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Foreword

This European Telecommunication Standard (ETS) has been produced by the Signalling Protocols and Switching (SPS) Technical Committee of the European Telecommunications Standards Institute (ETSI).

This ETS is part 1 of a multi-part standard covering the Digital Subscriber Signalling System No. one (DSS1) protocol specification for the Integrated Services Digital Network (ISDN) generic keypad protocol for the support of supplementary services, as described below:

Part 1: "Protocol specification";

Part 2: "Protocol Implementation Conformance Statement (PICS) proforma specification".

NOTE: Possible further parts may contain the testing specifications.

This reprint includes all previous Corrigenda as shown in the History box at the last page.

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1 Scope

This first part of ETS 300 122 specifies the keypad protocol of the pan-European Integrated Services Digital Network (ISDN) as provided by European public telecommunications operators for the application to a range of supplementary services at the T reference point, or coincident S and T reference point (as defined in CCITT Recommendation I.411 [1]), by means of the Digital Subscriber Signalling System No. one (DSS1).

The application of this standard to individual supplementary services is outside the scope of this standard.

The Keypad protocol provides a means of transferring keypad facility codes from the user to the network to control supplementary services and indicating network responses to the user.

This protocol applies to supplementary service invocation in the user-to-network direction, and the keypad facility codes used for the invocation of individual supplementary services are network dependent.

The protocol is stimulus in the sense that it does not require any knowledge about the invoked supplementary service by the user equipment. It is applicable to both the basic and primary rate access structures.

Further parts of this standard may specify the method of testing required to identify conformance to this standard.

This standard is applicable to equipment, supporting supplementary services using the keypad protocol, to be attached at either side of a T reference point or coincident S and T reference point when used as an access to the public ISDN.

2 Normative references

This 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 listed hereafter. For dated references, subsequent amendments to, or revisions of any of these publications apply to this standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

[1] CCITT Recommendation I.411 (1988): "ISDN user-network interfaces - Reference configurations".

[2] ETS 300 102-1 (1990): "Integrated Services Digital Network (ISDN); User-network interface layer 3; Specifications for basic call control".

[3] CCITT Recommendation Q.932 (1988): "Generic procedures for the control of ISDN supplementary services".

[4] CCITT Recommendation Q.931 (1988): "ISDN user-network interface layer 3 specification for basic call control".

[5] CCITT Recommendation I.210 (1988): "Principles of telecommunication services supported by an ISDN and the means to describe them".

[6] CCITT Recommendation I.112 (1988): "Vocabulary of terms for ISDNs".

[7] ETS 300 196-1: "Integrated Services Digital Network (ISDN); Generic functional protocol for the support of supplementary services; Digital Subscriber Signalling System No. one (DSS1) protocol; Part 1: Protocol specification".

3 Definitions

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

Integrated Services Digital Network (ISDN): see CCITT Recommendation I.112 [6], § 2.3, definition 308.

Service; telecommunications service: see CCITT Recommendation I.112 [6], § 2.2, definition 201.

Supplementary service: see CCITT Recommendation I.210 [5], § 2.4.

Stimulus protocol: a stimulus protocol consists of a sequence of stimulus information elements. A stimulus information element is generated as a result of a single event at the user/terminal interface or contains a basic instruction from the network to be executed by the user.

Functional protocol: a functional protocol consists of a sequence of functional information elements. A functional information element requires a degree of intelligent processing by a terminal in either generation or analysis.

Keypad facility code: a sequence of IA5-characters sent by the user in the Keypad facility information element to the network to control supplementary services.

4 Symbols and abbreviations

DSS1	Digital Subscriber Signalling System No. one.
IA5	International Alphabet No.5
ISDN	Integrated Services Digital Network.

5 Co-existence with other supplementary service protocols

5.1 Support of the various generic protocols

Networks may support the keypad and the functional generic protocols for the control of supplementary services. The support of multiple generic protocols is a network option. The service provider shall inform users at subscription time of the supplementary services available and of the generic protocols supported on their access.

5.2 Coexistence of generic protocols

As a general rule, the functional protocol shall be used unless the network specifies the use of a stimulus protocol for the invocation of certain supplementary services.

In general, the keypad protocol has only local significance while the functional protocol may have other than local significance.

For a given call instance, the protocol applied at a local interface may be different from the one applied at a remote user's interface. For example, one of the generic protocols can be used at the requesting user's interface, while a functional protocol shall be applied at the remote user's interface unless a network chooses, as an option, to use the keypad protocol for supplementary service indication or notification in the network-to-user direction.

5.3 Arrangements by which coexistence of protocols may be supported by a network

Some networks may support only one of the generic protocols per user access for the invocation of supplementary services. Other networks may choose to support a single generic protocol for the control of supplementary services, depending on the user access interface type (e.g. keypad on the basic access, functional on the basic access and primary access). This shall be arranged at subscription time.

Networks supporting multiple generic protocols per access in the user-to-network direction (i.e. for the supplementary service invocation) shall recognise the protocol option chosen by the user on the basis of the received message type or information element type.

Networks supporting more than one generic protocol per access in the network-to-user direction (i.e. at the remote user interface) may choose to apply a particular protocol depending on the supplementary services involved.

6 Procedures for the keypad protocol

The keypad protocol is based on the use of the Keypad facility and Display information elements. The Keypad facility information element may be included in the SETUP and INFORMATION messages. The Display information element may be included in any message sent by the network to the user according to ETS 300 102-1 [2]. It may be used in any state of a call and in association with a call for supplementary service invocation.

The procedures specified in CCITT Recommendation Q.932 [3], § 4, shall apply with the following clarifications:

- where a reference is made to CCITT Recommendation Q.931, the equivalent Clause in ETS 300 102-1 [2] shall be used;

- where a reference is made to CCITT Recommendation Q.932, ETS 300 196-1 [7] shall be used;

- text related to the Feature key management protocol shall be ignored;

- a supplementary service request can be related to the registration, cancellation, activation, deactivation or interrogation of a supplementary service. This request may be independent of an active call to a remote user (see CCITT Recommendation Q.932 [3], § 4.4.1, item 1);

- if a Sending complete information element is used in the call establishment phase then it shall always indicate completion of the called party number, as defined in ETS 300 102-1 [2], subclause 4.5.26 (see CCITT Recommendation Q.932 [3], § 4.5.1.1, 4th hyphenated item);

- the user shall transfer all the additional call information (contained within the Keypad facility information element) before the network determines that the called party number (contained within the Called party number information element) is complete (see CCITT Recommendation Q.932 [3], § 4.5.2.1, item 2);

- Annex B of CCITT Recommendation Q.932 [3] is outside the scope of this standard (see CCITT Recommendation Q.932 [3], § 4.5.2.2, the note no longer applies);

- CCITT Recommendation Q.932 [3], § 4.5.2.3, 1st paragraph, item b) is replaced by the following text: "information containing a sending complete indication, but the user information sent is not complete."

7 Coding requirements

There are no additional messages and information elements to those specified in ETS 300 102-1 [2].

Annex A (informative): Example use of the keypad protocol

The examples illustrated in CCITT Recommendation Q.932 [3], Appendix I, § I.2 are applicable.

Where a reference is made to CCITT Recommendation Q.931 [4] the equivalent Clause in ETS 300 102-1 [2] shall be used.

Annex B (informative): Functional reference model for the operation of supplementary services

The functional reference model illustrated in CCITT Recommendation Q.932 [3], Appendix II, is applicable, with the exception that the feature key management protocol is not applicable.

History

Document history	
March 1992	First Edition
April 1994	Corrigendum to First Edition: change to part 1 of a multi-part standard
March 1996	Converted into Adobe Acrobat Portable Document Format (PDF) and incorporation of all prior Corrigenda