



# SLOVENSKI STANDARD SIST ETS 300 402-3:1998

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8 [[ ]HJbc`ca fYy`Y`n`]bhY[ f]fUb]a ]`g]c]f]h]j Ua ]`f]G8 Bk!`Df]c]c`\_c`X]] [ ]HJbY`bU]c b]y`\_Y  
g]] bU]nUW]Y`y]h`r`%f]B GG`%k!`DcXU]h\_c] bU]dc]j Ync]j U]bU]d`Ugh!`" "XY. `GdYW]Z\_UW]U  
df]c]c`\_c`UV`c`\_c] bY] U]dc]gfYX]c] Ub`U

Integrated Services Digital Network (ISDN); Digital Subscriber Signalling System No. one (DSS1) protocol; Data link layer; Part 3: Frame relay protocol specification

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35.100.20	Podatkovni povezovalni sloj	Data link layer

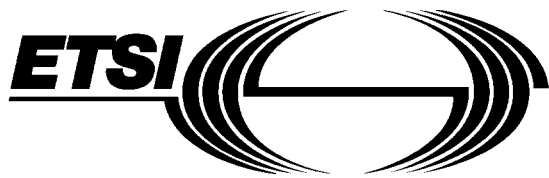
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**ETSI**

European Telecommunications Standards Institute

**ETSI Secretariat**

**Postal address:** F-06921 Sophia Antipolis CEDEX - FRANCE

**Office address:** 650 Route des Lucioles - Sophia Antipolis - Valbonne - FRANCE

**X.400:** c=fr, a=atlas, p=etsi, s=secretariat - **Internet:** secretariat@etsi.fr

Tel.: +33 92 94 42 00 - Fax: +33 93 65 47 16

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## Contents

Foreword .....	5
1 Scope .....	7
2 Normative references .....	7
3 Abbreviations .....	8
4 Frame structure for peer-to-peer communication .....	9
4.1 General .....	9
4.2 Flag sequence .....	9
4.3 Address field .....	9
4.4 Control field .....	9
4.5 Frame Relay information field .....	9
4.6 Transparency .....	10
4.7 Frame Checking Sequence (FCS) field .....	10
4.8 Format convention .....	10
4.9 Invalid frames .....	10
4.10 Frame abort .....	10
5 Elements of procedures and formats of fields for the DL-CORE services sublayer .....	11
5.1 General .....	11
5.2 Address field format .....	11
5.3 Address field variables .....	12
5.3.1 Address field extension bit (EA) .....	12
5.3.2 Command/Response bit (C/R) .....	12
5.3.3 Forward Explicit Congestion Notification (FECN) .....	12
5.3.4 Backward Explicit Congestion Notification (BECN) .....	12
5.3.5 Discard Eligibility indicator (DE) .....	12
5.3.6 Data Link Connection Identifier (DLCI) .....	12
5.3.7 DLCI/DL-CORE control indicator (D/C) .....	13
6 Placement of the DL-CORE sublayer protocol in the ISDN protocol architecture .....	14
6.1 Support by the underlying physical layer service .....	19
6.2 DL-CORE service .....	19
6.2.1 Primitives .....	19
6.2.2 Parameters .....	19
6.2.3 Procedures .....	19
6.2.3.1 Primitives/Frame Relay frame mapping .....	19
6.2.3.2 Parameters/fields mapping .....	19
6.3 Layer management .....	20
6.3.1 Primitives .....	20
6.3.1.1 MC-ASSIGN request .....	20
6.3.1.2 MC-REMOVE request .....	20
6.3.1.3 M2N-ASSIGN request .....	20
6.3.1.4 M2N-REMOVE request .....	20
6.3.1.5 MDL-ASSIGN request .....	20
6.3.1.6 MDL-REMOVE request .....	20
6.3.2 Parameters .....	20
6.3.2.1 DLCI value .....	20
6.3.2.2 DL-CORE Connection Endpoint Identifier (CEI) .....	20
6.3.2.3 DL CEI .....	21
6.3.2.4 PH CEI .....	21
6.3.3 Procedures .....	21
6.3.3.1 DL-CORE connection establishment .....	21
6.3.3.2 DL-CORE connection release .....	21

7	List of system parameters .....	21
8	Congestion control procedures.....	22
8.1	Implicit congestion detection .....	22
8.2	Explicit notification.....	22
8.2.1	Explicit congestion signals.....	22
8.2.2	Rate reduction strategy.....	22
Annex A (normative):	Consolidated Link Layer Management (CLLM) message.....	23
A.1	Address octets.....	24
A.2	Control field.....	24
A.3	XID information field .....	24
A.3.1	Format identifier field.....	24
A.3.2	Group field.....	24
A.3.2.1	Group identifier field.....	24
A.3.2.2	Group length field .....	24
A.3.2.3	Group value field.....	24
A.3.3	Parameter for Parameter set identification .....	25
A.3.3.1	Parameter set identification field.....	25
A.3.3.2	Parameter set identification length field.....	25
A.3.3.3	Parameter value field.....	25
A.3.4	Parameter field for Cause identifier.....	25
A.3.4.1	Parameter identifier field.....	25
A.3.4.2	Parameter length field.....	25
A.3.4.3	Cause value.....	25
A.3.5	Parameter field for DLCI identifier.....	26
A.3.5.1	Parameter identifier field.....	26
A.3.5.2	Parameter length field.....	26
A.3.5.3	Parameter value field.....	26
A.4	Frame check sequence field.....	26
A.5	Action of the congested node .....	26
History	.....	27

SIST ETS 300 402-3:1998

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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 based on CCITT Recommendation Q.922 (1992) and provides modifications and further requirements.

This ETS is part 3 of a multi-part standard covering the Integrated Services Digital Network (ISDN) Digital Subscriber Signalling System No. one (DSS1) data link layer specification as described below:

Part 1: "General aspects [ITU-T Recommendation Q.920 (1993), modified]";

Part 2: "General protocol specification [ITU-T Recommendation Q.921 (1993), modified]";

**Part 3: "Frame relay protocol specification";**

Part 4: "Protocol Implementation Conformance Statement (PICS) proforma specification for the general protocol";

Part 5: "PICS proforma specification for the frame relay protocol";

Part 6: "Test Suite Structure and Test Purposes (TSS&TP) specification for the general protocol";

Part 7: "Abstract Test Suite (ATS) and partial Protocol Implementation eXtra Information for Testing (PIXIT) proforma specification for the general protocol".

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## 1 Scope

This third part of ETS 300 402 specifies the frame structure, elements of procedure, format of fields and procedures for the proper operation of the Frame Relay layer 2 protocol as described in the service description ETS 300 399-1 [1].

NOTE 1: The Frame Relay protocol as defined in this ETS may be used with or without the elements of procedures of Link Access Procedure for Frame mode bearer services (LAPF) in CCITT Recommendation Q.922 [8].

LAPF as defined in CCITT Recommendation Q.922 [8] designates the link access procedures applicable to, but not restricted to, the Frame Relay service. The protocol specified in this ETS is a subset of LAPF; it is named "Data Link Core protocol" (DL-CORE) and it is used to support the Frame Relay service. It is intended to:

- share the core functions of LAPF as defined in ITU-T Recommendation I.233 [5];
- be used on B- or D-channel or  $n \times 64$  kbit/s; and
- operate on the D-channel simultaneously with the Link Access Procedure on the D-channel (LAPD) protocol as defined in ITU-T Recommendations Q.920 and Q.921 as modified by ETS 300 402-1 [2] and ETS 300 402-2 [3].

It assumes that data link identification is determined via group signalling or by prior agreement.

NOTE 2: Group signalling is defined in appendix II of CCITT Recommendation Q.922 [8].

The functions of DL-CORE, used to support the Frame Relay service, are considered to be:

- frame delimiting, alignment and transparency;
- frame multiplexing/demultiplexing using the address field;
- inspection of the frame to ensure that it consists of an integral number of octets prior to zero bit insertion or following zero bit extraction;
- inspection of the frame to ensure that it is neither too long nor too short;
- detection of (but not recovery from) transmission errors; and
- congestion control functions.

## 2 Normative references

This ETS incorporates by dated and 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 ETS only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

- [1] ETS 300 399-1 (1995): "Frame relay services; Part 1: General description".
- [2] ETS 300 402-1: "Integrated Services Digital Network (ISDN); Digital Subscriber Signalling System No. one (DSS1) protocol; Data link layer; Part 1: General aspects [ITU-T Recommendation Q.920 (1993), modified]".
- [3] ETS 300 402-2: "Integrated Services Digital Network (ISDN); Digital Subscriber Signalling System No. one (DSS1) protocol; Data link layer; Part 2: General protocol specification [ITU-T Recommendation Q.921 (1993), modified]".
- [4] ITU-T Recommendation I.122 (1993): "Framework for frame bearer services".

- [5] ITU-T Recommendation I.233 (1993): "Frame mode bearer service".
- [6] ITU-T Recommendation I.320 (1993): "ISDN protocol reference model".
- [7] CCITT Recommendation I.370 (1991): "Congestion management for the ISDN frame relaying bearer service".
- [8] CCITT Recommendation Q.922 (1992): "ISDN data link layer specification for frame mode bearer services".
- [9] ITU-T Recommendation X.200 (1994) | ISO/IEC 7498-1 (1994): "Information technology - Open Systems Interconnection - Basic reference model: The basic model".
- [10] ITU-T Recommendation X.210 (1993) | ISO/IEC 10731 (1994): "Information technology - Open systems interconnection - Basic reference model: Conventions for the definitions of OSI services".
- [11] CCITT Recommendation X.211 (1988): "Physical service definition of open systems interconnection for CCITT applications".
- [12] ISO/IEC 8885 (1993): "Information technology - Telecommunications and information exchange between systems - High-level data link control (HDLC) procedures - General purpose XID frame information field content and format".

### 3 Abbreviations

For the purposes of this ETS, the following abbreviations apply:

BECN	Backward Explicit Congestion Notification
C-plane	Control plane
C/R	Command/Response field bit
CEI	Connection Endpoint Identifier
CLLM	Consolidated Link Layer Management
D/C	DLCI or DL-CORE control indicator
DE	Discard Eligibility indicator
DL	Data Link (layer)
DL-	communication between layer 3 and data link layer
DL-CORE	Data Link Core protocol
DL-CORE-	communication between the DL-CORE user and DL-CORE
DLCI	Data Link Connection Identifier
EA	Address field Extension bit
FECN	Forward Explicit Congestion Notification
FCS	Frame Check Sequence
HDLC	High-level Data Link Control
ISDN	Integrated Services Digital Network
LAN	Local Area Network
LAPD	Link Access Procedure on the D-channel
LAPF	Link Access Procedure for Frame mode bearer services
M2N-	communication between layer 3 and layer 2 management entities
MC-	communication between DL-CORE and layer 2 management
MDL-	communication between layer 2 management and data link layer
OSI	Open Systems Interconnection
PH	Physical (layer)
PH-	communication between data link layer and physical layer
PDU	Protocol Data Unit
SAP	Service Access Point
SAPI	Service Access Point Identifier
TEI	Terminal Endpoint Identifier
U-plane	User plane
XID	eXchange IDentification

## 4 Frame structure for peer-to-peer communication

### 4.1 General

All data link layer peer-to-peer exchanges are in frames conforming to the format shown in figure 1 (other 3 or 4 octet address formats are available).

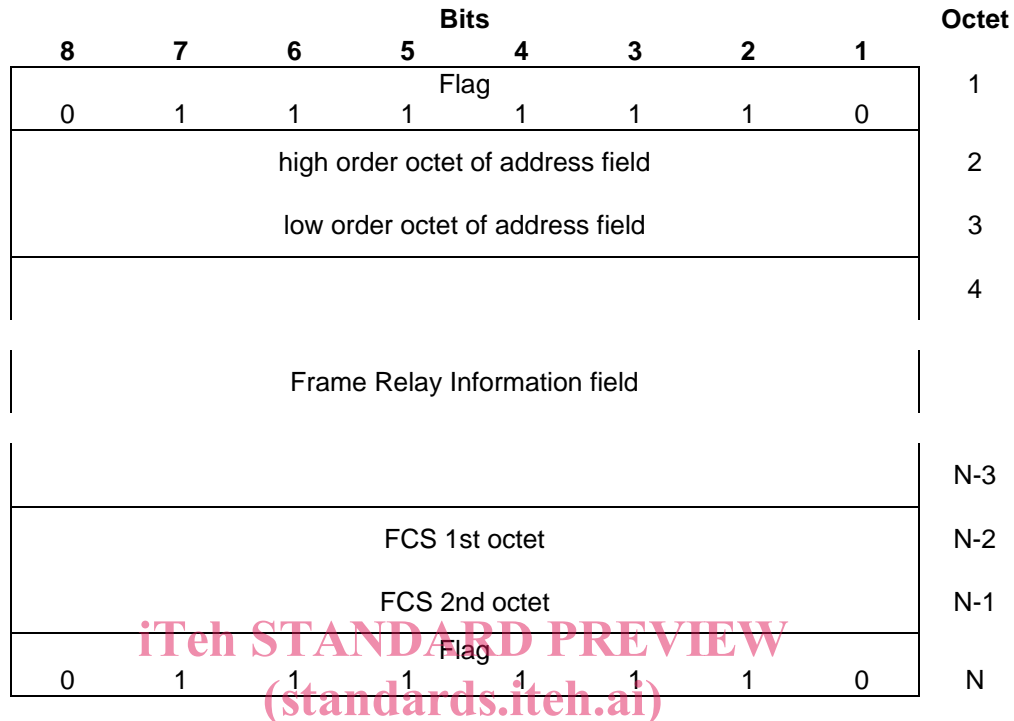


Figure 1: Frame Relay frame format with two octet address

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### 4.2 Flag sequence

All frames shall start and end with the flag sequence consisting of one "0" bit followed by six contiguous "1" bits and one "0" bit. The flag preceding the address field is defined as the opening flag. The flag following the Frame Check Sequence (FCS) field is defined as the closing flag. The closing flag may also serve as the opening flag of the next frame, in some applications. However, all receivers shall be able to accommodate receipt of one or more consecutive flags.

Flags shall be used as interframe fill (on channels other than D-channels).

### 4.3 Address field

The address field shall consist of at least two octets as illustrated in figure 1 but may optionally be extended up to 4 octets. The format of the address field is defined in subclause 5.2.

### 4.4 Control field

A control field, as seen by the DL-CORE sublayer, does not exist in a Frame Relay frame structure.

### 4.5 Frame Relay information field

The Frame Relay information field of a frame, when present, follows the address field (see subclause 5.2) and precedes the frame check sequence field (see subclause 4.7). The contents of the Frame Relay information field shall consist of an integral number of octets.

The maximum number of octets in the Frame Relay information field is defined in clause 7.