 28583;

– GSM messages supported in accordance with I-ETS 300 023, I-ETS 300 024, I-ETS 300 025, I-ETS 300 026, I-ETS 300 027, I-ETS 300 028 and I-ETS 300 029;

– DECT messages supported in accordance with ETS 300 175-9;

– proprietary messages.

6.5 Basic data communication interface coding

A coding is defined in this standard in order to identify the interface characteristics. It uses a bitmap type of coding for all the characteristics, with some extension mechanisms for extra bytes to be added if needed.

It shall be the responsibility of every sector or application to define how such a data element is used, if needed.

The coding is done with at least 1 byte for each characteristic. The bit b8 (most significant bit) of a byte indicates the presence of a subsequent byte; b8 is named 'Extension' in figures 9 to 17. The bit b7 of the first byte indicates a proprietary usage of this characteristic; b7 is named 'Proprietary' in figures 9 to 17. When an option is supported at the interface, the corresponding bit in the interface characteristics coding shall be set to 1.

6.5.1 Coding of the physical characteristics

The following coding shall be used for the physical characteristics:

Extension	Proprietary	RS232 9 way female	RS232 25 way female	RS232 9 way male	RS232 25 way male	BNC/TNC	RFU

Figure 9. Coding of the first byte

Extension	RJ11	RJ12	RJ45	RFU	RFU	RFU	RFU

Figure 10. Coding of the second byte

6.5.2 *Coding of the technological characteristics*

The following coding shall be used for the technological characteristics:

Extension	Proprietary	ETS 300 115	ETS 300 116	ETS 300 117	ETS 300 118	X.26	X.27

Figure 11. Coding of the first byte

Extension	V.28	I.430	ISO/IEC 8802-3	ISO/IEC 8802-4	ISO/IEC 8802-5	RFU	RFU

Figure 12. Coding of the second byte

Extension	GSM	DCS	DECT	RFU	RFU	RFU	RFU

Figure 13. Coding of the third byte

6.5.3 *Coding of the communication characteristics*

The following coding shall be used for the communication characteristics of the data communication interface. In the case of ISO/IEC 8802 LAN capabilities, the interworking capabilities shall be indicated with the subsequent bits of the second byte. If none of the interworking bits are set to 1, this means that the equipment has no interworking capability, and can be used in a stand alone LAN only.

Extension	Proprietary	V.24	X.21	HDLC	X.25	X.28	X.32

Figure 14. Coding of the first byte

Extension	X.31 case A	X.31 case B	ISO/IEC 8802-3	ISO/IEC 8802-4	ISO/IEC 8802-5	ISO/IEC 8473-1 ISO/IEC/DIS 8473-2 ISO 9542 interworking	Proprietary interworking

Figure 15. Coding of the second byte

Extension	GSM	DCS	DECT	RFU	RFU	RFU	RFU

Figure 16. Coding of the third byte

6.5.4 *Coding of the message characteristics*

The following coding shall be used for the message characteristics:

Extension	Proprietary	EN 28583	GSM	DECT	RFU	RFU	RFU

Figure 17. Coding of the first byte

7 Security module interface

NOTE. This clause is reserved for future use, when detailed standards on security modules related to the processing of a machine readable card are available.

8 Human interface

NOTE. This clause is reserved for future use, when detailed standards on human interfaces related to the processing of a machine readable card are available.

Annex A (informative)
Examples of interface coding

This annex gives some examples of coding for card interfaces of a CAD.

A.1 Case 1

The card interface of a CAD which accepts integrated circuit cards of the ID1 format following the standards EN 27816-1 : 1989, EN 27816-2 : 1989,
EN 27816-3 : 1992 with T=0 and T=1 and PTS protocols, ISO/IEC 7816-4, as well as magnetic cards with low coercivity ISO track 2, all within the same card reader, is coded as follows:

C 20-30-9C20-A020

A.2 Case 2

The card interfaces of a CAD which accepts integrated circuit cards of the ID1 format following the standards EN 27816-1 : 1989, EN 27816-2 : 1989,
EN 27816-3 : 1992 with T=0 and T=1 and PTS protocols, ISO/IEC 7816-4 as well as magnetic cards with low coercivity ISO track 2, within two different card readers, one for the magnetic cards and one for the integrated circuit cards, is coded as follows:

C 20-20-18-20 for the IC card reader

C 20-10-8020-8020 for the magnetic card reader

The code describing the card interfaces of such a CAD should therefore read:

C(20-20-18-20) - C(20-10-8020-8020)

blank

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